



**The Zoological Society
of London**

Annual Report 1971

THE ZOOLOGICAL SOCIETY OF LONDON

ABOUT THE SOCIETY

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 other 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 145 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 1955, with a bibliographical reference to the original description of each. The work contains approximately 260,000 entries and is published in 6 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 143rd Annual Report to the
Annual General Meeting of the Society
to be held on Thursday 4th May 1972
at 4.00 pm in the Society's Meeting
Room at Regent's Park

THE ZOOLOGICAL SOCIETY OF LONDON

THE ZOOLOGICAL SOCIETY OF LONDON

PATRON: HER MAJESTY THE QUEEN

COUNCIL 1971-1972

President: HRH The Prince Philip, Duke of Edinburgh, KG, KT

Treasurer: Sir Terence Morrison-Scott, DSC, DSc

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The Hon. Ivor Montagu

The Duke of Northumberland, KG, TD, FRS

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Professor A. T. Phillipson, MA, PhD, DVSc, MRCVS, FRSE

Peter Scott, CBE, DSC, LLD

The Lord Strathalmond, CMG, OBE, TD

C. A. Wright, DSc, PhD, FIBiol, *Vice-President*

THE ZOOLOGICAL SOCIETY OF LONDON

HONORARY FELLOWS

Date of election

- 1971 His Majesty Emperor Hirohito of Japan
- 1952 Professor J. Berlioz
Muséum National d'Histoire Naturelle,
Jardin des Plantes, 57 rue Cuvier, Paris 5^e, France
- 1937 HH Maharajah Raol Shri Krishnakumarsinhji Bhavsinhji of Bhavnagar,
Bhavnagar, Kathiawar, India
- 1951 Professor Dr H. Boschma
Rijksmuseum van Natuurlijke, 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^e, France
- 1945 Monsieur Jean Delacour
Parc Zoologique de Clères, Clères, Rouen, S-M, France
- 1929 Dr W. K. Gregory
American Museum of Natural History,
Central Park West at 79th Street, New York, USA
- 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
- 1952 Dr R. C. Murphy
American Museum of Natural History,
Central Park West at 79th Street, New York, 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

CONTENTS

REPORT OF THE COUNCIL

The Membership	7
Finance	8
The London Zoo	9
Whipsnade Park	15
Scientific activities	18
Research	21
Educational activities	25
General matters	26
Acknowledgments	29

APPENDICES

1. President's speech on the presentation of the Gold Medal	33
2. Regulations	34
3. Committees	35
4. Staff	37
5. Publications by Society's staff and research workers	38
6. List of animals received	41
7. Donors of animals	54
8. Donations to the Zoological Record Fund	57
9. Books presented to the Library	58
Meetings during 1972	61
Financial accounts	63

THE MEMBERSHIP

COUNCIL

The President presided at the Annual General Meeting which was held on 20th May. The following members of Council retired:

Professor E. J. W. Barrington
The Earl of Bessborough
The Duke of Northumberland
Mr Peter Scott
Professor G. P. Wells
Mr Woodrow Wyatt
Dr Frank Yates

The Duke of Northumberland and Mr Peter Scott who, in accordance with the By-laws had been appointed to Council to fill casual vacancies, were elected for a further term, and the other vacancies were filled by the election of Dr J. D. Carthy, Dr Raymond Greene, Dr W. Lane-Petter (Scientific Fellows), Mr Aubrey Buxton and the Lord Strathalmond (Ordinary Fellows).

At the meeting HRH The Prince Philip presented the Society's Gold Medal to the Secretary, Lord Zuckerman. The text of the President's speech is given in Appendix 1 of this report.

The President also presented the 1970 awards for contributions to zoology.

The Stamford Raffles Award (awarded to an amateur zoologist for distinguished contributions to zoology) to *Mr D. R. Rosevear*, British Museum (Natural History), in recognition of his contributions to knowledge of the West African mammalian fauna. The award was a sculpture in bronze, *Wild Boar*, by Miss Elisabeth Frink.

The Scientific Medal (awarded to persons under 40 years of age for distinguished work in zoology) to *Dr Denis Noble*, of the University of Oxford, for his work on the physiology of nerve and muscle; and to *Professor J. G. Phillips*, of the University of Hull, for his work on comparative endocrinology.

The Thomas Henry Huxley Award (for original work submitted as a doctoral thesis) to *Dr P. J. Sharp*, of the University of Leeds (now at University College of North Wales, Bangor), for his thesis 'The hypothalamic control of gonadotrophin release in the Japanese quail (*Coturnix coturnix japonica*)'. The award was a sculpture, *Seals*, by Mr David Wynne.

A Certificate of Commendation was awarded to *Dr O. Anne E. Rasa*, of the University of London (now at the Max-Planck-Institute for the Physiology of Behaviour, West

Germany), for her thesis 'The effects of frustration and prolonged isolation on a learned behaviour pattern for aggression in *Microspathodon chrysurus* (Pomacentridae)'.

The Prince Philip Medal (for an account of practical work involving some aspect of living animals by a pupil, under 19 years of age, in a school in the United Kingdom) awarded to *Stephen M. Clift*, of Archbishop Holgate's Grammar School, York, for his essay 'Some characteristics of the shells of limpets, *Patella vulgata*, in relation to the environment'.

On the occasion of his State visit to Great Britain in October HM The Emperor of Japan visited the Zoological Gardens, Regent's Park and was welcomed by the President, who also admitted His Majesty as an Honorary Fellow in recognition of his contributions to the zoological sciences, particularly in the field of marine biology.

ROLL OF MEMBERS

At the end of the year there were 3,023 Fellows and 2,279 Associates.

OBITUARY

The Council records with deep regret the deaths of The Earl of Mansfield who at various times had served on Council, as Vice-President, and as a member of the Finance and the Gardens and Park Committees; Sir Wilfrid le Gros Clark who had served on Council and as Vice-President; Mr Richard Carrington, a Scientific Fellow for 36 years; Miss C. D. Russell who had been a Fellow since 1895; The Earl of Tankerville who had been a Fellow since 1935; and Mr Sidney A. Westwood, formerly the Accountant and Clerk to the Council.

AMENDMENTS TO REGULATIONS

Minor amendments to Regulations 15, 18 and 19 were approved by Council. The amended Regulations are given in Appendix 2.

FINANCE

Attendances at Regent's Park at 1,941,900 were some 8 per cent higher than in 1970, and at Whipsnade attendances also increased, being about 18 per cent higher than last year. Admission charges were increased to keep pace with rising costs, but the very low concessionary prices for old age pensioners and students remained unchanged. With higher gate receipts and a substantial improvement in the income from the Zoo Shops and Catering activities the results for the year show a small surplus.

The development programmes at Regent's Park and at Whipsnade, described in later sections of this report, were continued, the total capital expenditure for the year being £341,000.

DONATIONS

The Council again acknowledges its gratitude to Sir Michael Sobell, whose generous donation of £250,000 has enabled us to proceed with the building of the new Ape and Monkey House in Regent's Park, and also gratefully acknowledges other donations received, including \$25,000 from The Annenberg Fund, £200 from the Rt Hon. The Lord Faringdon and a legacy of £200 from the late Mr A. R. Stradling.

ZOO RESTAURANTS LTD

Zoo Restaurants Ltd has had a satisfactory year in spite of the fact that early bookings were affected by the postal strike in so far as a number of functions had to be cancelled due to poor support, and others suffered by reduced attendances. However, later bookings have been up to standard and the facilities are still booked on Fridays and Saturdays for several years ahead.

THE LONDON ZOO

Visitors during the year 1,941,900
Visitors to the Children's Zoo 395,150
Visitors to the Aquarium 417,600

GENERAL DEVELOPMENT

With the resumption of major building after a period of some three years, 1971 was marked by a great deal of activity. The construction of the new Ape and Monkey House continued apace, and the three main blocks – North, South and East blocks – were ready for occupation at the beginning of October. In the following fortnight the animals which had continued to occupy part of the old Monkey House, as well as those which had been kept temporarily in the disused North Mammal House, were moved into their new quarters. The old house was then demolished to clear the site for the remaining two blocks of the new complex. The outside enclosures were finished during the winter but the animals were confined to the exhibition or reserve dens in the buildings to allow time for grass and other plants in and around the enclosures to become established.

Support for the capital programme from HM Government, which was announced in last year's Annual Report, enabled us to start the planning of future major projects,

including new quarters for the big cats to replace the existing Lion House, and also to complete a number of smaller, but equally important items.

The latter included the renovation of the Mappin Terraces. By the end of the year the four 'hill' paddocks for sheep and goats and five of the six bear enclosures (one was renovated separately a few years ago) had been repaired, waterproofed and surfaced to bring the Mappin Terraces back to renewed life after nearly 60 years of hard and useful service. Lady Casson's help with the design was much appreciated.

Other development works to improve public amenities, which were started last year, continued in the early part of 1971.

A number of catering improvements were completed. The Penguin Cafe was renovated and part of the accommodation converted to a machine vending section where hot drinks, cold snacks and confectionery are obtainable from a battery of automatic vending machines. A smaller vending section was installed at the Garden Cafe to provide additional hot drink and snack facilities for the many visitors who like to picnic.

A new kiosk at the Main Gate was completed, and the Regent Bar was extended to become the Tavern Bar, which was opened in June. The small mammal and bird displays which were included have proved extremely popular with visitors.

A new children's playground near the Zoo Shop was opened by the Spring Holiday weekend and throughout the season was a hive of activity. Inevitably, as with all popular places, it stimulated a certain amount of boisterousness in older children but, by and large, behaviour in the playground was remarkably good, and this innovation has more than justified itself.

The pool in the outside elephant paddock of the Elephant and Rhino Pavilion was rebuilt to make it easier for the public to see the elephants bathing. The daily bath now takes place outside on most spring and summer days, thus avoiding the crowding around the indoor pool where the space for viewing is restricted.

Under the direction of the Architect, the Works Department was occupied in a variety of projects either in preparing the work for completion by an outside contractor or in carrying out the work itself. The variety of these items is a reflection of the complexity of operations at Regent's Park. For example, the surface of the Casson Bridge had to be renewed, the foundations of the Keeper's Lodge underpinned, and the roof of the Regent Building resealed. A new main kitchen drain had to be provided, the locks on all public lavatories had to be changed for decimal coins, pumps in the Aquarium replaced, a new low-temperature refrigeration plant installed in the Supplies building, and modifications made in our quarantine premises.

The back areas of the Small Seal Pond were reconstructed to allow for the more flexible use of this attractive enclosure. By changing the servicing arrangements and back dens the pool was made suitable for the keeping of amphibious animals, such as Capybara, as well as purely aquatic ones, and was used, with great effect, later in the year, as the temporary home for a sealion and its cub. The former Red Panda pit was converted to its original use as a water display for a pair of beavers which the Hudson's Bay Company had presented to Her Majesty The Queen during her visit to Canada. The Giant Tortoise exhibit in the Reptile House was improved and altered to allow the keeping of a mixed collection of lizards as well as of tortoises, and a special exhibit for Carmine Bee-eaters was built in the Bird House.

THE COLLECTION

Mammal Section Perhaps the outstanding feature of the year's events has been a series of successful moves of animals from one installation to another at Regent's Park and, in some cases, to and from Whipsnade. The moves were necessary for several reasons; some animals were transferred to new buildings, others were moved to make way for maintenance and construction, and some breeding groups were reorganized.

The most notable move was the transfer from the old Monkey House to the new buildings, of all the apes and monkeys, including the Lowland Gorillas 'Guy' and 'Lomie', three Chimpanzees and five Orang-utans, one of the latter with a new-born baby. This took place in a period of a few days and in the course of normal work. The Gorillas, Chimpanzees and two of the Orangs had to be anaesthetized for the purpose, and in each case the opportunity was taken to give the animals a health check. The examination of the Gorilla 'Guy' indicated that some bad teeth had to be removed, the result of which is a noticeable improvement in his general condition.

As always planned, the move made it possible to introduce to each other the two Gorillas. In the old building they had lived in adjoining cages, and when moved to their new quarters they were, at first, kept close together in separate back dens. A few days later, they were successfully put together in the main exhibition den. Many had feared that 'Guy's' long bachelor existence would make him an unwilling, and even dangerous, companion for any potential mate. To the relief of all, the two creatures immediately settled together very peacefully.

On the Mappin Terrace the work of renovation meant moving animals out of each enclosure, or in some cases two enclosures at a time, for lengthy periods. The Barbary Sheep were moved, in turn, to each of the 'goat-hills'. Some of the Mouflon flock were moved to the Old Cattle Sheds, and another group went to Whipsnade for the summer, where the opportunity was taken to conduct a controlled experiment in comparative feeding. The bears also had to be moved. Throughout the year, the extra work for the staff on the Mappin Terraces was considerable.

Some Whipsnade Lions and Tigers were brought temporarily to London to be introduced to new animals, which had been acquired to form breeding groups. In the case of dangerous species the facilities for such introductions are easier at Regent's Park where much better control is possible.

During the year there were a number of breeding successes. In 1967 the Society accepted from the Government of Hong Kong a group of young Orang-utans, which had been confiscated under the legislation brought in by the Government to stop the illegal trade in this species. This year two Orangs were born. 'Bulu', the Orang born at Regent's Park in 1961, produced a baby in June, fathered by 'Boy' of the Hong Kong group. In October, in the middle of the turmoil of moving the apes from the old to the new house, another young female 'Bunty', gave birth. 'Bulu's' baby had to be removed for hand-rearing, after a week, because of 'Bulu's' indifference to her maternal duties. The other baby is being reared successfully by her mother.

Two Chimpanzees were born in the Breeding Colony of these apes, but one died soon after birth. A Pig-tailed Macaque, three baboons and one Brown Capuchin were also born.

The Polar Bear born at the end of 1970 quickly became a favourite of visitors during

the early part of the year. In October she was sent to Zurich Zoo as a companion to a young male born at the Bristol Zoo, which was also being sent to Zurich.

A young sealion was born in June and was the first for many years to be reared at the Zoo past babyhood. It was moved with its mother to the Small Seal Pond which had, as reported earlier, been suitably modified, in order that it could grow up away from the main herd. Few sealions are born in captivity and very few reach maturity, but we are hopeful that the cub, now 6 months old, will do well.

The list of births for the year also includes a Przewalski's Horse, a female Greater Kudu which, unlike last year's calf, is thriving; another Lar Gibbon, the third born since 1966 (bringing the family to five); a Bighorn Sheep, a Blesbok, a Yak, a Collared Peccary, two Brindled Gnu, one litter each of pumas and lions, and a number of American Bison, Barbary Sheep, Mouflon, Timor Deer, Blackbuck and Wild Boar.

The Clore Pavilion continues its successful breeding record; the most noteworthy event was the birth of another group of Fennec Foxes, indicating that the changes in the lighting system in the Nocturnal section, to simulate an annual rhythm in the length of daylight, may well be an important factor in achieving breeding success with this species. Other species bred in the Pavilion included Slow Loris, Slender Loris, Senegal Bush-baby, Plains Viscacha, Tree-shrew, Acouchy, Talapoin and Crested and Brush-tailed Porcupine.

As part of the reorganization of the Ape and Monkey collection for the move to their new quarters, the male Orang-utan 'Gambar', which was the only one of the Sumatran race of this species in the Regent's Park collection, was sent on deposit to the Jersey Zoo, which has a female of this subspecies.

On the afternoon of Sunday, 28th February, a wolf got out of the Wolf Wood enclosure into the area between the public barrier and the cage. The 'escape drill' which is regularly practised but, happily not often used, was put into effect. The wolf, which was trying to get into the other half of the enclosure, was recaptured in under 30 minutes. The staff was at half-strength because it was a Sunday, but carried out the standard procedure with precision. They earned the respect of the public for their efficiency and tact.

The ban on the importation of animals which are susceptible to rabies remained in force throughout the year. This naturally made the task of obtaining animals, for instance those required for the new Ape and Monkey House and for other major displays such as those in the Charles Clore Pavilion, more difficult. Fortunately, the excellent breeding results of the past years made it possible not only to maintain the Collection but also, in some cases, to improve and increase the size of the groups.

Bird Section The Snowdon Aviary has always had a good breeding record. If anything, it improved this year. The Bristle-crowned Starling, which so far as we know has not previously been reared in captivity, is a new species to have hatched and been reared. The pair of White-cheeked Turacos produced four young from three different broods in 11 months. The now annual sight of Sacred Ibis and Cattle Egret eggs and chicks in the nests, just below the footbridge, reflects the success of the aviary as a whole.

Other important events in the Bird Section were the successful rearing of five Snowy

Owls, a Spectacled Owl, which is probably only the third ever to be raised in captivity, two penguins, a Palawan Peacock Pheasant and four Malayan Glossy Starlings.

Two large and valuable collections of birds were presented during the year. One, mainly of south-east Asian species, parrots and finches, was presented by Mr M. Zuurdeeg of Sussex. Another, mainly of flamingos and cranes, was donated by Mr Aubrey Buxton. The Royal Zoological Society of Antwerp presented a pair of Imperial Pheasants and also some of the rare and little-known Congo Peafowl, and the Basel Zoo four Straw-necked Ibis.

A small group of young Ostriches was kept over the winter and spring at Regent's Park and then sent to Whipsnade, where they were put in the White Rhino paddock. Five vultures of three species, which had been hand-reared in Africa, were also sent to Whipsnade.

The young female of the pair of Ostriches kept at Regent's Park produced her first three eggs during the year, and although infertile, there had been every hope of chicks being hatched from a later clutch. Unfortunately, the male Ostrich died suddenly during the year. Another is now being sought.

The annual spring scourge of egg-stealing by vandals or misguided collectors was rather worse than usual in 1971; the eggs of Cattle Egret, Sacred Ibis, Gallinule, Barnacle Geese and even penguins were stolen. Unfortunately it is extremely difficult to prevent this happening, and perhaps only adverse publicity and public reaction will in the end stop this vandalism.

Among the species or subspecies which have been added to the Collection for the first time are the Dusky Lory (*Pseudeos fuscata*), Yellow-green Grosbeak (*Caryothraustes canadensis*), Abyssinian Ground Thrush (*Zoothera piaggiae*), and the Congo Peafowl (*Afropavo congensis*).

Aquarium During the year several collections of fishes and invertebrates were received from Madeira, Las Palmas, Singapore, and from various parts of Britain. Fishing expeditions were made by the Aquarium staff to Portsmouth and Littlehampton. Four young cuttlefish hatched at the Plymouth Marine Laboratory were presented to the Society after they had been shown to HM The Emperor of Japan during his visit to the Royal Society. Three are still alive, and are feeding well on sandhoppers.

Insect House New arrivals included a collection of three dozen land hermit-crabs from the Persian Gulf, and adult specimens of the Giant Stick Insect (*Acrophylla titan*) from Australia. This year the butterfly cage has had its best show for some time. Several hundred butterflies, often as many as 1,000 at a time, have been exhibited during sunny spells. These have included Small and Large Tortoiseshells, Brimstones and Peacocks, as well as many common species of hawkmoth.

Reptile House A number of improved handling techniques have been developed during the year. These included acrylic tubing in which snakes may be safely held during examination, and some specially made snake-handling sticks. We are now experimenting with a canvas muzzle, instead of a net, for restraining crocodiles.

A number of interesting hatchings occurred during the year. These included two

clutches of eggs of Boipevussu Snakes (*Leiosophis gigas*), two clutches from the Leopard Ground Geckos (*Eublepharis macularius*) and a Giant Cuban Anole (*Anolis equestris*). The offspring are all thriving.

Other arrivals have included an Amethystine Python (*Liasis amethystinus*) from Hong Kong, a Mexican Beaded Lizard (*Heloderma horridum*) and two Palestine Vipers (*Vipera xanthina palaestinae*), a species which is new to the collection.

VETERINARY AND PATHOLOGY REPORTS

Including examinations made for purposes of surveys in healthy animals, the number of animals which received veterinary attention during the year was 551. There have been no outbreaks of transmissible disease, and the general health of the Collections remains good, although post-natal mortality in some species is still high. Several factors, including lack of privacy, may be involved.

The results of the clinical surveys which have been made indicate that there is no serious nutritional disorder in the Collections, although there are still some obscure problems. The food supplement designed to provide the necessary mineral and vitamin requirements, which was referred to in last year's report, is proving satisfactory, and many carnivorous species are thriving on a diet of specially devised tinned food (ZF6).

For several years research has been carried out in the Pathology Department on the diseases of free-living wild birds and mammals in Great Britain. This has resulted in some interesting findings, including the diagnosis of botulism in birds in St James's Park, London, and The Royal Botanic Gardens, Kew, also of Newcastle disease (fowl pest) in birds of prey. A survey of skin diseases in wild birds has also been made.

Messrs D. Conroy and D. McGregor of the recently formed Fish Pathology Unit have started their research on vibriosis and the haematology of fish.

Further details of the work of the Veterinary Hospital and of the post-mortem examinations and research carried out by the Pathology Department are given in the Scientific Report, which is referred to on page 21.

The Hospital has continued to receive many visitors and students interested in veterinary problems. Miss J. Hodgkinson, of the staff of the Clinical Research Centre, Medical Research Council, Northwick Park Hospital, spent four weeks gaining experience in the handling of primates. Miss A. Vernon, from the Eastman Dental Hospital, made several visits in order to make comparative studies of radiographs of primate dentition, and nine veterinary students spent various periods in the Hospital as part of their vacation training programme.

Groups from the South-west Metropolitan Regional Hospital Paediatric Club, London Association of the Medical Women's Federation, the Gynaecological Visiting Society, the Royal Veterinary College, zoology students from the Paddington Technical College and medical students from King's College Hospital Medical School also visited the Hospital.

Animals of all kinds (except fish and invertebrates) at the London Zoo

	<i>In the Collection on 1 January 1971</i>	<i>Received in 1971 by presentation, exchange, deposit, purchase and transfer from Whipsnade</i>	<i>Born and hatched in the Menagerie in 1971</i>	<i>Died, sold, exchanged, returned to depositors and transferred to Whipsnade</i>	<i>In the Collection on 31 December 1971</i>
Mammals	809	155	350	406	908
Birds	1,356	303	98	385	1,372
Reptiles and Amphibians	707	440	160	420	887
	2,872	898	608	1,211	3,167

Estimated numbers of fish and invertebrates in the Collection at 31 December 1971

Fish	2,544	Invertebrates (excluding locusts, ants and bees)	1,161
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WHIPSNADE PARK

Visitors during the year 560,100
 Visitors to the Children's Zoo 158,950
 Cars brought into the Park 54,450

We were delighted to welcome HM King Gustav of Sweden, accompanied by the Earl Mountbatten of Burma, who visited the Park privately on 3rd November.

GENERAL DEVELOPMENT

As at Regent's Park, the pace of activity quickened during the course of the year with the implementation of the Development Plan.

While detailed planning was being carried out on more important items, many smaller projects were completed. A children's playground, near the Avenue Cafeteria, forms part of the 'Family Centre', and provides one of the general amenities which will gradually be concentrated in this central area. Since the Spring Holiday, when it opened, it has proved a great attraction. Another small project was the addition of covered viewing shelters to many of the animal houses. These allow visitors to see the animals in their houses either in winter or during bad weather in the summer. The Giraffe House, the Indian and Black Rhino houses and Woodfield Paddock, where the main herd of European Bison

are kept, are some of the sites of these new shelters. Modifications to catering facilities included the moving of two kiosks from the Triangle site on the Downs, to new sites near the penguins and the Avenue Cafe.

In August work began on one of the main items of development which were recommended in the 1969 Report of Associated Industrial Consultants Limited, and which were approved by the Department of the Environment and by the Council. This is an exhibit for marine mammals and, in the first instance, for dolphins. The building consists of two indoor pools and a small viewing area, with a larger pool and viewing area out of doors. The pools are supplied with filtered water, and there are underwater viewing windows in the indoor pool. The design is such as to make it possible to reveal the natural range of activities of water mammals.

Steps to improve Whipsnade's electricity supplies were started towards the end of the year. This work is chiefly concerned with the installation of a new intake system, the first section of a high voltage ring main with a new transformer sub-station near the 'Family Centre' area.

A larger number of minor items of improvement than usual helped to make this a year of excellent progress. The old Hall Farm Restaurant was converted into an exhibition room with two aviaries for small birds, mainly finches and mynahs, and a rearranged version of the display which was prepared to mark European Conservation Year 1970. The former Rhesus Monkey Cage, a very large structure, was put to more suitable use as a flight aviary for the three species of vulture, mentioned on page 13, as well as Sacred Ibis and Egrets. A tarmac riding circuit was laid for camel rides. These are more popular than ever now that Whipsnade has a large herd of Bactrian Camels. The Children's Zoo was repainted in brighter colours, and one of the public shelters converted into a house for Fennec Foxes; new plantings included three large rose beds and a rockery.

The White Rhino paddock, with its new animal house and light railway have prospered. Inevitable teething troubles of track, rolling stock and organization were dealt with successfully by the railway company which had a successful first full year of operation. The line now runs through the White Rhino paddock, and between new paddocks containing herds of European Bison and Bactrian Camels.

In 1972 separate paddocks, mainly of herds of ungulates, will be grouped to form regional exhibits of animals. Spicer's Field will be redeveloped for Asian temperate animals as the first step in the programme. The second will be an extension of the White Rhino paddock into Big Barn Field and beyond for an 'African Plains' region. In preparation for the work in Spicer's Field, the zebras in the northern section were fenced off into a narrow strip along the Downs boundary; this rearrangement prevented the zebras wandering so far away from the public that they could not be properly seen, as sometimes happened previously.

The numbers of cars driven through the Park increased considerably in the year, and on the summer Bank Holiday, a record number of 1,280 cars entered the Park. The improvements to the Car Gate which were made in 1970, the opening up of rough, but adequate, parking areas near the White Rhinos and near the Cloisters Cafeteria and, perhaps most important of all, the introduction of a one-way traffic system on the busiest days, all helped to achieve this satisfactory result.

THE COLLECTION

Whipsnade always has good breeding records. 1971, however, has been one of its best years for total numbers of animals born or hatched, and almost certainly the best in terms of noteworthy births, including a White Rhinoceros, Rosy Flamingos, as well as Cheetahs, Musk Oxen, and a Mountain Zebra.

The average annual birth rate for mammals at Whipsnade over the last few years has been 38 per cent of the total number of mammals in the Collection. This high figure would doubtless have been higher were it not for the fact that the Whipsnade Collection contains many animals or groups of animals which, for reasons of age or sex distribution cannot breed.

A young male White Rhino was born on 23rd June to an animal which was already pregnant before leaving South Africa in July 1970. It was an interesting event, since this is only the second White Rhino to be born outside Africa, the other also having been dropped by a cow which was pregnant when she left Africa. Matings have been observed in the herd at Whipsnade, and it is hoped that they will prove fertile.

Flamingos have not previously been hatched at either Regent's Park or Whipsnade, and the emergence in July of three Rosy Flamingo chicks out of six eggs laid (a high success rate in captivity) was a noteworthy event. The staff at Whipsnade must be given credit for the careful planning which went into creating, over a period of two years, the right conditions for these difficult birds to nest and lay eggs.

In March, the breeding pair of Cheetahs 'Jack' and 'Juanita' broke their own world record by producing a fourth litter of three cubs, all females, which have been successfully reared. The excellent breeding of Cheetahs at Whipsnade since 1967 means that the stock is now large enough to permit the disposal of surplus animals to other zoos, and animals have accordingly been sent to collections which need either a male or female to make up pairs.

Two more Musk Oxen calves were born, following the first successful births at Whipsnade in 1969 of this rare species; fortunately one of the calves was a heifer. Moose twins are sometimes born but rarely survive in captivity; the twins born at Whipsnade in May are flourishing. In May a Hartmann's Mountain Zebra was born, the first at Whipsnade. Having acquired a pair of these animals from a European zoo, it is hoped to build up a herd of this comparatively rare species.

In a notable year there were many other successful births, the most interesting of which were two Kodiak Bear cubs, later sent to Prague Zoo, two Northern Lynx, three Cape Hunting Dogs, a Thomson's Gazelle, five Père David's Deer, two Przewalski's Horses, two European Bison, two Reindeer, one Sitatunga and several Brindled Gnu, Llama, Guanaco and Rheas.

An ever-present problem, both at Whipsnade and Regent's Park, is the disposal of surplus males, particularly those from herd species. They must often be removed from the herd in order to prevent animals being killed, but they are never in great demand elsewhere. The creation of 'bachelor' groups is one answer to the problem. Groups of male Brindled Gnu and Blesbok have been put in the White Rhino paddock, where they thrive and add variety to the exhibit. The breeding herd lives separately and peacefully, without the risk of casualties which occur when subordinate males are present.

Early in the year the Council decided that the Longhorn Cattle herd, which was no

longer considered to be a rare breed, should not be retained as part of the Gene Bank, and the animals were sold to other Longhorn breeders.

VETERINARY REPORT

The review of mammalian diets has almost been completed. Particular attention is now being focussed on the feeding of waterfowl, cranes, flamingos and the carnivorous birds, and a series of pelleted foods and supplements for meat and fish are being used for these groups.

The degree of infestation with nematodes did not reach the levels sometimes observed in the paddocks during the spring and summer months, control being maintained by frequent examination of faeces from all species and regular anthelmintic treatment of the most susceptible animals.

A combination of the narcotic Etorphine and the sedative Xylazine was found to be effective for the immobilization of large bovines, a group which has been difficult to sedate with other drug combinations. Further trials were carried out with the hypnotic Metomidate as an immobilizing agent, and as a premedicant for full anaesthesia of birds.

Animals of all kinds (except fish and invertebrates) at Whipsnade Park

	<i>In the Collection on 1 January 1971</i>	<i>Received in 1971 by presentation, exchange, deposit, purchase and transfer from Regent's Park</i>	<i>Born and hatched in the Park in 1971</i>	<i>Died, sold, exchanged, returned to depositors and transferred to Regent's Park</i>	<i>In the Collection on 31 December 1971</i>
Mammals	978	34	334	370	976
Birds	1,128	143	142	218	1,195
Reptiles	2	6	—	—	8
	2,108	183	476	588	2,179

SCIENTIFIC ACTIVITIES

SCIENTIFIC MEETINGS

Eight meetings were held during the year. Most of the papers that were presented were published in the *Journal of Zoology*, but the following contributions were not intended for publication: 'Life history of the Brook Lamprey, *Lampetra planeri* - an experiment in the use of Super 8 film' by Professor J. E. Webb, Mr T. A. Scott and Mr A. R. Hockley; 'Tensile patterns and materials in hydrostatic organisms' by Professor S. A.

Wainwright; Dr J. H. Sparks introduced a 'Wild World' film on deer in Britain, and Mr P. Drabble spoke on 'Observations on badgers under controlled conditions'; Dr I. W. Rowlands and Dr Barbara J. Weir, who spoke about their expedition to South America to trap hystricomorph rodents for study at the Wellcome Institute, also showed some interesting films taken in Argentina, Bolivia and Peru; Mr C. G. C. Rawlins, the Director of Zoos, introduced the Anglia Television film 'It's a long way from Umfolozi', which showed the capture and transport from Natal to Whipsnade Park of the White Rhino herd; Dr D. Noble, who was awarded the Society's Scientific Medal for 1970, spoke on 'Generation of rhythmic activity in mammalian and amphibian hearts'; and Professor A. J. E. Cave described some 'Observations on rhinoceros cranial osteology'.

SYMPOSIA

Two symposia were held:

20th/21st May 'Diseases of fish' organized by Dr Lionel E. Mawdesley-Thomas in association with The Fisheries Society of the British Isles.

15th/16th July 'Comparative physiology of desert animals' organized by Dr G. M. O. Maloiy.

PUBLICATIONS

Journal of Zoology

Transactions of the Zoological Society of London

Symposia of the Zoological Society of London

Zoological Record

Nomenclator Zoologicus

Editor: Dr H. G. Vevers

Assistant Editor: Miss M. A. Edwards

Journal of Zoology Volumes 163, 164 and 165 were published, and the Council is greatly indebted to the many zoologists who give of their time to referee the manuscripts submitted, and so ensure a high standard of published papers.

Symposia One Volume was published: Number 28 'Regional variation in Indian Ocean coral reefs' edited by Dr D. R. Stoddart and Sir Maurice Yonge, FRS.

Zoological Record

Managing Recorder: Mr M. N. Dadd

Senior Recorders: Mr D. Cole, Mrs M. Green, Mrs D. Thelwall

Volume 104 (literature for 1967): Nineteen Sections have been published and the last Section, 'List of New Generic and Subgeneric Names', which cannot be compiled until all the other Sections have appeared, is nearing completion. The Section 'Insecta', for which the Society assumed responsibility in 1969, proved to be particularly large, containing some 10,000 titles as against 6,000 in the previous volume.

Volume 105 (literature for 1968): Seventeen Sections have been published, and the Sections 'Insecta', 'Protochordata' and 'List of New Generic and Subgeneric Names' are being compiled.

Volume 106 (literature for 1969): The Section 'Verme's' has been divided into three separate Sections, which increases the total number of Sections making up a complete volume from 20 to 22. Nine Sections of this volume have been published and eight are in the press.

Volume 107 (literature for 1970): Apart from those Sections which are compiled by specialist Recorders, no work is as yet in progress on this volume as every effort is being directed towards finishing all Sections of the previous volumes.

A new system of work has been introduced by which the permanent staff of 15 Recorders is divided into three teams, each led by a Senior Recorder. This scheme, together with the revised manual system designed to remove the clerical work from the Recorders, is helping considerably towards the speeding up of the production of the *Record*.

The Council is greatly indebted to the many people who help with the compilation of the *Record*; to the Director and to the Chief Librarian of the British Museum (Natural History), and the Director of the National Lending Library, who provide accommodation for many of the Recorders and much help in the day-to-day work, and also to those whose donations to the Zoological Record Fund are listed in Appendix 8.

International Zoo Yearbook

Editor: Mr J. Lucas (until August 1971)

Mrs Nicole Duplaix-Hall (since August 1971)

Advisory Editor: Dr H. G. Vevers

It is clear that since its inception 12 years ago, the *Yearbook* has become a standard reference work. Mr Gary K. Clarke, President of the American Association of Zoological Parks and Aquariums refers to it in a recent review as 'the Bible of the Zoo World'. Of approximately 900 zoos listed in Volume 12, some 610 have provided background material for the *Yearbook* by returning annual questionnaires and sending articles, notes and records.

Volume 12 (1972) is divided into three sections. Section 1 is devoted to captive South American primates. The Consultant Editor of this volume is Dr Philip Hershkovitz, Research Curator at the Field Museum of Natural History, Chicago and a recognized authority on New World monkeys. The 15 papers in this section, many of which were specially commissioned by Dr Hershkovitz, cover a wide range of topics including conservation, breeding, comparative behaviour and veterinary problems. They include articles on conservation policies by Miss Moira Warland, Secretary to the Survival Service Commission of the IUCN; olfactory communication by Dr G. Epple; trapping and collecting by M. Tsalickis; breeding tamarins by E. Weber, and Plasmodia in monkeys by Professor L. M. Deane.

Section 2, covering new developments in the zoo world, contains 46 papers and reports on various aspects of zoo management such as Architecture and Display Techniques, Breeding, Conservation, Education, Research and Veterinary Work. The final section, the reference section, comprises a detailed list of zoos and aquaria of the world; zoo federations and associations; numbers and species of vertebrates bred by zoos and aquaria in 1970; a census of rare animals in captivity, and a list of studbooks for rare or endangered species in captivity.

LIBRARY

The classification and recataloguing of the 120,000 books in the Library was begun in 1969, with the support of a grant from the Wellcome Trust. A supplementary grant by the Trust to cover the cost of employing a cataloguer and typist to the end of 1972 enabled the project to go ahead without interruption.

The Library has continued to provide a reference, photocopying and lending service to members of the Society and its staff, and every effort has been made to provide current literature in spite of its steeply mounting cost and bulk. The value of these services could be greatly enhanced if books were returned promptly, and the Council hopes that Fellows and Associates will cooperate in this way and so help to improve the service which can be given to all.

The excellent facilities provided by the new meeting rooms are becoming widely known, and an increasing number of scientific organizations are now regularly holding their meetings here.

RESEARCH

RESEARCH

A comprehensive report of the research carried out by the Society for the period 1969-71 is being published in Part IV, Volume 166, of the *Journal of Zoology*. Only a brief review is given here, and the publications by members of the Society's staff and by Research Workers are listed in Appendix 5.

Dr H. G. Vevers, in collaboration with Dr G. Y. Kennedy of the Cancer Research Laboratory, Sheffield, has continued his work on invertebrate pigments. They have completed a paper on the red fluorescent pigment of the echinoid *Arbacia lixula*.

They have also investigated the pigments in the green eggshells of Aracauno fowls, which contain protoporphyrin, biliverdin and its zinc chelate and traces of coproporphyrin I.

Mr P. J. S. Olney is continuing his investigations into the foods and feeding habits of the Snipe (*Capella gallinago*) and other Charadriiformes. He is also acting as an Honorary Editor of *The Birds of the Western Palearctic*, being responsible for the sections on food and feeding habits.

Professor A. J. E. Cave has continued to study the anatomy of the rhinoceros and of cetaceans.

The King's College research unit, under the direction of Sir Francis Knowles, has studied the ultrastructural relationship between the hypothalamus and the pituitary in fishes and reptiles.

THE NUFFIELD INSTITUTE OF COMPARATIVE MEDICINE

Staff

Director: L. G. Goodwin. *Biochemistry*: M. A. Crawford. *Infectious Diseases*: G. R. Smith. *Pathology*: R. N. T-W-Fiennes. *Research Assistant Infectious Diseases*: D. E. Bidwell. *Laboratory Superintendent*: P. R. E. Wallace. *Administrative Assistant*: Miss P. E. Wright.

Visiting Graduates: P. K. C. Austwick; P. A. J. Ball; M. J. M. Barker; G. H. du Boulay; B. E. Brooker; D. A. Dyson; Christine M. Hawkey; A. T. Nurden; A. J. Sinclair; A. Voller; A. S. Young; D. A. B. Young. *Research Students*: Jennifer Davies; R. T. Herbert; B. R. Manawadu.

Wellcome Trust Research Laboratories, Nairobi: *Director*: J. D. Gatenby Davies. *Research Graduates*: Sister Fredericka Jacob; R. C. Siddons; Patricia F. Uphill; Z. Verjee. *Services Officer*: R. A. Whittingham.

Mr B. E. Brooker, Dr A. J. Sinclair and Mr A. T. Nurden joined the staff, with support from the Overseas Development Administration, Unilever Limited, and the British Heart Foundation respectively. Miss J. Davies, Dr M. J. M. Barker, Dr D. Reichl, Dr D. A. B. Young and Mr R. T. Herbert have taken up appointments elsewhere.

Mr D. E. Bidwell and Mrs R. Zalin were awarded PhD degrees of London University.

Visiting scientists who worked for short periods in the Institute included: Dr S. Alford (London), Professor M. El Nasri (Khartoum), Miss J. Bonga and Dr T. Goosens (Tanzania), Dr A. Latonio (Liverpool), Dr T. Strickland (US Navy), Dr R. Cornille and Dr J. Haworth (WHO Geneva).

Mr S. Kabuye (Uganda) has received technical training under a British Council scheme.

Research projects The Pathology Department has continued to study nutritional disorders of the skeleton in South American monkeys; this project has now developed into a collaboration with the Dunn Nutritional Laboratories, Cambridge, to investigate the metabolism of Vitamin D in monkeys. Dr C. M. Hawkey has investigated problems of coagulation and fibrinolysis in mammals, and has studied the effects of adrenergic blocking drugs on the development of diffuse intravascular coagulation. Mr A. T. Nurden has begun a study of the bound carbohydrates on the surface of blood platelets, and Miss J. Davies completed her work on haemostasis in crabs.

Mr P. K. C. Austwick has studied fungous infections in human and animal tissues, and has helped in the diagnosis of mycoses in zoo animals. He also visited Yugoslavia to study the possible relationship between fungal toxins and Balkan nephropathy.

In the Infectious Diseases Department, Dr G. R. Smith and Mr D. A. Dyson have continued their investigations of contagious bovine pleuropneumonia, and Mr Dyson is at present in Vom, Nigeria making field studies of the production of immunity to the disease. Dr Smith has also worked on immunity to *Aspergillus fumigatus* infections in animals. Dr D. E. Bidwell has studied the susceptibility of mosquitoes and mosquito tissue to arboviruses. Dr A. Voller and Dr B. R. Manawadu have worked on the immunology of malaria; Dr Voller spent the early part of the year in Amani, Tanzania, determining malarial antibody levels in populations exposed to different degrees of

challenge by malaria parasites. Dr P. A. J. Ball studied immunity to intestinal worms, and Dr L. G. Goodwin and Mr B. E. Brooker made further investigations of the effect of trypanosome infections on host tissues and immune reactions. Dr A. S. Young is at present in Kenya, working on the piroplasms of wild animals.

In the Biochemistry Department, Dr M. A. Crawford and Dr A. J. Sinclair have continued the study of nutritional problems, especially the supply in the diet of polyunsaturated fatty acids required in the growth of brain cells. Dr D. A. B. Young worked on the effects of fasting on insulin release, and the insulin inhibitory activity of serum.

In the Radiology Department, Dr G. H. du Boulay, with Mr L. Symon (National Hospital, Queen Square) have made a comparative study of arterial spasm after subarachnoid haemorrhage.

At the affiliated Wellcome Trust Research Laboratories, Nairobi, Dr R. C. Siddons and Sister F. Jacob have investigated the effects on baboons of diets deficient in Vitamin B₁₂ and folic acid; Mrs P. F. Uphill has studied the intestinal flora of normal and vitamin deficient baboons, and Dr Z. Verjee has made observations on their lipid metabolism. Dr J. D. Gatenby Davies has begun a study of nutrition and anaemia during pregnancy in women from a rural area of Kenya.

THE WELLCOME INSTITUTE OF COMPARATIVE PHYSIOLOGY

Staff

Senior Research Fellow: I. W. Rowlands. *Research Fellows*: Barbara J. Weir; W. H. Tam; R. C. Jones; A. R. Thawley. *Research Students*: Christine M. Roberts; A. P. Gulamhusein. *Research Assistant*: P. A. Racey. *Senior Technician*: G. F. Nevill.

Mr P. A. Racey, whose appointment at Liverpool University was recorded in the 1970 Report, left the Institute in March. Dr W. H. Tam accepted an appointment in the University of Western Ontario and resigned his Fellowship at 30th September. Mr A. R. Thawley was appointed to a Fellowship to extend Dr Tam's studies on the endocrinology of pregnancy and began work on 1st December.

Research projects A considerable part of the research effort of the Institute concerns various aspects of the reproductive physiology of the following hystricomorph rodents which are being bred in the Institute: the Viscacha (*Lagostomus maximus*); Chinchilla (*Chinchilla laniger*); Cuis (*Galea musteloides*); Casiragua (*Proechimys guairae*); Degu (*Octodon degus*) and Tuco-tuco (*Ctenomys talarum*). The Casiragua, of which 20 were sent from Venezuela by Dr O. A. Reig, is another species which has not been bred previously in captivity.

Dr Weir has improved her technique for the induction of ovulation and oestrus in the Chinchilla, and five females have become pregnant following artificial insemination. Studies have been made by Dr Rowlands and Dr Weir on the functional relationship between the pituitary gland and the gonads of the Viscacha.

An investigation by Dr Weir of the unusual pattern of reproductive behaviour (the 'chin-rump follow') of the Cuis has involved various studies of the highly active sebaceous gland situated under the chin of the male, to determine its role in the evocation of oestrus and ovulation. The ovaries of these animals have been examined histologically by Dr Rowlands, and Dr Tam has determined their progesterone content during the

reproductive cycle. Dr Tam has also investigated the chemical pathways by which progesterone is formed in the ovary of the Chinchilla, and has isolated a new progestagen from this source.

An extensive investigation of the chromosomes of all the available species of hystricomorphs has been made by Dr Weir in cooperation with Dr Wilma George of Oxford. The diploid number ($2n = 88$) recorded by them for the Jamaican Hutia (*Geocapromys brownii*) is the highest reported for any mammal to date.

Signs of diabetes mellitus have appeared in the new colonies of the Tuco-tuco when kept on laboratory diets, and breeding has been only sporadic. But no evidence of the disease has been noticed in a small group of the same consignment of animals kept out-of-doors in a large tank, containing enough soil for active digging; breeding has occurred in these conditions.

Dr Jones has continued his studies of the ultrastructure of mammalian spermatozoa during their development in the testes and during their passage through the male ducts, and of the changes which take place within the female reproductive tract up to the time of, and after, fertilization. These findings have been compared with those taking place in spermatozoa preserved in various artificial media, and after freezing. Different methods of fixing boar spermatozoa for electron-microscopic study are being examined with the object of preserving the integrity of the membrane surrounding the head of the spermatozoon. An intact membrane is probably necessary for fertility after freezing. Dr Jones has extended his studies to various other animal species available in the Institute.

Miss Roberts, who has established that implantation in the Viscacha occurs on the 18th day after mating, has continued her comparative studies on the early embryology of hystricomorph rodents.

Mr Gulamhusein has studied the breeding of Stoats in captivity, and several litters have been born. The supply of these animals, obtained from the wild during the summer, has greatly assisted the investigation of the reproductive cycle and particularly, the growth of the implanted embryos. In cooperation with Professor F. Beck an electron-microscopic study has been made of the pre- and post-implantation changes in the uterus of the Ferret.

Before leaving the Institute, Mr Racey bred some Edible Dormice (*Glis glis*) and found that this species may be a useful laboratory animal for studies relating reproduction to hibernation.

During the year 51 specimens were added to the Reference Collection of Reproductive Organs.



Lowland Gorillas 'Guy' and 'Lomie', London Zoo
The Zoological Society of London



Their Majesties The Emperor and Empress of Japan visiting the Reptile House, London Zoo
The Zoological Society of London



Californian Sealion; one month old, London Zoo *The Zoological Society of London*



Cheetahs at Whipsnade
Park; fourth litter
*The Zoological Society
of London*

Northern Ground
Hornbills, London Zoo
*The Zoological Society
of London*





Black Rhino; calf five months old, with mother, Whippsnade Park *The Zoological Society of London*



White Rhino; calf two months old, with mother, Whippsnade Park *The Zoological Society of London*

EDUCATIONAL ACTIVITIES

In 1964 the Wolfson Foundation made a grant to the Society of £100,000 to adapt and extend our offices so as to provide a headquarters for the main organizations concerned with the conservation of wildlife.

The first stage, the modernization of our offices was completed but, in the meantime, the Control of Office and Industrial Development Act 1965 was passed and, in spite of appeals, we were not granted a Development Permit to build the extension until November 1970. By this date many of the conservation organizations had extended their activities and a much larger building was required. In addition, with cost inflation the money available, even for the original building, was totally inadequate. The Wolfson Foundation accordingly agreed to the reallocation of the remaining part of the original grant, £50,000, up-dated by £5,000, towards the building of an Education Centre in Regent's Park. This will fulfil a long-standing need, as the present educational building was converted in 1959 out of the old Small Cat House and, to provide additional accommodation for classes, we have been using the Mappin Terrace Cafe, which is far from ideal as a lecture room. The new building is now being planned.

EDUCATION PROGRAMME FOR SCHOOLS

In order to cover rising costs the charges made to pupils were increased at the beginning of the Summer Term. Despite this the number of pupils attending lecture-demonstrations increased by 10 per cent over the figure for 1970. The comparative figures were:

		1970	1971
Regent's Park	Spring Term (Secondary schools)	14,694	20,401
	Summer Term (Primary schools)	19,474	20,035
	Autumn Term (Secondary schools)	18,979	18,896
Whipsnade Park	Summer Term (Secondary schools)	4,618	4,150
		57,765	63,482

OTHER COURSES

During the year special demonstrations were arranged for students from universities, technical colleges, and colleges of education. A course for university students was held during the Easter vacation, and the Council is grateful to Professor A. d'A. Bellairs, Dr N. B. Marshall, FRS, Dr J. R. Napier and Dr Barbara Weir for lecturing at this course.

A sixth form symposium was held in December. It was entitled 'The Natural History of Populations of British Vertebrates' and was organized by Professor V. C. Wynne-Edwards, FRS, Mr Rodney Jones, Mr Ian J. Linn, Dr J. Bryan Nelson and Dr Christopher M. Perrins also took part. This symposium was greatly appreciated by a capacity audience of sixth form pupils from all over south-east England.

YOUNG ZOOLOGISTS' CLUB

At the beginning of the year the Club subscription, which had remained at 15s per annum since 1965, was increased to £1. Club meetings and film shows continued to be popular, and trips to Birdland, Bourton-on-the-water and to Twycross Zoo were well supported.

A special issue of the Club's Zoo Magazine, sub-titled 'Your day at the Zoo' was also sold to visitors to Regent's Park and Whipsnade during the summer and autumn.

CHRISTMAS LECTURES

Three meetings were held in the week following Christmas for the children and young friends of Members of the Society.

Dr I. W. Rowlands and Dr Barbara Weir of The Wellcome Institute of Comparative Physiology gave an illustrated talk on 'Hunting Hystricomorphs in South America', and Dr Garth Underwood gave an illustrated talk on 'The Life of Reptiles'. The film 'The African Lion' was also shown. All three meetings had enthusiastic audiences.

GENERAL MATTERS

Sutton Seeds Limited of Reading very generously provided the prize money for two competitions to encourage the submission of ideas for modern and forward looking exhibits, first from the staff and secondly from members of the Young Zoologists' Club and school pupils. Twenty-three entries were received from the latter group and 26 entries from members of the staff at London and Whipsnade.

The standard of entries from both groups was high and showed considerable originality.

PUBLICITY

Television was used as the main medium for advertisement during 1971. It was concentrated on Thames Television, advertising of the London Zoo starting towards the end of March and continuing until August. Television advertising of Whipsnade started early in May, and continued until the end of August. In addition, several films of the White Rhinos at Whipsnade and the railway were featured on television programmes. The film, made by Anglia Television, of the collection and transport by sea of the herd of White Rhinos from the Umfolozi Reserve, Natal, to Whipsnade was an excellent record of this complicated operation.

Photographs and reports in the press continued to provide regular coverage of events. Many photographs of the London Zoo's Polar Bear 'Triplet' appeared in the spring, and

the meeting of the gorillas 'Guy' and 'Lomie' in their new house was also widely reported. At Whipsnade facilities were arranged for the press to photograph the Black Rhino (born in November, 1970), the young White Rhino, Kodiak Bears, and Arabian Camel; the moving of the Giant Tortoises from Regent's Park, and the presentation of a White Goat as mascot to the Royal Regiment of Wales.

In addition to the usual photographs and lengths of film supplied to the Education Department for their lectures, much of the Television Unit's time has been taken up with the production of photographs and transparencies for the new London Zoo Guide, which is due to be published in the spring of 1972.

STAFF

At the end of the year the Society's permanent staff totalled 564. A list of senior members is given in Appendix 4.

The Society has recognized the Association of Scientific, Technical and Managerial Staffs as representing the interests of the executive, supervisory, secretarial and clerical staff of the Society. The Executive and Clerical Staff Association which had represented this group of staff since 1958, has been wound up.

Training

Of the 17 members of the keeper staff, at London and Whipsnade, who completed the course for the Ordinary Certificate in Zoo Animal Management, which is organized in conjunction with Paddington Technical College, 16 were successful in the final examinations, Messrs W. Hall, C. J. Mew and B. Wingate and Mrs S. Williams achieving distinctions. All of the nine members of staff who completed the Higher Certificate course were successful in the final examinations, Messrs C. Bates and D. Robinson achieving distinctions. A further 35 members of staff enrolled for the Ordinary and Higher courses which started in September.

Mr M. R. Fenellow and Miss L. Sparkes, Laboratory Technicians in the Nuffield Institute of Comparative Medicine, qualified for a Higher National Certificate in Microbiology and the Associateship of the Institute of Science Technology respectively. Mr D. Green, Animal Technician, in the Nuffield Institute of Comparative Medicine, qualified for Associateship of the Institute of Animal Technicians. Mr P. Cox, Craft Trainee, Restaurant Kitchen, gained a City and Guilds Certificate 147 with distinction.

The end of October saw the return to the Zoo of a suntanned, but somewhat weary, Senior Keeper, Paul Anscombe (Lion House), who with Mr J. Beamond (Members' Restaurant) had visited 32 zoos in Europe and Asia on a tour which they had personally organized during 6 months' leave of absence.

Retirements and Resignations

Mr J. Lucas, Editor *International Zoo Yearbook*, resigned upon his appointment as Science Writer for the International Union for the Conservation of Nature, and Mrs L. René-Martin, Production Manager, Publications Department, resigned on her marriage. Shortly after his return to London following a 6 months' secondment to the Zoological Society of Jos, Nigeria, Keeper J. M. Irwin resigned to take up the appointment of Curator to Kano Zoo, Nigeria.

Mr J. J. Hazell, Service Gatekeeper, retired after 44 years of service, and Mr A. F. Shambrook, Headkeeper Parrot House, after 43 years of service. Other retirements included Mr H. Hemmings, Head Gardener, Regent's Park, and Mr B. J. Iken, Assistant Accountant, Whipsnade, both after 40 years' service; Mr A. Beamond, Groundsman, Regent's Park; Mr R. H. Hazzard, Head Keeper Bird Section, Whipsnade; Mr W. Kelton, Head Gatekeeper, Regent's Park; Mr W. H. Zealand, Farm Bailiff, Whipsnade, and Messrs F. T. Morton and F. W. Weston, both Boiler House Assistants at Regent's Park.

Appointments and Promotions

REGENT'S PARK

Mr J. Brown, *Retail Manager, Regent's Park and Whipsnade*

Mrs N. Duplaix-Hall, *Editor, International Zoo Yearbook*

Mr W. G. Gardner, *Head Gardener*

Mr T. Law, *Assistant Head Gardener*

Mr M. Magnier, *Deputy Head Gatekeeper*

Mr O. Mills, *Head Gatekeeper*

Mr P. Ryder-Davies, *Veterinary Clinical Assistant*

Mr R. J. Watkins, *Headkeeper, Parrot House*

WHIPSNADDE PARK

Mr M. L. Taverner, *Office Manager*

Mr J. Weatherhead, *Head Keeper, Elephant Section*

During the year we have benefited greatly from advice on marketing activities, both at Regent's Park and Whipsnade, provided by Mr C. G. Naylor, who had recently retired from Marks and Spencer Limited. We are most grateful for his help.

Medals

The Society's Bronze Medal was awarded to Mr D. G. Newson, Overseer of Birds, and to Mr W. G. Crompton, Head Keeper, Elephant and Rhino Pavilion, for long and meritorious service.

Obituary

It is with great regret that we record the deaths of Mr F. A. Green, Gatekeeper, Regent's Park; Mr A. D. Morton, Handyman, Regent's Park and Mr D. Everton, Gardener, Regent's Park.

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.

The Council is indebted to the many Fellows who have sent specimens for the Collection, both at Regent's Park and Whipsnade. We are also grateful to Senhora Hermione Blandy de Freitas Martins and Senhor João de Freitas Martins of Madeira, a Corresponding Member of the Society, who have sent us interesting collections of marine animals, and to the Jersey Wildlife Preservation Trust for their gift of a group of Vervet Monkeys. Many other interesting animals have also been received, either as gifts or in exchange, from individuals, zoological societies and institutions, and are recorded in Appendix 7.

We are constantly in touch with the British Museum (Natural History) in connection with the identification of animals and wish to record our thanks to Dr G. Corbet, Miss A. Grandison and Mr J. E. Hill. We are also grateful to Mr D. T. Holyoak and Mrs M. Morriss for the help they give.

We are greatly indebted to the Director and staff of the Central Veterinary Laboratory, Weybridge, with whom we work very closely and whose constant help, particularly to the Pathologist, the Nuffield Institute of Comparative Medicine and at Whipsnade Park, is much appreciated.

We are grateful to Mr S. F. Everiss and his colleagues of the Biological Sciences Department, Paddington Technical College, for their continued interest and cooperation in the organization of the training courses in Zoo Animal Management.

We are also grateful to Mr N. Whittaker of the RSPCA, London Airport, for his interest and help in looking after our animals in transit, and to the St John Ambulance Brigade for their help at the First Aid Centre, London Zoo.

The Council also gratefully acknowledges the assistance of the many scientists, veterinarians, departments, organizations and firms for their ready cooperation. In particular we wish to express our thanks for the help given to:

The Veterinary Officer by Dr C. Franklin, Miss G. Lewis, Dr J. M. Payne, Mr J. E. N. Sloan, who has also given great assistance at Whipsnade, Sonicaid Ltd, Mr W. L. Whitehouse and Dr H. Platt.

The Pathologist by Dr Joan Taylor, the late Dr K. P. Carpenter, Dr S. P. Lapage, Dr B. Rowe, Dr E. S. Anderson, Dr P. Cavanagh, Dr B. R. Laurence, Dr T. Clay, Professor J. J. Buckley, Dr L. F. Khalil, Professor P. C. C. Garnham, Dr R. Finlayson, Professor E. Cotchin, Dr E. C. Appleby, Dr M. J. Mitchinson, Dr L. Mawdesley-Thomas, Dr E. Elkan, Mr E. W. Trow, Dr L. H. Turner, Miss G. Lewis, Mr John Faragher and Dr P. Dawson.

The Nuffield Institute of Comparative Medicine by the Director, Federal Department of Veterinary Research, Vom, Nigeria, Professor H. M. Cameron, Dr P. Krogh, Mr L. P. Smith, Dr G. Davidson, Dr C. Symons, Dr K. Dormandy, Dr L. Poller, Maw's Pharmaceutical Company and the Director, Twyford Laboratories;

The Wellcome Institute of Comparative Physiology by Professor F. Beck, Professor I. M. Goodbody, Dr P. L. Guilbride, Dr O. A. Reig, Mr J. Trethewey and by the Ford Foundation, the Meat and Livestock Commission, the Medical Research Council, the Ministry of Overseas Administration and the Wellcome Trust;

The Supplies, Shipping and Transport Sections by the Board of Trade and HM Customs and Excise, Carworth Europe, the many people who have offered Evergreen Oak for feeding animals and Mr Barry Hilton and the Polkerris Boy Scout Troop for bamboo, Aer Lingus Airlines, Air Canada, Air France, Air India, Frederick Attwood & Son, British European Airways, British Overseas Airways Corporation, British Rail, Caledonian/BUA, Cambrian Airways, East African Airways, KLM, Royal Dutch Airlines, Wm. H. Muller, J. F. Obree & Sons Ltd, Overseas Containers Ltd, Pan American World Airlines, Rennie Hogg Ltd, Sabena Airlines, South African Airways, Swiss Airlines, Union-Castle Mail Steamship Company and Varig Airlines;

Whipsnade Park by Dr P. Cavanagh, Bayer Agrochem Ltd, Cooper Nutrition Products Ltd, Janssen Pharmaceutica, Reckett & Colman, Spillers Ltd, and the Royal Veterinary College.

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

Appendices

PRESENTATION OF THE SOCIETY'S GOLD MEDAL TO
PROFESSOR LORD ZUCKERMAN AT THE ANNUAL GENERAL MEETING

The President said

'The occasion of the presentation of medals and prizes is always considered a suitable moment to make the recipient as embarrassed as possible. You will be glad to know there is not going to be any relaxation of this rule on this occasion.

'There is an inscription on it. I don't know who found it; it was some classical scholar because he must have gone through quite a lot of Cicero to find it, and it reads - I don't know whether my pronunciation has anything to do with modern or any form of Latin, but it says something to the effect

"In omne vel officio vel sermone sollers"

which of course, if you translate it, means that Solly is expert, clever, skilful in all things, whether on duty or doing anything else. Which I think is a very clever selection which shows how prescient Cicero was in 54 BC when he was referring to Tullius, 6th King of Rome.

'The first reference to Lord Zuckerman in connection with the Society was recorded in the Annual Report of 1928 and in the *Centenary History of the Society* published in 1929. It says that, as Research Fellow and Anatomist, "Dr S. Zuckerman, MA, a brilliant student who had come from the University of Cape Town to London to graduate in medicine, was selected from a number of suitable candidates and began work in January."

'I leave it to you to imagine what sort of work he did. One of the things he was doing was studying baboons on Monkey Hill. During this time he found time, somehow or another, to write a book which legend has it had the title "The Sexual Life of the Primates". After further consideration of the implications of this title, he decided to use another name, "The Social Life of Monkeys and Apes".

'Lord Zuckerman also undertook the work of Prosector, which was a Victorian title which was still in use in the Society at that time for one who dissects dead bodies in preparation for anatomical investigation.

'Since then, 1st January 1928, Lord Zuckerman has maintained his belief and interest in the Society's work through a busy life devoted - all I can say - to a multitude of other careers. Of the staff then working in the Menagerie, all except two have retired, many after forty or more years' service, but all remember him with affection and with many memories of his strenuous work and, I am told it is rumoured, of his very vigorous party-going as well. He remained a Scientific Fellow of the Society while working in the States, Oxford, and during the War. He was elected to the Council in 1953 and became Secretary in 1955. In 1970 the Council, wishing to mark his fifteenth year as Secretary, awarded to him the Society's Gold Medal.

'During his tenure of office, Lord Zuckerman has breathed new life into the Society. It is through his enthusiasm and planning, and his positive genius for extracting money in large quantities, that we have been able to complete so much of the rebuilding of the Gardens, Regent's Park, and to regenerate the Society's scientific work. He has had not only the vision of what should be done, but the determination to see it through despite the many, many difficulties which have had to be faced in the last years. At a time when so much effort was needed to find the resources to carry through the Zoo's rebuilding programme, to build new veterinary accommodation and facilities, and to institute a new pathology department, he also obtained the necessary support to found two new research institutes, which are now firmly established and have won national and international recognition.

'I have already referred to the scientific work of the Society, which owes so much to his firm belief in the basic scientific objectives of the Society and the contribution which it should make to zoology and conservation, and for this alone he deserves the admiration and gratitude of ourselves.

'And the Gold Medal, which is the highest honour the Society can confer and which, in the last 100 years, has been awarded only on six occasions, is presented to Lord Zuckerman in deep appreciation of his leadership of the Society through his tenure of office as Secretary.'

REGULATIONS

The following Regulations were amended by the Council, pursuant to the power granted in Article 8 of the Charter. The amendments are given in italics.

Regulation 15

Fellows and Associates shall be admitted without charge to the Zoological Gardens, Regent's Park, and to Whipsnade Park, and to any enclosure within either for which an entrance fee is charged to the public, at such times as the public is admitted *and upon the same conditions.*

Regulation 18

An Ordinary Fellow may at any one time introduce two guests (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, to Whipsnade Park and to any enclosure within either for which an entrance fee is charged to the public.

Regulation 19

A Scientific Fellow may at any one time introduce two guests (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, to Whipsnade Park and to any enclosure within either for which an entrance fee is charged to the public.

COMMITTEES 1971-1972

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.

Members of Committee:

Sir Gawaine Baillie, Bt	Geoffrey Schomberg, FLS
Miss Elisabeth Beazley, ARIBA, AADipl	Lady Daphne Straight
The Lord Donaldson, OBE	Lady Anne Tree
Sir Dudley Forwood, Bt, <i>Chairman</i>	The Marquess of Willingdon
A. M. Hassell	<i>Secretary:</i> C. G. C. Rawlins, OBE, DFC
Mrs R. Maudling	
Air Vice-Marshal G. Silyn Roberts, CB, CBE, AFC, MSc	

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.

Members of Committee:

E. C. Appleby, PhD, MRCVS	Professor A. T. Phillipson, MA, PhD, DVSc, MRCVS, FRSE
Professor G. H. Arthur, DVSc, FRCVS	J. E. N. Sloan, BSc
D. F. Attenborough, MA	Professor W. H. Thorpe, ScD, FRS
A. G. Beynon, DVSM, MRCVS	W. L. Whitehouse, RD, MB, FRCS, MRCOG
Peter S. Bridge, MA, BSc, DVSM, MRCVS	<i>Secretary:</i> M. R. Brambell, MA, PhD, MRCVS, FLS
Matthew Crawford, MRCVS	
Francis C. Fraser, CBE, DSc, FRS	
W. Lane-Petter, MA, MB, BChir, FIBiol, <i>Chairman</i>	

Committee of the Wellcome Institute of Comparative Physiology

Terms of reference: To advise on all matters relating to the research undertaken by 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.

Members of Committee:

Professor J. M. Dodd, PhD, FIBiol, FRSE	J. S. Perry, DSc, FIBiol
J. F. D. Frazer, MA, DM, PhD	R. V. Short, ScD, BVSc, MRCVS
Professor R. J. Harrison, MA, MD, DSc, MB, BChir	H. V. Thompson, BSc, FIBiol, <i>Chairman</i>
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Professor D. Lacy, MA, PhD	<i>Secretary:</i> I. W. Rowlands, PhD
W. Lane-Petter, MA, MB, BChir, FIBiol	

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.

Members of Committee:

Professor H. Baum, PhD	Professor G. V. R. Born, MB, ChB, DPhil
Professor A. O. Betts, MA, PhD, MRCVS	Professor G. M. Bull, MD, FRCP

Committee of the Nuffield Institute of Comparative Medicine continued

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Professor G. S. Nelson, MD, DSc, MB, ChB
N. W. Pirie, MA, FRS
J. E. N. Sloan, BSc
C. E. Gordon Smith, CB, MD, FRCP, FRCPath

Dame Janet Vaughan, DBE, DM, FRCP
P. O. Williams, MB, FRCP
C. A. Wright, DSc, PhD, FIBiol
Secretary: L. G. Goodwin, MB, BS, MRCP,
BPharm, BSc, FIBiol

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

Members of Committee:

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J. H. Elgood, MA
Miss Barbara M. Gilchrist, PhD
Oliver Impey, MA, DPhil
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Geoffrey Schomberg, FLS
D. J. Stanbury, BSc, ARCS
Mrs P. C. G. Arthur
T. A. Burdett
P. G. Carter
Secretary: M. K. Boorer, BSc, DipEd

Publications Committee

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

Members of Committee:

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Professor E. J. W. Barrington, MA, DSc, FRS,
Chairman
Professor A. d'A. Bellairs, DSc, MRCS
Professor A. J. E. Cave, MD, DSc, FRCS, PLS
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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.

Members of Committee:

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Francis C. Fraser, CBE, DSc, FRS, *Chairman*
Professor J. Green, PhD
J. P. Harding, PhD
R. A. Neal, DSc, PhD
J. G. Sheals, PhD

John Smart, DSc
Sir James Stubblefield, DSc, FRS
Errol White, CBE, DSc, FRS
Secretary: H. Gwynne Vevers, MBE, DPhil, FLS,
FIBiol

International Zoo Yearbook Committee

Terms of reference: To advise on the general policy, production, promotion and finance of the *Yearbook*.

Members of Committee:

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Professor F. Bourlière, MD, LSc
William G. Conway
The Earl of Cranbrook, CBE, MA, FLS, *Chairman*
Francis C. Fraser, CBE, DSc, FRS
Geoffrey R. Greed

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Walter Van den bergh
Secretary: Mrs Nicole Duplaix-Hall, FLS

The President, Treasurer and Secretary are *ex officio* Members of all Committees.

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Director of Zoos: C. G. C. Rawlins, OBE, DFC
Architect: J. W. Toovey, AADipl(Hons), FRIBA
Building Manager: L. G. Taverner
Chief Accountant: W. N. Pickford, MM, ACIS
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Catering Manager: G. A. J. Perkins, MHCI
Public Relations Officer: J. A. Dale, MIPR

SCIENTIFIC

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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 22
Wellcome Institute of Comparative Physiology: See page 23
Pathologist: I. F. Keymer, PhD, MRCVS
Veterinary Officer: J. M. Hime, MRCVS, DVR
Veterinary Clinical Assistant: P. Ryder-Davies, MB, BS, BVSc, MRCVS
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Librarian: R. A. Fish, FLA
Publications Department: See pages 19, 20

LONDON ZOO

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Curator of Birds: P. J. S. Olney, BSc, DipEd, FLS
Curator of Mammals: M. R. Brambell, MA, PhD, MRCVS, FLS
Assistant to Curator of Aquarium: G. J. Ashby
Gardens Executive: J. Ward
Head Gardener: W. G. Gardner
Overseer of Birds: D. G. Newson
Overseers of Mammals: T. Sangster, J. Lambden
Overseer of Reptiles: D. Ball, AIAT
Supplies Officer: C. H. Johns, DPA

Head Keepers

Aquarium: R. Dumbelton
Aquatic Birds and Birds of Prey: A. E. Scrivener, AIAT
Bears: S. Morton

Head Keepers continued

Bird House: W. G. R. Daines
Children's Zoo: H. C. Dean
Elephant Pavilion and Aquatics: W. G. Crompton, G. E. Hughes
Insects: R. P. Humphrys, AIAT
Lion House: G. A. S. Figgett
Monkeys: G. Callard
Parrot House and Eastern Aviary: R. J. Watkins
Pheasantry and Ostrich House: R. Barrow
Ungulates: H. G. N. Robinson
Small Mammals: D. Clarke

WHIPSNADE PARK

Curator: V. J. A. Manton, MRCVS
Park Manager: O. C. Chamberlain
Veterinary Officer: D. M. Jones, BSc, BVetMed, MRCVS
Catering Manager: J. Boswood
Office Manager: M. L. Taverner
Head Gardener: J. Folds
Senior Overseer: F. L. Gladman
Overseer: G. Stanbridge

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: J. Datlen
Children's Zoo: P. C. Milne

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Consulting Landscape Architect: Peter F. Sheppard, CBE, BArch, PPRIBA, AMTPI, FILA
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Honorary Helminthologist: Professor J. J. C. Buckley, DSc
Honorary Veterinary Consultant: A. G. Beynon, DVSM, MRCVS
Adviser on Labour Relations: E. Bishop, OBE
Medical Referee: J. P. Horder, OBE, MA, MB, BCh, MRCP
Honorary Consultant Photographer: W. G. Vanderson
Consultant Typographers: Colin Banks, MSIA, John Miles

PUBLICATIONS BY SOCIETY'S STAFF AND RESEARCH WORKERS

(including those published in collaboration)

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		Total number acquired	Number born or hatched in the Menagerie
RODENTIA			
<i>Funisciurus pyrrhopus</i>	Fire-footed Squirrel	5	
<i>Peromyscus maniculatus</i>	Deer Mouse	21	12
<i>Gerbillus harwoodi</i>	Lesser African Gerbil	3	
<i>Meriones unguiculatus</i>	Clawed Jird	18	3 (3)
<i>Apodemus sylvaticus</i>	Field Mouse	2	2
<i>Grammomys dolichurus</i>	Long-tailed Thicket Rat	3	
<i>Arvicanthis niloticus</i>	Nile Rat	28	25
<i>Lemniscomys striatus</i>	Striped Grass Mouse	19	15
<i>Rhabdomys pumilio</i>	Four-striped Rat	2	2
<i>Thallomys nigricauda</i>	Acacia Rat	3	
<i>Lophuromys flavopunctatus</i>	Harsh-furred Mouse	4	
<i>Acomys cahirinus</i>	Arabian Spiny Mouse	35	35
<i>Cricetomys gambianus</i>	Giant Pouched Rat	5	
<i>Otomys irroratus</i>	Swamp or Vlei Rat	2	
<i>Graphiurus crassicaudatus</i>	Bushy-tailed Dormouse	20	20 (2)
<i>Allactaga hotsoni</i>	Jerboa	2	
<i>Jaculus blandfordi</i>	Jerboa	6	
<i>Hystrix cristata</i>	Crested Porcupine	3	3 (1)
<i>Atherurus africanus</i>	African Brush-tailed Porcupine	2	2
s <i>Galea musteloides</i> Meyen (South America)	Cuis	11	5 (4)
<i>Dasyprocta aguti</i>	Orange-rumped Agouti	3	
<i>Myoprocta pratti</i>	Green Acouchy	5	5 (3)
<i>Lagostomus maximus</i>	Plains Viscacha	4	4 (2)
<i>Chinchilla laniger</i>	Chinchilla	11	4
<i>Octodon degus</i>	Degu	10	2
s <i>Proechimys guairae</i> Thomas (South America)	Casiragua	8	2
CARNIVORA			
<i>Canis familiaris</i>	Dingo	3	3 (3)
	Dingo × Singing Dog	16	16
<i>Fennecus zerda</i>	Fennec Fox	3	3
<i>Ursus americanus</i>	American Black Bear	2	2 (2)
<i>Mustela nivalis</i>	Weasel	1	
<i>Mustela putorius</i>	Ferret	6	4 (4)
<i>Mellivora capensis</i>	Ratel	1	
<i>Suricata suricatta</i>	Grey Meerkat	1	
<i>Felis serval</i>	Serval	1	1 (1)
<i>Felis concolor</i>	Puma	3	2
<i>Panthera leo</i>	Lion	5 (1)	4
PINNIPEDIA			
<i>Zalophus californianus</i>	Californian Sea Lion	2	2 (1)
PERISSODACTYLA			
<i>Equus przewalskii</i>	Przewalski's Wild Horse	1	1
<i>Equus burchelli</i>	Common Zebra	1	1
<i>Asinus hemionus</i>	Turkmen Wild Ass	2 (2)	
<i>Asinus asinus</i>	Donkey	1	
ARTIODACTYLA			
<i>Sus scrofa</i>	Wild Boar	17	17 (6)
<i>Tayassu tajacu</i>	Collared Peccary	2 (1)	1

		Total number acquired	Number born or hatched in the Menagerie
<i>Lama guanicoe</i>	Guanaco	2	1
<i>Muntiacus muntjak</i>	Indian Muntjac	1	
<i>Dama dama</i>	Fallow Deer	6 (4)	2 (1)
<i>Axis axis</i>	Spotted Deer	2 (2)	
<i>Cervus timorensis</i>	Timor Deer	5	5 (2)
<i>Giraffa camelopardalis</i>	Giraffe	2	1 (1)
<i>Tragelaphus spekei</i>	Sitatunga	1	
<i>Tragelaphus strepsiceros</i>	Greater Kudu	1	1
<i>Bos grunniens</i>	Yak	2	2
<i>Bison bonasus</i>	European Bison	3	
<i>Bison bison</i>	American Bison	3	3
<i>Damaliscus dorcas</i>	Blesbok	1	1
<i>Connochaetes taurinus</i>	Brindled Gnu	2	2
<i>Antilope cervicapra</i>	Blackbuck	20	20 (13)
<i>Ovibos moschatus</i>	Musk Ox	2 (2)	
<i>Ammotragus lervia</i>	Barbary Sheep	18	18 (15)
<i>Capra falconeri</i>	Markhor	3	
<i>Ovis musimon</i>	Mouflon	8	8 (2)
<i>Ovis canadensis</i>	Bighorn Sheep	2	2 (1)
DOMESTIC			
	Pigs	12	
	Jersey Calf	1	
	Goats	18	18 (1)
	Sheep	13	13 (3)
Birds			
STRUTHIONIFORMES			
<i>Struthio camelus</i>	Ostrich	6	
SPHENISCIFORMES			
<i>Spheniscus demersus</i>	Black-footed Penguin	1	1
<i>Spheniscus humboldti</i>	Humboldt's Penguin	1	1 (1)
PELECANIFORMES			
<i>Pelecanus rufescens</i>	Pink-backed Pelican	2	
<i>Phalacrocorax carbo</i>	Common Cormorant	2	
CICONIIFORMES			
<i>Ardeola grayii</i>	Indian Pond Heron	2	
<i>Ardeola ibis</i>	Cattle Egret	2	2
<i>Sphenorhynchus abdimii</i>	Abdim's Stork	6	
<i>Carphibis spinicollis</i>	Straw-necked Ibis	4	
<i>Threskiornis aethiopica</i>	Sacred Ibis	6	6 (4)
<i>Guara rubra</i>	Scarlet Ibis	2	
<i>Ajaia ajaia</i>	Roseate Spoonbill	2	
<i>Phoenicopterus ruber ruber</i>	Rosy Flamingo	3	
<i>Phoenicopterus ruber chilensis</i>	Chilean Flamingo	21	
<i>Phoeniconaias minor</i>	Lesser Flamingo	3	
ANSERIFORMES			
<i>Chauna torquata</i>	Crested Screamer	1	
<i>Cygnus atratus</i>	Black Swan	2	
<i>Branta canadensis</i>	Canada Goose	9	9 (1)

		Total number acquired	Number born or hatched in the Menagerie
<i>Anas americana</i>	American Wigeon	1	
<i>Netta rufina</i>	Red-crested Pochard	1	
<i>Aythya affinis</i>	Lesser Scaup	1	
<i>Aix galericulata</i>	Mandarin Duck	5	
<i>Somateria mollissima</i>	Eider Duck	1	
<i>Oxyura jamaicensis</i>	North American Ruddy Duck	2	
FALCONIFORMES			
<i>Vultur gryphus</i>	Great Condor	1	
<i>Geranoaetus melanoleucus</i>	Chilean Eagle	1	
<i>Haliaeetus vocifer</i>	African Fish Eagle	2	
<i>Neophron percnopterus</i>	Egyptian Vulture	2	
<i>Sarcorhamphus papa</i>	King Vulture	1	
GALLIFORMES			
<i>Coturnix chinensis</i>	Painted Quail	5	
<i>Lophura nycthermerus</i>	Silver Pheasant	4	4 (1)
<i>Lophura imperialis</i>	Imperial Pheasant	2	
<i>Syrnaticus reevesii</i>	Reeves's Pheasant	1	1
<i>Syrnaticus humiae humiae</i>	Hume's Bar-tailed Pheasant	1	1
<i>Chrysolophus pictus</i>	Golden Pheasant	1	1
<i>Chrysolophus amherstiae</i>	Lady Amherst's Pheasant	4	4
<i>Polyplectron emphanum</i>	Palawan Peacock Pheasant	1	1
<i>Pavo cristatus</i>	Common Peafowl	3	3
<i>Pavo muticus</i>	Green Peafowl	1	
G <i>Afropavo congensis</i> Chapin (Congo)	Congo Peafowl	5	
GRUIFORMES			
<i>Anthropoides virgo</i>	Demoiselle Crane	3	
<i>Balearica pavonina</i>	Crowned Crane	3	
<i>Rallus aquaticus</i>	Water Rail	1	
<i>Tribonyx mortierii</i>	Tasmanian Waterhen	2	2
<i>Amaurornis phoenicurus chinensis</i>	Eastern White-breasted Waterhen	1	
CHARADRIIFORMES			
<i>Vanellus vanellus</i>	Lapwing	5	
<i>Tringa totanus</i>	Redshank	3	
<i>Glareola pratincola</i>	Collared Pratincole	6	
<i>Larus marinus</i>	Great Black-backed Gull	1	1
<i>Alca torda</i>	Razorbill	1	
COLUMBIFORMES			
<i>Ducula bicolor melanura</i>	Nutmeg Fruit Pigeon	1	
<i>Columba guinea</i>	Speckled Pigeon	4	4 (1)
<i>Streptopelia roseogrisea</i>	Barbary Dove	1	
<i>Streptopelia vinacea vinacea</i>	Vinaceous Dove	7	7
<i>Streptopelia chinensis tigrina</i>	Malay Necklace Dove	5	2 (1)
<i>Geopelia humeralis</i>	Barred-shouldered Dove	2	
<i>Geopelia striata striata</i>	Zebra Dove	5	
<i>Columbigallina minuta</i>	Pygmy Dove	2	
<i>Chalcophaps indica</i>	Green-winged Dove	1	
<i>Ocyphaps lophotes</i>	Crested Pigeon	1	1

		Total number acquired	Number born or hatched in the Menagerie
PSITTACIFORMES			
SS	<i>Chalcopsitta sintillata sintillata</i> (Temminck) (New Guinea)	Yellow-streaked Lory Black-winged Lory	1 1
	<i>Eos cyanogenia</i>	Dusky Lory	1
G	<i>Pseudeos fuscata</i> (Blyth) (New Guinea)	Western Black-capped Lory	1
	<i>Domicella lory viridicrissalis</i>	Western Black-capped Lory	1
	<i>Domicella lory salvadorii</i>	Western Black-capped Lory	2
	<i>Domicella lory erythrothorax</i>	Purple-naped Lory	1
	<i>Domicella domicella</i>	Scarlet Lory	1 (1)
	<i>Domicella garrula garrula</i>	Yellow-backed Lory	1
	<i>Domicella garrula flavopalliata</i>	Funereal Cockatoo	1 (1)
	<i>Calyptorhynchus funereus</i>	Triton Cockatoo	1
	<i>Cacatua galerita triton</i>	Lesser Sulphur-crested Cockatoo	2
	<i>Cacatua sulphurea</i>	Cockatiel	2
	<i>Nymphicus hollandicus</i>	Quaker Parrakeet	8
	<i>Myiopsitta monachus</i>	Guiana Parrotlet	1
	<i>Forpus passerinus passerinus</i>	Celestial Parrotlet	1
	<i>Forpus coelestis coelestis</i>	Canary-winged Parrakeet	2
	<i>Brotogeris versicolurus chiriri</i>	Orange-flanked Parrakeet	2
	<i>Brotogeris pyrrhopterus</i>	Eclectus Parrot	2
	<i>Eclectus roratus</i>	Budgerigar	14
	<i>Melopsittacus undulatus</i>		14
CUCULIFORMES			
	<i>Tauraco corythaix</i>	Knysna Turaco	2
	<i>Tauraco leucotis leucotis</i>	White-cheeked Turaco	3
	<i>Corythaixoides concolor</i>	Grey Turaco	2
STRIGIFORMES			
	<i>Tyto alba</i>	Barn Owl	3
	<i>Otus bakkamoena glabripes</i>	Bare-footed Scops Owl	1
	<i>Bubo capensis mackinderi</i>	Kenya Eagle Owl	1 (1)
	<i>Bubo africanus cinerascens</i>	Abyssinian Spotted Eagle Owl	3
	<i>Bubo africanus</i>	Spotted Eagle Owl	2
	<i>Bubo vosseleri</i>	Nduk Eagle Owl	1
	<i>Pulsatrix perspicillata</i>	Spectacled Owl	1
	<i>Nyctea scandiaca</i>	Snowy Owl	5
	<i>Asio otus</i>	Long-eared Owl	1
APODIFORMES			
S	<i>Colibri thalassinus</i> (Swainson) (Cen. America)	Green Violet-ear Humming Bird	1
	<i>Anthracothorax nigricollis</i>	Black-throated Mango Humming Bird	1
	<i>Chorestes notatus</i>	Blue-breasted Sapphire Humming Bird	2
	<i>Amazilia fimbriata nigricauda</i>	Black-tailed Emerald Humming Bird	1
	<i>Amazilia tzacatl</i>	Rufous-tailed Humming Bird	1

		Total number acquired	Number born or hatched in the Menagerie
G <i>Urochroa bougueri</i> (Bourcier) (Columbia and Ecuador)	White-tailed Hillstar Humming Bird	1	
G <i>Lafresnaya lafresnayi</i> (Boissoneau) (S. America)	Mountain Velvet-breast Humming Bird	1	
CORACIIFORMES			
<i>Momotus momota</i>	Blue-crowned Motmot	1	
S <i>Merops orientalis</i> Latham (India)	Little Green Bee-eater	1	
<i>Upupa epops</i>	Hoopoe	2	
<i>Phoeniculus purpureus</i>	Wood Hoopoe	1	
<i>Aceros undulatus</i>	Wreathed Hornbill	1	
<i>Bucorvus abyssinicus</i>	Northern Ground Hornbill	2	
PICIFORMES			
<i>Pteroglossus torquatus</i>	Banded Aracari	1	
<i>Ramphastos tucanus</i>	Red-billed Toucan	1	
PASSERIFORMES			
<i>Pitta guajana</i>	Banded Pitta	4	
<i>Pitta brachyura</i>	Bengal Pitta	2	
<i>Pitangus sulphuratus</i>	Great Kiskadee	2	
<i>Chiroxiphia pareola</i>	Blue-backed Manakin	5	
<i>Pycnonotus barbatus layardi</i>	Layard's Bulbul	1	
SS <i>Prionops plumata cristata</i> Rüppell (N.E. Africa)	Curly-crested Helmet Shrike	2	
<i>Lanius schach</i>	Rufous-backed Shrike	3	
<i>Lanius excubitor</i>	Great Grey Shrike	2	
<i>Copsychus malabaricus</i>	Shama	1	
S <i>Zoothera piaggiae</i> (Bouvier) (E. Africa)	Abyssinian Ground Thrush	3	
S <i>Muscicapa pallipes</i> Jerdon (W. India)	White-bellied Blue Flycatcher	2	
<i>Muscicapa rubeculoides</i>	Blue-throated Flycatcher	2	
<i>Dicaeum trigonostigma</i>	Orange-bellied Flowerpecker	2	
<i>Zosterops palpebrosa</i>	Indian White-eye	4	
<i>Lophospingus pusillus</i>	Black-crested Finch	1	
<i>Sicalis flaveola</i>	Saffron Finch	1	
<i>Caryothraustes canadensis</i> (Linnaeus) (S. America)	Yellow-green Grosbeak	2	
<i>Ramphocelus flammigerus icteronatus</i>	Yellow-rumped Tanager	1	
<i>Cyanerpes cyaneus</i>	Blue Honey Creeper	2	
<i>Pezites militaris</i>	Red-breasted Meadowlark	2	
<i>Serinus canaria</i>	Canary	11	
<i>Serinus leucopygius leucopygius</i>	Grey Singing Finch	2	
<i>Carduelis chloris</i>	Greenfinch	6	6
<i>Amandava amandava</i>	Avadavat	2	
<i>Poephila guttata castanotis</i>	Zebra Finch	3	
<i>Chloebia gouldiae</i>	Gouldian Finch	17	
<i>Lonchura striata</i>	Striated Finch	11	
<i>Lonchura striata var.</i>	Bengalese Finch	20	
<i>Lonchura castaneothorax castaneothorax</i>	Chestnut-breasted Finch	3	

		Total number acquired	Number born or hatched in the Menagerie
<i>Padda oryzivora</i>	Java Sparrow	2	
<i>Amadina fasciata</i>	Cut-throat Finch	1	
<i>Aplonis panayensis strigata</i>	Malay Glossy Starling	4	4
<i>Onychognothus salvadorii</i>	Bristle-crowned Starling	2	2 (1)
<i>Lamprotornis purpureus</i>	Purple Glossy Starling	1	
<i>Spreo superbus</i>	Superb Glossy Starling	2	2 (2)
<i>Gracula religiosa intermedia</i>	Nepal or Greater Hill Mynah	4	
<i>Corvus corax corax</i>	Raven	1	
Reptiles			
TESTUDINES			
<i>Chelydra serpentina serpentina</i>	Snapper	1	
<i>Emys orbicularis</i>	European Pond-tortoise	1	
<i>Sternotherus odoratus</i>	Musk Turtle	1	
<i>Chrysemys picta dorsalis</i>	Southern Painted Terrapin	1	
<i>Chrysemys scripta elegans</i>	Red-eared Terrapin	6	
<i>Chrysemys ornata callirostris</i>	Ornate Terrapin	1	
<i>Malaclemys geographica</i>	Map Terrapin	1	
<i>Mauremys caspica leprosa</i>	Spanish Terrapin	3	
<i>Clemmys insculpta</i>	Wood Terrapin	1	
<i>Clemmys guttata</i>	Spotted Terrapin	1	
<i>Terrapene carolina carolina</i>	Carolina Box Tortoise	1	
<i>Testudo graeca</i>	Mediterranean Spur-thighed Tortoise	20	
<i>Testudo hermanni</i>	Hermann's Tortoise	1	
<i>Gopherus berlandieri</i>	Berlandier's Tortoise	1	
CROCODILIA			
<i>Caiman crocodilus</i>	Spectacled Cayman	1	
SAURIA			
Gecko sp. inc.		12	
<i>Gymnodactylus scaber</i>	Rough-skinned Gecko	2	
<i>Tarentola mauritanica</i>	Moorish Gecko	6	
<i>Tarentola annularis</i>	Egyptian Gecko	1	
<i>Phelsuma cepedianum</i>	Jewelled Gecko	4	
<i>Coleonyx variegatus</i>	Texas Ground Gecko	5	
<i>Eublepharis macularius</i>	Leopard Ground Gecko	6	4
<i>Teratolepis fasciata</i>	Banded Viper Gecko	2	
<i>Anolis equestris</i>	Greater Cuban Anole	3	1
<i>Anolis lineatopus</i>	Gray's Anole	1	
<i>Anolis sagrei</i>	Brown Anole	3	
<i>Iguana iguana</i>	Iguana	1	
s <i>Cyclura ricordii</i> (Dumeril & Bibron) (Hispaniola)	Dominican Ground Iguana	1	
<i>Dipsosaurus dorsalis</i>	Desert Iguana	1	
<i>Crotaphytus collaris</i>	Collared Lizard	1	
s <i>Sceloporus clarkii clarkii</i> Baird & Girard (North America)	Clark's Spiny Lizard	3	
<i>Phrynosoma douglassi</i>	Short-horned Lizard	14	13 (7)
<i>Calotes versicolor</i>	Indian Changeable Lizard	4	
<i>Agama agama</i>	Margouillat Agama	3	
<i>Agama stellio</i>	Starred Agama	2	

		Total number acquired	Number born or hatched in the Menagerie
<i>Uromastyx acanthinurus</i>	Bell's Dabb Lizard	2	
<i>Uromastyx microlepis</i>	Small-scaled Dabb Lizard	3	
<i>Uromastyx ornatus</i>	Ornate Dabb Lizard	2	
<i>Chamaeleo chamaeleon</i>	Common Chameleon	2	
<i>Chamaeleo dilepis</i>	Flap-necked Chameleon	1	
<i>Chamaeleo bitaeniatus</i>	Two-banded Chameleon	1	
<i>Chamaeleo bitaeniatus ellioti</i>	Montane Side-striped Chameleon	3	1 (1)
<i>Chamaeleo jacksoni</i>	Kikuyu Three-horned Chameleon	8	
<i>Mabuya macularia</i>	Bronzy Grass Skink	1	
<i>Eumeces algeriensis</i>	Algerian Skink	6	
<i>Chalcides ocellatus</i>	Eyed Skink	1	
<i>Gerrhosaurus validus</i>	Robust Plated Lizard	2	
<i>Gerrhosaurus flavigularis</i>	Yellow-throated Plated Lizard	2	
<i>Eremias velox</i>	Asian Swift Lizard	1	
<i>Ameiva thoracica</i>	Lion Ameiva	1	
<i>Varanus griseus</i>	Grey Monitor	3	
<i>Heloderma suspectum</i>	Gila Monster	1	
<i>Heloderma horridum</i>	Mexican Beaded Lizard	1	
<i>Anguis fragilis</i>	Slowworm	1	
<i>Cordylus cordylus jonesii</i>	Jones' Armoured Lizard	1	
<i>Cordylus vittifer</i>	Transvaal Girdled Lizard	2	
SERPENTES			
<i>Liasis amethystinus</i>	Amethystine Python	1	
<i>Morelia spilotes variegata</i>	Carpet Python	1	
<i>Python molurus</i>	Indian Python	1	
<i>Python regius</i>	Royal Python	4	
<i>Epicrates cenchria</i>	Rainbow Boa	6	
<i>Corallus enydris cookii</i>	Cooke's Tree Boa	1	
<i>Corallus caninus</i>	Emerald Tree Boa	3	
<i>Boa constrictor</i>	Boa Constrictor	1	
<i>Eryx conicus</i>	Russell's Sand Boa	1	
<i>Eryx johnii</i>	John's Sand Boa	1	
<i>Natrix piscator</i>	Checkered Keelback Snake	1	
<i>Thamnophis sirtalis</i>	Common Garter Snake	13	6 (5)
<i>Storeria occipitomaculata</i>	Red-bellied Snake	1	
<i>Lycodonomorphus rufulus</i>	Rufous Snake	1	
<i>Pseudaspis cana</i>	Mole Snake	3	
s <i>Zaocys dhumnades</i> (Cantor) (S.E. Asia & Taiwan)	Taiwan Big-eye Snake	1	
<i>Ptyas mucosus</i>	Dhaman	1	
<i>Lytorhynchus diadema</i>	Leaf-nosed Snake	4	
<i>Elaphe guttata</i>	Corn-Snake	1	
<i>Elaphe taeniurus</i>	Taiwan Beauty Snake	2	
ss <i>Elaphe vulpina gloydi</i> Conant (Gt. Lakes U.S.A.)	Eastern Fox Snake	1	
<i>Elaphe obsoleta</i>	Rat Snake	2	
<i>Elaphe obsoleta quadrivittata</i>	Yellow Rat Snake	1	
s <i>Elaphe carinata</i> (Guenther) (E. China & Taiwan)	Taiwan Kelled Snake	1	
<i>Coluber jugularis</i>	Balkan Whipsnake	2	

		Total number acquired	Number born or hatched in the Menagerie
<i>Coluber viridiflavus</i>	Dark Green Snake	1	
<i>Spalerosophis diadema</i>	Diadem Snake	1	
<i>Coluber arenarius</i>	Buff Racer	1	
<i>Pituophis catenifer deserticola</i>	Great Basin Snake	3	
<i>Pituophis catenifer sayi</i>	Bull Snake	1	
<i>Arizona elegans</i>	Texas Glossy Snake	1	
<i>Leiosophis gigas</i>	Boipevussu Snake	6	5 (3)
<i>Heterodon nasicus</i>	Western Hognose Snake	1	
<i>Lampropeltis getulus californiae</i>	California King Snake	1	
<i>Dasypeltis scabra</i>	African Egg-eating Snake	4	
<i>Enhydris chinensis</i>	Chinese Water Snake	9	6 (6)
s <i>Enhydris plumbea</i> (Boie) (S.E. Asia & Taiwan)	Rice Paddy Snake	5	
<i>Crotaphopeltis hotamboeia</i>	Herald Snake	2	
<i>Malpolon moilensis</i>	Moila Snake	2	
<i>Ahaetulla mycterizans</i>	Long-nosed Whipsnake	1	
<i>Thelotornis kirtlandi</i>	Kirtland's Tree Snake	1	
<i>Dispholidus typus</i>	Boomsnake	1	
<i>Bungarus multicinctus</i>	Many-banded Krait	2	
<i>Naja haje</i>	Egyptian Cobra	1	
<i>Naja nigricollis</i>	Black-necked Cobra	3	
<i>Hemachatus haemachatus</i>	Ringhals	1	
ss <i>Micrurus fulvius tenere</i> (Baird & Girard) (Southern U.S.A. & N. Mexico)	Texas Coral Snake	2	
<i>Dendroaspis jamesoni</i>	Eastern Jameson's Mamba	1	
<i>Dendroaspis polylepis</i>	Black Mamba	2	
<i>Causus rhombeatus</i>	Night Adder	1	
<i>Vipera berus</i>	Adder	1	
s <i>Vipera xanthina palaestinae</i> Werner (Syria, Jordan, Israel)	Palestine Viper	2	
<i>Bitis arietans</i>	Puff Adder	3	
<i>Bitis caudalis</i>	Horned Puff Adder	1	
<i>Bitis gabonica</i>	Gaboon Viper	1	
<i>Bitis nasicornis</i>	Horn-nosed Snake	2	
<i>Cerastes cerastes</i>	Horned Cerastes Viper	1	
<i>Agkistrodon piscivorus leucostoma</i>	Western Cottonmouth	1	
<i>Agkistrodon hypnale</i>	Merrem's Hump-nosed Viper	5	4 (4)
<i>Trimeresurus stejnegeri</i>	Taiwan Bamboo Viper	1	
s <i>Trimeresurus mucrosquamatus</i> (Cantor) (S.E. China & Taiwan)	Taiwan Habu	1	
<i>Crotalus atrox</i>	Western Diamondback Rattlesnake	1	
<i>Crotalus viridis viridis</i>	Prairie Rattlesnake	2	
<i>Crotalus viridis lutosus</i>	Great Basin Rattlesnake	2	
<i>Crotalus viridis oreganus</i>	Northern Pacific Rattlesnake	5	
AMPHIBIANS			
Toad sp. inc.		1	
<i>Dendrobates</i> sp. inc.	Poison Arrow Frog	12	
<i>Proteus anguinus</i>	Olm	1	
<i>Necturus maculosus</i>	Mudpuppy	4	
<i>Cryptobranchus alleganiensis</i>	Hellbender	2	

		Total number acquired	Number born or hatched in the Menagerie
<i>Triturus cristatus</i>	Crested Newt	1	
<i>Triturus marmoratus</i>	Marbled Newt	5	
<i>Triturus vulgaris</i>	Common Smooth Newt	6	
<i>Triturus helveticus</i>	Palmate Newt	3	
<i>Cynops pyrrhogaster</i>	Japanese Newt	50	50
<i>Pleurodeles waltl</i>	Pleurodele Newt	2	
<i>Salamandra salamandra</i>	European Salamander	2	
<i>Ambystoma mexicanum</i>	Axolotl	43	30
<i>Xenopus laevis</i>	Smooth Clawed Toad	1	
<i>Discoglossus pictus</i>	Painted Frog	6	
<i>Bombina bombina</i>	Fire-bellied Toad	4	
<i>Bombina variegata</i>	Yellow-bellied Toad	8	
<i>Bombina orientalis</i>	Eastern Bell Toad	2	
<i>Alytes obstetricans</i>	Midwife Toad	4	
<i>Bufo calamita</i>	Natterjack	6	
<i>Bufo viridis</i>	Green Toad	2	
<i>Bufo carens</i>	Slender Toad	5	
<i>Bufo bufo</i>	Common European Toad	2	
<i>Bufo melanostictus</i>	Common Asiatic Toad	9	
<i>Bufo terrestris americanus</i>	American Toad	1	
<i>Bufo marinus</i>	Giant Toad	5	
<i>Hyla arborea</i>	European Tree-frog	10	
<i>Hyla cinerea</i>	Green Tree-frog	1	
<i>Hyla septentrionalis</i>	Cuban Tree-frog	1	
<i>Ceratophrys calcarata</i>	Columbian Horned Frog	4	
<i>Rana tigrina crassa</i>	Indian Bull Frog	2	
<i>Rana esculenta</i>	Edible Frog	54	
<i>Rana ridibunda</i>	Marsh Frog	4	
<i>Rana temporaria</i>	Common Frog	65	40
<i>Rana catesbeiana</i>	American Bull Frog	1	
<i>Rana pipiens</i>	Leopard-Frog	4	
<i>Rana clamitans melanota</i>	Green Frog	2	
<i>Philautus leucorhinus</i>		6	

Fishes new to the collection

- Scleropages formosus* (Schlegel & Müller) (Borneo, Banka, Sumatra, Thailand)
Chalceus macrolepidotus Cuvier (Guianas)
Fundulus chrysotus (Günther) (South Carolina to Florida)
Fundulus heteroclitus (Linnaeus) (Canada to Mexico; Bermuda)
Cromileptes altivelis (Cuvier & Valenciennes) (Indo-West Pacific)
Eretmodus cyanostictus Boulenger (Lake Tanganyika)
Haplochromis burtoni (Günther) (Lake Tanganyika)

WHIPNADE PARK

Mammals

MARSUPIALIA

<i>Protemnodon rufogrisea</i>	Red-necked Wallaby	54	54 (1)
<i>Macropus canguru</i>	Grey Kangaroo	1	

PRIMATES

<i>Galago crassicaudatus</i>	Thick-tailed Bushbaby	1	1
<i>Macaca mulatta</i>	Rhesus Macaque	1	1

		Total number acquired	Number born or hatched in the Menagerie
<i>Hylobates moloch</i>	Grey Gibbon	1	1 (1)
<i>Pan troglodytes</i>	Chimpanzee	8 (3)	
RODENTIA			
<i>Cynomys ludovicianus</i>	Prairie Marmot	3	
<i>Dolichotis patagonum</i>	Mara	12	6 (2)
<i>Dasyprocta punctata</i>	Central American Agouti	7	7
CARNIVORA			
<i>Canis lupus</i>	Canadian Timber Wolf	11	11 (1)
<i>Lycaon pictus</i>	Cape Hunting Dog	3	3
<i>Ursus arctos</i>	Kodiak Bear	2	2
<i>Thalarctos maritimus</i>	Polar Bear	1	1
<i>Nasua nasua</i>	Coati	3	3
<i>Ailurus fulgens</i>	Red Panda	2	2 (2)
<i>Felis lynx</i>	Northern Lynx	4	4 (2)
<i>Felis serval</i>	Serval	2 (2)	
<i>Felis concolor</i>	Puma	3	3 (1)
<i>Panthera tigris</i>	Sumatran Tiger	1 (1)	
<i>Panthera pardus</i>	Leopard	2 (2)	
<i>Acinonyx jubatus</i>	Cheetah	3	3
PINNIPEDIA			
<i>Zalophus californianus</i>	Californian Sealion	1	
PERISSODACTYLA			
<i>Equus przewalskii</i>	Przewalski's Horse	2	2
<i>Equus zebra</i>	Mountain Zebra	1	1
<i>Equus burchelli</i>	Common Zebra	4	4 (3)
<i>Asinus hemionus</i>	Turkmen Wild Ass	1	1 (1)
<i>Diceros simus</i>	White Rhinoceros	1	1
ARTIODACTYLA			
<i>Sus scrofa</i>	Wild Boar	1 (1)	
<i>Tayassu tajacu</i>	Collared Peccary	6	6 (4)
<i>Lama glama</i>	Llama	6	6
<i>Lama guanicoe</i>	Guanaco	6	6 (1)
<i>Camelus dromedarius</i>	Arabian Camel	1	1
<i>Dama dama</i>	Fallow Deer	14	14 (2)
<i>Axis axis</i>	Axis Deer	10	10 (5)
<i>Axis porcinus</i>	Hog Deer	14	14 (8)
<i>Cervus duvauceli</i>	Barasingha	5	5 (3)
<i>Cervus nippon</i>	Black × Japanese Sika Deer	2	2 (1)
	Formosan Sika Deer	13	13 (1)
<i>Cervus elaphus</i>	Red Deer	13	13 (2)
	Wapiti	4	4 (2)
<i>Elaphurus davidianus</i>	Pere David's Deer	6	6 (2)
<i>Alces alces</i>	Moose	2	2
<i>Rangifer tarandus</i>	Reindeer	2	2
<i>Hydropotes inermis</i>	Chinese Water Deer	40	40 (4)
<i>Giraffa camelopardalis</i>	Baringo Giraffe	3	
<i>Tragelaphus spekei</i>	Sitatunga	1	1
<i>Taurotragus oryx</i>	Eland	2 (2)	
<i>Boselaphus tragocamelus</i>	Nilgai	2	2 (1)

		Total number acquired	Number born or hatched in the Menagerie
<i>Bos grunniens</i>	Yak	1	
<i>Syncerus caffer</i>	Cape Buffalo	2 (1)	1 (1)
<i>Bison bonasus</i>	European Bison	2	2
<i>Bison bison</i>	American Bison	5	5 (1)
<i>Damaliscus dorcas</i>	Blesbok	5	5 (2)
<i>Connochaetes taurinus</i>	Brindled Gnu	7 (2)	5
<i>Gazella thomsoni</i>	Thomson's Gazelle	1	1
<i>Ovibos moschatus</i>	Musk Ox	2	2
<i>Ovis musimon</i>	Mouflon	16	16 (7)
DOMESTIC			
	Ponies	4	4
	Ankole Ox	4	4 (1)
	Windsor White Goat	16	16 (2)
	Four-horned Sheep	15	15 (1)
Birds			
STRUTHIONIFORMES			
<i>Struthio camelus</i>	Ostrich	3 (3)	
RHEIFORMES			
<i>Rhea americana albescens</i>	Common Rhea	16	14 (1)
CASUARIIFORMES			
<i>Dromaius novae-hollandiae</i>	Emu	1	1 (1)
CICONIIFORMES			
<i>Ardeola ibis</i>	Cattle Egret	12 (6)	
<i>Ciconia ciconia</i>	White Stork	2	2 (2)
<i>Ciconia nigra</i>	Black Stork	5	
<i>Threskiornis aethiopica</i>	Sacred Ibis	1 (1)	
<i>Phoenicopterus ruber ruber</i>	Rosy Flamingo	3	3
ANSERIFORMES			
<i>Dendrocygna eytoni</i>	Eyton's Tree Duck	4	
<i>Cygnus atratus</i>	Black Swan	12 (2)	10 (1)
<i>Cereopsis novae-hollandiae</i>	Cereopsis Goose	4	4 (1)
<i>Anser caerulescens atlanticus</i>	Greater Snow Goose	2	2
<i>Anser caerulescens caerulescens</i>	Lesser Snow Goose	6	6 (1)
<i>Anser anser</i>	Grey Lag Goose	2	2
<i>Anser indicus</i>	Bar-headed Goose	2	2 (1)
<i>Anser canagicus</i>	Emperor Goose	12	8 (1)
<i>Branta leucopsis</i>	Barnacle Goose	5	5
<i>Branta canadensis</i>	Canada Goose	18 (7)	11
<i>Branta ruficollis</i>	Red-breasted Goose	3	3 (3)
<i>Chloëphaga picta leucoptera</i>	Upland Goose	2	2
<i>Alopochen aegyptiacus</i>	Egyptian Goose	6	6 (2)
<i>Tadorna cana</i>	South African Shelduck	2 (1)	1 (1)
<i>Lophonetta specularioides specularioides</i>	Crested Duck	8	8 (6)
<i>Anas penelope</i>	Common Wigeon	2	2
<i>Netta rufina</i>	Red-crested Pochard	1	1
FALCONIFORMES			
<i>Torgos tracheliotus</i>	Lappet-faced Vulture	1 (1)	

		Total number acquired	Number born or hatched in the Menagerie
<i>Gyps rueppellii</i>	Ruppell's Griffon Vulture	2 (2)	
<i>Gyps africanus</i>	African White-backed Vulture	2 (2)	
GALLIFORMES			
<i>Coturnix chinensis</i>	Painted Quail	5 (5)	
<i>Lophura nycthemerus</i>	Silver Pheasant	30 (10)	20 (2)
<i>Catreus wallichi</i>	Cheer Pheasant	10	10 (3)
<i>Syrnaticus reevesii</i>	Reeves's Pheasant	5 (5)	
<i>Syrnaticus humiae humiae</i>	Hume's Bar-tailed Pheasant	5 (3)	2
<i>Chrysolophus pictus</i>	Golden Pheasant	6 (1)	5
<i>Chrysolophus amherstiae</i>	Lady Amherst's Pheasant	6 (2)	4
<i>Pavo cristatus</i>	Common Peafowl	2 (2)	
GRUIFORMES			
<i>Grus antigone</i>	Sarus Crane	4	
COLUMBIFORMES			
<i>Geopelia cuneata</i>	Diamond Dove	4 (4)	
PSITTACIFORMES			
<i>Trichoglossus haematod moluccanus</i>	Swainson's Lorikeet	2	2
<i>Nymphicus hollandicus</i>	Cockatiel	3	2
<i>Psittacus erithacus</i>	Grey Parrot	1	
<i>Psittacula krameri manillensis</i>	Indian Ring-necked Parrakeet	4	4
PASSERIFORMES			
<i>Serinus mozambicus</i>	Green Singing Finch	2 (2)	
<i>Serinus canaria</i>	Canary	10 (10)	
<i>Estrilda troglodytes</i>	Common Waxbill	2	
<i>Amandava amandava</i>	Avadavat Finch	4	
<i>Poephila guttata castanotis</i>	Zebra Finch	12 (12)	
<i>Lonchura striata var.</i>	Bengalese Finch	7 (7)	
<i>Lonchura striata</i>	Striated Finch	11 (11)	
<i>Padda oryzivora</i>	Java Sparrow	2	
<i>Gracula religiosa indica</i>	Southern Hill Mynah	1	
DOMESTIC			
	Budgerigar	8 (8)	
Reptiles			
TESTUDINES			
<i>Chrysemys scripta elegans</i>	Red-eared Terrapin	6 (6)	

LIST OF DONORS OF ANIMALS TO THE SOCIETY

REGENT'S PARK

- Ableman, Mr M., 7 Long-headed Grasshoppers,
1 Solitary Grasshopper, 20 Desert Beetles,
6 Praying Mantis
- Adams, Mr J., 9 Deer Mice
- Animal Health Trust, 1 Indian Muntjac
- Antwerp Zoo, 2 Imperial Pheasants, 5 Congo
Peafowl, 1 Great Condor
- Armstrong, Mr P., 1 Carolina Box Tortoise
- Baker, Mr R. H., 2 *Cichlasoma severum*
- Barrett, Mr M. G. T., 2 *Torania* sp., 5 *Heteropoda
venatoria*, 1 *Centuroides* sp., 1 drassid, 1 *Selenops*
and 1 other spider
- Basel Zoo, 4 Straw-necked Ibis
- Bedford College, 4 Axolotls
- Behan, Sean, 2 Royal Pythons, 1 Spanish Terrapin
- Bellis, Miss G., 1 Spanish Terrapin, 1 Ornate
Terrapin
- Bennett, Mrs B., 4 Canaries
- Bennett, Mr P., 8 Yellow-bellied Toads, 2 Eastern
Bell Toads, 5 Slender Toads
- Berlin Aquarium, 4 *Archimantis* nymphs, 4 *Para-
stagmatoptera* nymphs, 2 *Phyllium* sp. and ova,
1 *Anthia* sp., 2 *Cyrtophora citricola* and cocoons,
2 argiopids and 1 cocoon, 1 *Grammostola* sp.,
1 *Nephilengys cruentata*
- Bird, Mr D. R., 2 Scorpions, 1 Beetle, 2 Common
European Toads, 6 *Haplochromis burtoni*
- Birmingham University, 6 *Blaberus gigantea*, 6 *B.
disciodalis*
- Blenkin, Mr, 6 Geckos sp. inc.
- Blunden, Mrs, 1 Banded Aracari
- Bower, Mrs, 1 Kikuyu Three-horned Chameleon
- Bowerman, Mr P., 1 Iguana
- Bowman, Mr A., 1 Cut-throat Finch
- Brice, Mr W., 46 Edible Frogs
- Brien, Mrs A., 2 Axolotls
- Bristol University, 5 Lapwings
- Bristol Zoo, 3 Redshanks
- Burgess, Mr P., 1 *Clarias*
- Buxton, Mr A., 3 Crowned Cranes, 3 Demoiselle
Cranes, 2 African Fish Eagles, 3 Lesser
Flamingos, 3 Rosy Flamingos, 21 Chilean
Flamingos
- Caledonian Road Police Station, 1 Eastern Fox
Snake
- Care, Mrs S., Moon moth larvae
- Catty, Mrs, 1 Purple Glossy Starling
- Chester, Mr M., 1 Russell's Sand Boa
- Clemo, Miss S., 1 Brown Capuchin
- Cockburn, Mr C., 2 Horn-nosed Snake
- Covey, Mrs G., 2 Blue Honey Creepers, 2 Indian
White-eyes
- Crossman, Mrs G., 1 Nepal Hill Mynah
- Dalton, Miss Janet, 1 *Scolopendra* sp.
- Darby, Mr H. F., 1 Boa Constrictor
- Dastal, J. and Seber, G., 2 Common Garter
Snakes
- Davis, Mr, 1 Chinchilla
- D'eath, Mr J., 1 Eider Duck
- Desborough, Mr D., 1 Common Eel
- du Vergier Tabernacle, Mr J., 3 Red-eared Terra-
pins
- Edwards, Mr S., 1 Jones' Armoured Lizard
- Elliott, Mr C. W., 1 Albino *Clarias*
- Emberson, Mr S., 1 European Pond-tortoise
- Farrow, Mrs, 25 frogs and eggs
- Feldhammer, Mr B., 1 Horned Cerastes Viper,
2 Bell's Dabb Lizards, 3 Moorish Geckos, 1
Egyptian Gecko, 1 Toad sp. inc.
- Ferguson, Mr M., 7 Long-headed Grasshoppers,
1 Solitary Grasshopper, 20 Desert Beetles, 6
Praying Mantis
- Fisher, Mr B., 1 Butterfly Fish
- Foote-Forester, Mr and Mrs, 2 Black Swans, 1
Red-crested Pochard, 1 American Wigeon, 1
Lesser Scaup
- Forbes, Mr, 2 mantids
- Fox, Mr J., 2 Axolotls
- Gable, Mr R., 1 Bull-Snake
- Goldsmiths College, 7 White Axolotls
- Gratton, Wing-Commander, Land hermit-crabs
- Guy's Hospital Medical School, 4 South American
Lungfish
- Halliday, Mrs, 1 Mediterranean Spur-thighed
Tortoise
- Harris-Lane, Mr G., 1 Common Garter Snake
- Harvey, Mr P. R., 2 Pygmy Doves, 3 Zebra
Finches
- Head, The Viscount and Viscountess, 2 Knysna
Turacos
- Hickman, Mr A. D., 4 Mediterranean Spur-
thighed Tortoises
- Holloway, Mrs, 2 Mediterranean Spur-thighed
Tortoises

- Hooper, Mrs, 1 Nepal Hill Mynah
Huseyin, Mr H., 1 Mediterranean Spur-thighed Tortoise
Ireland, Mr G. W., 3 Moorish Geckos
James, Dr M. J., 6 tenebrionid beetles, 6 *Blaps gages*
Jones, Mr N., 1 European Salamander, 1 Smooth Clawed Toad, 1 Crested Newt, 2 Edible Frogs
Joyner, Mrs C., 1 Mole Snake, 2 European Tree Frogs
Kampfner, Miss, 6 Locusts
Keating, Prosper, 1 Rufous Snake
Kentish Town Police Station, 1 Slowworm
Kerslake, Mrs, 40 Goldfish
Killip, Mr, 1 Weasel
Kingham, Mrs, 1 Mediterranean Spur-thighed Tortoise
Klemens, Mr M., 1 Spotted Terrapin, 1 Wood Terrapin, 1 Berlandier's Tortoise
Kynaston, P.C. 574, Taylor, P.C. 466, Chaffey, P.C. 457, Lindsay, P.C. 292, 1 Dark Green Snake
Lisicki, Mrs, 1 Mediterranean Spur-thighed Tortoise
London Anglers Association Willesden Police Branch, Collection of Roach, Rudd and Perch
Long, Miss Anne, 1 European Salamander
Lonstaff, Mr J., 1 Margouillat Agama
Lucas, Mr J., 2 Snappers
Maby, Mrs V., 7 Canaries
McQuade, Mr T., 2 Ornate Dabb Lizards, 2 Moila Snakes, 3 Leaf-nosed Snakes
Medway, Lord and Lady, 1 Yellow-streaked Lory
Member of Staff, 1 Canary-winged Parrakeet
Mercer, Mr, 1 Indian Python
Merlin, Mr R. J., 1 mantid
Metropolitan Police, 4 *Anisomorpha buprestoides*, 4 *Extatosoma tiaratum*, 1 *Orexines macklotti*
Ministry of Ag. Fish. and Food, 3 Nile Rats
Moore, Mr M., 2 Java Sparrows, 2 Orange-flanked Parrakeets, 1 Cockatiel
Morton, Mr R. A., 1 Red-eared Terrapin
Munther, Mr M. A., 1 Piranha
Neville, Master, 100 Stick Insects
Newmark, J. R. and G. H., 7 Long-headed Grasshoppers, 1 Solitary Grasshopper, 20 Desert Beetles, 6 Praying Mantis, 1 Whip Scorpion, 5 Pill Millipedes, 1 Jungle Scorpion, 20 polydesmid millipedes, 1 *Dytiscus* Beetle, 1 cricket, 1 centipede, 2 plant bugs, 4 leaf-insects, 1 Rhino Beetle, 5 spiders, 4 Indian Changeable Lizards, 1 Long-nosed Whipsnake, 1 Dhaman, 1 Merrem's Hump-nosed Viper, 1 Eyed Skink, 1 Grey Monitor, 2 Common Chameleons, 1 skink, 1 *Mabuya macularia*, 2 Green Toads, 6 Painted Frogs, 6 Ceylon Tree Frogs, 2 Indian Bull Frogs, 9 Asiatic Toads
North, Mr C., 1 Cooke's Tree Boa
Nuffield Institute of Comparative Medicine, 15 Clawed Jirds
Ozorio, Mr, 1 Water Rail
Paivansalo, Mr Mirja, 1 *Clarias* sp.
Pardoe, Mr F. W., 2 Mediterranean Spur-thighed Tortoise
Parker, Mrs Veronica, 8 Assam silkmoth cocoons
Parsons, Mr M., 2 European Tree-frogs
Priestley, Mrs, 1 Common Agama
Riley, Mr A. E., 2 Grey Singing Finches
Riva, J. P. and J. D., 1 Arawana
Roberts, Mr D. J., 1 Map Terrapin
Robinson, Mr C., 4 Axolotls
Rodway, Mr P., 2 Ferrets
Romer, Mr J. D., 1 Carpet Python, 1 Amethystine Python
Room, Dr P. A., 1 Western Cottonmouth
Savage, Mrs, 6 *Cichlasoma severum*
Schomberg, Mrs G., 2 Mandarin Ducks
Sherrington, Dr Andrew, 4 Mudpuppys, 1 American Toad, 4 Giant Toads, 1 American Bull Frog, 4 Leopard Frogs, 2 Green Frogs, 1 Lion Ameiva, 3 Brown Anole, 1 Gray's Anole, 4 Common Garter Snakes, 1 Red-bellied Snake
Skipper, Mr R., 8 *Alestes nurse*, 1 *Distichodus affinis*
Smith, Mr A., 2 Texas Coral Snakes
Smith, Mr C., 1 Layard's Bulbul, 1 Little Green Bee-eater
Smith, Mrs M. H., 2 Mediterranean Spur-thighed Tortoises
Smith, Mrs P., 3 Mediterranean Spur-thighed Tortoises
Strang, Mr, 1 Razorbill
Stuart, Mr, 1 Small-scaled Dabb Lizard
Stuart, W. A., 2 Leaf-nosed Snakes, 1 Asian Swift Lizard, 2 Rough-skinned Geckos
Swainson, Miss Jill, 6 Gipsy Moth larvae
Taylor, Dr K., 3 Acacia Rats, 2 Swamp Rats, 4 Harsh-furred Mice, 4 Striped Grass Mice, 3 Long-tailed Thicket Rats, 3 Gerbils sp. inc.
Twycross Zoo, 1 Abyssinian Colobus
Viner, Mr J., 1 Red-eared Terrapin
Warbey, Mr B., 1 Red-eared Terrapin, 1 Spanish Terrapin
Weir, Dr B., 6 Casiraguas, 2 Degus
Wellcome Institute, 6 Degus, 6 Cuis
Whitall, Mr P. H., 2 Starred Agamas
White, Dr G. B., 1 Nduk Eagle Owl
White, Mr L. A., 1 Hermann's Tortoise
Whittaker, Mr, RSPCA Heathrow, 1 Spectacled Cayman, 1 Musk Turtle, 1 Two-banded Chameleon, 1 Giant African Snail, 2 Royal Pythons
Whitworth, Miss M., 2 Bengal Pittas
Wilkins, Mr G. A., 1 Southern Painted Terrapin

Wingate, Mr, 7 Desert Scorpions
 Ziss, Mr H., 3 Mediterranean Spur-thighed Tortoises
 Zuurdeeg, Mr M., 11 Striated Finches, 20 Bengalese Finches, 3 Chestnut-breasted Finches, 2 Avadavats, 1 Saffron Finch, 1 Black-crested Finch, 17 Gouldian Finches, 1 Nutmeg Fruit Pigeon, 2 Barred-shouldered Doves, 1 Shama, 5 Painted Quails, 1 Purple-naped Lory, 1 Yellow-backed Lory, 1 Dusky Lory, 1 Black-winged Lory, 4 Western Black-capped Lory, 1 Triton Cockatoo, 1 Eclectus Parrot, 1 Guiana Parrotlet, 1 Celestial Parrotlet, 1 Cockatiel, 1 Green-winged Dove, 5 Zebra Doves, 3 Malay Necklace Doves, 1 Barbary Dove

WHIPSNADE PARK
 Allwright, Mrs J., 1 Cockatiel
 Barnes, Mr and Mrs P. L., 1 Grey Parrot
 Bond, Mrs E., 10 Guinea Pigs
 Bryant, Mr, 2 Muscovy Ducks
 Buxton, Mr A., 2 Common Rheas, 4 Sarus Cranes
 Carey, Mrs E., 1 Southern Hill Mynah
 Everall, D., 1 Fat Dormouse
 Lancaster, C. G., 1 Tortoise
 Leckford Estate Limited, 4 Eyton's Tree Ducks
 Mew, C., 8 Rabbits
 Nelms, S., 2 Tortoise
 Smith, Miss D. M. and Such, Miss E. T., 5 Chimpanzees

DONATIONS TO THE ZOOLOGICAL RECORD FUND

	£
American Entomological Society	19.30
American Ornithologists' Union	19.77
American Society of Ichthyologists & Herpetologists	187.52
American Society of Mammalogists	164.78
Anonymous	100.00
British Museum (Natural History)	1,450.00
British Ornithologists' Union	16.00
British Trust for Ornithology	3.15
California Academy of Sciences	9.60
Canadian Society of Zoologists (Volume 106)	20.33
Canadian Society of Zoologists (Volume 107)	19.64
Challenger Society	5.25
Conchological Society of Great Britain & Ireland	2.00
Duke University, Department of Zoology	19.25
Entomological Society of Alberta	3.94
Entomological Society of America	79.84
Geological Society of London	5.25
Kennicott Club	9.52
Linnean Society of London	20.00
Liverpool School of Tropical Medicine	3.00
Loveridge, A.	14.00
Malacological Society of London	2.10
The Mammal Society of the British Isles (Volume 107)	5.00
The Mammal Society of the British Isles (Volume 108)	5.00
Michigan, University of	41.00
Paleontological Society	20.36
Royal Entomological Society	10.00
Royal Society of Tropical Medicine & Hygiene	10.00
Society of Systematic Zoology	123.71
Transvaal Museum	5.25
Wellcome Research Laboratories	17.50
	£2,412.06

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- BJELKE-PETERSEN, J. Report of the Committee on the Problem of the Crown-of-Thorns Starfish. 1971.
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- Coefficients of natural selection. By L. M. Cook. 1971.
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- Cassell's natural history. 8v. 1877-82.

MONTAGU, THE HON. I.

NAPIER, DR J. R.

NEWMARK, G. H. AND J. R.

PRINCE, J. H.

RENE-MARTIN, MRS L.

RICH, DR E. E.

ROWLANDS, DR I. W.

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OF ENGLAND

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STANBURY, D.

SVENSSON, U.

SWEENEY, C.

THOMPSON, G.

WILSON, J. E.

WOLSTENHOLME, DR G. E. W.

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Bird display and behaviour. By E. A. Armstrong. 1947.

The calls of the koala. By Ambrose Pratt. 1937.

Camera adventures in the African wilds. By A. R. Dugmore. 1913.

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Emigration, migration and nomadism. By W. Heape. 1931.

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Wildlife and the camera. By A. R. Dugmore. 1912.

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Monkeys and apes. By Prue Napier. 1970.

Old world monkeys: evolution and systematics and behaviour. Ed. by J. R. Napier and P. H. Napier. 1970.

Birds of Ceylon, 4. By W. W. A. Phillips. 1961.

Marine game fishes of the world. By F. La Monte. 1952.

Animals in the night: senses in action after dark. By J. H. Prince. 1968.

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Animal life of Malawi. By R. C. H. Sweeney. 1970.

Tropical freshwater aquaria. By G. Cust and P. Bird, 1970.

Lectures delivered before the Sunday Lecture Society, Newcastle-upon-Tyne. 1887.

Chemical influences on behaviour. Ed. by R. Porter and J. Birch. 1970.

Control processes in multicellular organisms. Ed. by G. E. W. Wolstenholme and J. Knight. 1970.

Effects of external stimuli on reproduction. Ed. by G. E. W. Wolstenholme and M. O'Connor. 1967.

Hearing mechanisms in vertebrates. Ed. by A. V. S. De Reuck and J. Knight. 1968.

Mutation as cellular process. Ed. by G. E. W. Wolstenholme and M. O'Connor. 1969.

Preimplantation stages of pregnancy. By G. E. W. Wolstenholme and M. O'Connor. 1965.

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Taste and smell in vertebrates. Ed. by G. E. W. Wolstenholme and J. Knight. 1970.

WOOD, G. L.

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Birds of Australia. Illustrations by John Gould. Text by A. Rutgers. 1967.
Conservation of Nature. By E. Duffey. 1970.
The Guinness book of records. 1971.
The mystery of animal migration. By M. Ricard. 1969.

Meetings during 1972

Scientific Meetings at 5.0 p.m.

Tuesday, 8th February

Tuesday, 14th March

Tuesday, 11th April

Tuesday, 9th May

Tuesday, 13th June

Tuesday, 10th October

Tuesday, 14th November

Tuesday, 12th December

Symposia

'Biology of Myriapoda' (in association with the Centre Internationale de Myriapodologie, Paris). This symposium will be held in the University of Manchester from Wednesday, 5th April to Wednesday, 12th April.

A symposium on primate biology in celebration of the centenary of the birth of Sir Grafton Elliot Smith will be held on Thursday and Friday, 9th-10th November.

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 1971, 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
21st February 1972

Balance Sheet at 31st December 1971

1970				
£	£		£	£
	96,751	Sundry creditors and receipts in advance		148,739
	200,783	Short term loans and Bank overdraft		199,973
	91	Heer Bequest		91
	5,135	Fantham Bequest (note 1)		5,000
	15,181	Nuffield Institute Fund (note 2)		14,649
	31,919	Wolfson Donation Fund (note 3)		63,702
		Publications Funds (note 4)		
25,564		Zoological Record Fund	13,929	
15,434		Neave Lloyd Fund	13,794	
—	40,998		—	27,723
	16,552	Composition Fund		16,627
	1,039	Staff Benevolent Fund (note 5)		1,082
		Reserves		
89,831		General Reserve (note 6)	90,000	
220,067		Buildings Replacement Fund (note 7)	254,870	
100,000		Pensions Contributions Reserve	100,000	
—	409,898		—	444,870
	120,621	General Purposes Account		120,621
	<u>£938,968</u>			<u>£1,043,077</u>

For the notes which form part of these accounts see page 69

Income and Expenditure Account for the year ended 31st December 1971

1970		INCOME		
£	£		£	£
28,105		Members' subscriptions and entrance fees	31,369	
4,379		<i>Less</i> transferred to publications	4,885	
<hr style="width: 50%; margin-left: 0;"/>	23,726		<hr style="width: 50%; margin-left: 0;"/>	26,484
		Interest and dividends		
27,935		General (after allocation to funds in 1971)	18,263	
5,389		Net income from De Arroyave Fund (note 10)	5,084	
57		Income from Davis Fund (note 11)	57	
<hr style="width: 50%; margin-left: 0;"/>	33,381		<hr style="width: 50%; margin-left: 0;"/>	23,404
		<i>Scientific</i>		
30,431		Sale of scientific publications	28,845	
8,837		Educational scheme - visits	11,460	
2,315		Young Zoologists' Club	2,582	
13,653		International Zoo Yearbook	14,550	
<hr style="width: 50%; margin-left: 0;"/>	55,236		<hr style="width: 50%; margin-left: 0;"/>	57,437
		<i>Regent's Park</i>		
558,122		Admission of visitors to Gardens	679,350	
28,367		Admission of visitors to Aquarium	33,098	
19,948		Admission of visitors to Children's Zoo	28,077	
1,118		Chimpanzees' tea party	735	
3,636		Riding receipts	3,573	
2,872		Push chairs, hire of	2,968	
51,116		Catering and other services, net income	71,377	
18,157		Zoo Restaurants Ltd.	18,298	
2,421		Television and film permits	1,734	
1,091		Animals	2,330	
6,126		Miscellaneous receipts	8,800	
<hr style="width: 50%; margin-left: 0;"/>	692,974		<hr style="width: 50%; margin-left: 0;"/>	850,340
		<i>Whipsnade</i>		
112,494		Admission of visitors to Park	171,126	
7,866		Admission of visitors to Children's Zoo	11,684	
33,951		Admission of cars to Park	41,623	
3,496		Train receipts	3,225	
2,062		Riding receipts	2,868	
453		Push chairs, hire of	481	
8,985		Car parks - parking fees	9,815	
2,136		Farm, gardens and forestry sales	1,042	
5,873		Animals	7,692	
7,639		Catering and other services, net income	13,810	
1,095		Miscellaneous receipts	1,360	
<hr style="width: 50%; margin-left: 0;"/>	186,050		<hr style="width: 50%; margin-left: 0;"/>	264,726
		Deficit carried to Balance Sheet	<hr style="width: 50%; margin-left: 0;"/>	<hr style="width: 50%; margin-left: 0;"/>
60,940				
<hr style="width: 50%; margin-left: 0;"/>	<hr style="width: 50%; margin-left: 0;"/>		<hr style="width: 50%; margin-left: 0;"/>	<hr style="width: 50%; margin-left: 0;"/>
£1,052,307			£1,222,391	

For the notes which form part of these accounts see page 69

1970		EXPENDITURE			
£	£		£	£	£
	83,121	General administration			92,585
	—	Contribution to Buildings Replacement Fund			26,000
	32,577	Interest on short term loans			21,578
		<i>Pensions</i>			
10,145		Payments to pensioners		9,335	
35,109		Contribution to Trustees of Pension Fund		37,674	
<u> </u>	45,254			<u> </u>	47,009
		<i>Scientific</i>			
20,777		General scientific	23,259		
6,535		Wellcome Institute	12,817		
38,561		Nuffield Institute	48,617		
<u> </u>			<u> </u>	84,693	
16,944		Library		17,478	
22,927		Scientific publications		24,106	
10,350		Educational scheme		12,179	
3,972		Young Zoologists' Club		5,190	
11,407		International Zoo Yearbook		12,600	
<u> </u>	131,473			<u> </u>	156,246
		<i>Regent's Park</i>			
		Menagerie			
6,437		Rates and insurance	7,428		
261,317		Salaries	290,669		
51,697		Provisions	56,922		
46,757		Fuel, light, water, transport	58,663		
27,894		Miscellaneous	27,634		
<u> </u>			<u> </u>	441,316	
		Works			
81,315		General maintenance	93,679		
1,567		Alterations	4,634		
<u> </u>			<u> </u>	98,313	
20,104		Gardening		21,907	
20,868		Advertising		29,401	
6,777		Purchase of animals and exhibits		6,529	
<u> </u>	524,733			<u> </u>	597,466
		<i>Whipsnade</i>			
		Menagerie			
6,288		Rates and insurance	7,037		
100,839		Salaries	118,692		
37,706		Provisions	44,644		
16,110		Fuel, light, water, transport	17,390		
14,419		Miscellaneous	15,311		
<u> </u>			<u> </u>	203,074	
		Works			
28,966		General maintenance	32,235		
2,093		Alterations	4,315		
<u> </u>			<u> </u>	36,550	
9,968		Farm, gardens and forestry		14,394	
12,772		Advertising		20,617	
5,988		Purchase of animals		5,852	
<u> </u>	235,149			<u> </u>	280,487
		Surplus carried to Balance Sheet			1,020
<u> </u>	<u> </u>			<u> </u>	<u> </u>
	£1,052,307				£1,222,391

Wellcome Institute of Comparative Physiology

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31st DECEMBER 1971

	£	£		£	£
Ford Research Fund - interest and dividends		15,112	Salaries (including pension contributions)		28,807
Research funds transferred from Birmingham University		12,670	Laboratory and other scientific expenses		5,837
Society's contribution		12,817	Administrative charges		2,306
		<hr/>	Heating, lighting and miscellaneous		3,244
		40,599	Purchase of equipment		405
					<hr/>
			Expenditure from project grants:		40,599
Project grants		3,999	Salaries	3,458	
			Scientific expenses	541	
				<hr/>	3,999
		<hr/>			
		<u>£44,598</u>			<u>£44,598</u>

BALANCE SHEET AT 31st DECEMBER 1971

Sundry creditors and receipts in advance		1,948	Sundry debtors and payments in advance		3,588
Capital Account (Ford Research Fund):			Investments at cost (market value £310,841)		231,822
Balance 1st Jan. 1971	235,638		Cash on deposit and in hand		11,372
Add Profit on investments	6,963				
	<hr/>	242,601			
Equipment Fund:					
Balance 1st Jan. 1971	2,693				
Less Maintenance and renewals	460				
	<hr/>	2,233			
		<hr/>			
		<u>£246,782</u>			<u>£246,782</u>

Notes on the Accounts

31st December 1971

		£	£	£
1. Fantham Bequest	Balance at 1st January 1971			5,135
	Investment income			514
	<i>Less: Expenditure</i>			5,649
	Balance at 31st December 1971			514
2. Nuffield Institute Fund	Balance at 1st January 1971			15,181
	Donations and grants			134,717
	Society's contribution			48,617
	<i>Less: Salaries (including pension contributions)</i>		127,555	198,515
	Scientific expenses		41,037	
	Other expenses		15,274	
	Balance at 31st December 1971			183,866
3. Wolfson Donation Fund	Balance at 1st January 1971			31,919
	Donation (instalment)			30,000
	Investment income			1,783
	Balance at 31st December 1971			63,702
4. Publications Funds				
	Balance at 1st January 1971			
	Sales and donations			
	<i>Less: Publication and distribution costs</i>			
	Balance at 31st December 1971			
5. Staff Benevolent Fund	Balance at 1st January 1971			1,039
	Investment income			43
	Balance at 31st December 1971			1,082
6. General Reserve Fund	Balance at 1st January 1971			89,831
	Fees of deceased Compounders (from Composition Fund)			425
	Net profit on sale of investments			41,121
	<i>Less: Arrears of rent, Canal Bank</i>		2,695	131,377
	Transfer to Rebuilding Account		38,682	41,377
	Balance at 31st December 1971			90,000
7. Buildings Replacement Fund	Balance at 1st January 1971			220,067
	Investment income			8,803
	Transfer from Income and Expenditure Account			26,000
	Balance at 31st December 1971			254,870
8. Stocks	No values are included in the Balance Sheet for:			
	a. Animals			
	b. Library books and pictures			
	c. Plant, vehicles, fittings and furniture			
9. Rebuilding Account	Balance at 1st January 1971			138,186 Dr.
	New works			341,008
	<i>Less: Transferred from General Reserve</i>		38,682	479,194 Dr.
	Donations and grants (received or due):			
	H.M. Government	155,660		
	Sobell donation (instalments)	170,270		
	Miscellaneous	4,315		
Balance at 31st December 1971		330,245	368,927	
10. De Arroyave Fund	The capital of the De Arroyave Fund is held by the Official Trustee of Charitable Funds. The income from the Fund was £5,129, and from this £45 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.			

Welcome to the Journal of Comparative Physiology

Volume 158, Number 1, December 1985

Edited by R. W. G. Anderson and J. A. Grimbergen

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