THE ZOOLOGICAL SOCIETY OF LONDON

Annual Report 1985-1986

Fellows will be aware that as a result of amendments to the Bye-laws agreed by postal ballot and approved by the Privy Council on 17 June 1985, the Accounts of the Society shall be made up to 31 March in each year.

This Report covers the period from 1 January 1985 to 31 March 1986. Animals in the Collection, however, will continue to be recorded on an annual basis.

Published by

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

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

A new Charter was granted to the Society in 1963.

The Society's Gardens in Regent's Park—now known all over the world as the London Zoo—were opened in 1828. A hundred years later the Society acquired and, in 1931 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 other 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. The Wellcome Institute of Comparative Physiology and the Nuffield Institute of Comparative Medicine were founded during the 1960's. These well-equipped laboratories, with the Veterinary Hospital and the Curators' research units, were joined in 1977 to form The Institute of Zoology, thus greatly extending the scope of research which can be undertaken 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 159 years of its existence.

The Society's publications include:

The *Journal of Zoology*, which contains papers covering all fields of zoology. It is now produced in two series: Series A (being the *Proceedings of the Society*), three volumes (12 parts) are published annually *and* Series B (incorporating the *Transactions of the Society*), two parts are published each year.

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 27 parts dealing with the different animal groups. From Volume 115, the *Record* is published in conjunction with BIOSIS (BioSciences Information Service/Biological Abstracts, Philadelphia, USA).

The *Nomenclator Zoologicus* contains the names of all the genera and subgenera in zoology from the 10th Edition of Linnaeus 1758 to the end of 1965, with a bibliographical reference to the original description of each. The work contains approximately 280,000 entries and is published in 7 volumes.

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

Report of the Council

The Council has pleasure in presenting its 157th Annual Report to the Annual General Meeting of the Society to be held on 24th September 1986 at 4.00 pm in the Society's Meeting Room at Regent's Park.

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PATRON: HER MAJESTY THE QUEEN

COUNCIL 1985–1986

President: Sir William Henderson, DSc, FRCVS, FIBiol, FRSE, FRS
Treasurer: The Rt. Hon. Lord Peyton of Yeovil
Secretary: R. M. Laws, CBE, PhD., FIBiol, FRS
The Rt. Hon. Peter Archer, QC, MP
Lady Casson, RIBA, FSIA
The Rt. Hon. Lord Charteris of Amisfield, GCB, GCVO, OBE, QSO, *Vice-President*
The Earl of Cranbrook, MA, PhD, FLS
Professor B. A. Cross, CBE, ScD, MRCVS, FRS
Professor E. J. Denton, CBE, ScD, FRS
Sir Arthur Drew, KCB, JP
D. C. Evered, BSc, MD, FRCP, FIBiol
Professor B. K. Follett, PhD, DSc, FRS
The Viscountess Macmillan, DBE
Professor N. A. Mitchison, DPhil, FRS
J. F. Peake, BSc
C. E. Gordon Smith, CB, MD, FRCP, FRCPath, *Vice-President*
Professor Sir Richard Southwood, MA, DSc, PhD, ARCS, FIBiol, FRS, *Vice-President*
T. A. P. Walker
Sir Richard Way, KCB, CBE, *Vice-President*
H.G. The Duke of Wellington, MVO, OBE, MC, *Vice-President*
Sir Philip de Zulueta, MA

HONORARY FELLOWS

Date of Election
1977 HRH The Prince Philip, Duke of Edinburgh, KG, KT
1971 His Majesty Emperor Hirohito of Japan, KG
1975 Professor Jean Anthony
Muséum National d'Histoire Naturelle,
55 rue de Buffon, Paris 53, France
1975 Professor L. D. Brongersma
Rijksmuseum van Natuurlijke Historie,
Leiden, Holland
1978 Professor José Carvalho
Museu Nacional,
Quinta da Boa Vista,
Rio de Janeiro, Brazil 20940
1957 Professor Robert Courrier
L'Institut de France (Académie des Sciences),
23 Quai de Conti, Paris 6, France
1975 Professor Jean Dorst
Muséum National d'Histoire Naturelle
(Mammifères et Oiseaux),
55 rue de Buffon, Paris 53, France
1978 Sir Charles Fleming
Balivean, 42 Wadestown Road,
Wellington, New Zealand
1952 Professor Sven Otto Hörstadius
Zoologiska Institutionen, Uppsala, Sweden
1984 Professor George Evelyn Hutchinson
Dept of Biology, Osborn Memorial Laboratories,
Yale University, P.O.B. 6666, New Haven,
Connecticut, USA
1984 Professor Ernst Mayr
Museum of Comparative Zoology,
Harvard University, Cambridge,
Massachusetts, USA
1974 Dr Roger Tory Peterson
Route 4, Box 131, Neck Road, Old Lyme, Connecticut,
USA
1984 Professor Lord Zuckerman, OM, KCB, FRS
University of East Anglia, Earlham Hall, Norwich

Introduction by the President

In my introduction to last year's Annual Report, I described the events which led up to the Government's recognition of the Society's need for assistance in the short term and in the long term. As a result the Society received revenue grants of £2 million for 1984/85, and for 1985/86: it will receive a similar grant in respect of 1986/87. Additionally the Society has received capital grants of £2 million during the period. Towards the end of this year a review will be carried out on the progress which the Society has made. For the sake of convenience and in order to fit in with the Government's own financial arrangements, the Society's financial year will begin on 1 April. Consequently this Report covers the period from 1 January 1985 to 31 March 1986.

This period has been one of consolidation and preparation for the implementation of the Society's plans for the future. The first priority is to introduce new and improved presentations of selected groups within the Collections for the greater interest and enjoyment of visitors. The new assistance from the Government, the continued support from Fellows and Friends and the admission charges paid by the general public have enabled certain demolitions of out-dated structures to be carried out and certain improvements of the amenities to be effected. Much larger funds are required for new buildings or developments and full advantage must be taken of the Government's generous offer to match £ for £, up to £0.75 million per year, whatever the Society can raise from private sources.

One event of great satisfaction to the Officers and Council was the acceptance by the Prime Minister of an invitation to a reception at London Zoo when the other guests included members of Government and prominent industrialists. Mrs Thatcher drew attention to the support of Government and asked for further assistance from the private sector for the Society's capital expenditure on new buildings. The developments planned for 1986–1993 are The Coral Reef Aquarium, a new building; The Arctic Wilderness, to be achieved by a remodelling of the Mappin Terraces; The World of Insects, to be constructed inside the Mappin Terraces following the creation of the new aquarium on a separate site; the Children's Zoo and Family Centre; and a new Entrance and Information Complex.

The Management Committee, under Lord Peyton's chairmanship, has undertaken much of the burden of the day to day affairs, particularly those relating to management and finance. This has made possible a reduction in the number of Council meetings and enabled it to give more attention to scientific affairs. An independent Development Trust has been set up under the chairmanship of Sir Derek Palmar for the express purpose of fund raising.

With the participation of the Secretary, Dr R. M. Laws, and the Director of Science, Professor J. P. Hearn, a series of meetings has been held with Heads of Zoology Departments from a number of universities. As a result of these meetings, it was agreed to establish a Zoology Liaison Group with the Society. The first meeting was held on 1 July 1985. Professor R. J. Berry (University of London) was elected Chairman and Professor K. Simkiss (University of Reading) Secretary. The aim of this Liaison Group is to consider what is happening to the discipline of zoology in the Universities and Learned Societies and to explore regions of common benefit. From the universities' point of view, zoology is an integrating discipline but its growth centres and value to society need representing. The Society, for its part, wishes to strengthen the promotion of zoology as a scientific discipline and to assume a greater role in pleading the cause for zoology in the present adverse climate for the furtherance of biological sciences.

This Report records, briefly, the most significant of the many activities of the Society during this period of fifteen months. Of increasing importance as a result of a growing demand is to provide advice and services for the creation of new Zoological Gardens. The first success in this field was the opening in 1984 of the new Zoo in the Doha Municipality, Qatar. The Society is assisting in the development of other projects in the Middle East in the role of consultant, represented by Mr D. M. Jones, Director of Zoos.

The ultimate success of these endeavours depends upon a strong and healthy organization which it is the Society's privilege to possess and which reflects great credit on the leadership provided by Mr J. L. Boyer, Chief Executive Officer.

Wm. M. Henderson

President

Review of the Period

Annual General Meeting

The Annual General Meeting was held on 8 May, with the President, Sir William Henderson, in the Chair.

In accordance with Article 12 of the Charter Dr R. M. Laws (appointed in 1984 as Secretary to fill the casual vacancy created by the resignation of Professor J. G. Phillips), retired from office. In accordance with Article 10 of the Charter the following Fellows retired as Ordinary Members of the Council: Dr E. D. Barlow and Mr C. J. Perrin (Ordinary Fellows); Dr R. H. Hedley and Professor L. Wolpert (Scientific Fellows). Sir Terence Morrison-Scott (Ordinary Fellow) also retired from Council at his own wish.

In accordance with Articles 11 and 12 of the Charter and Byelaw 26 Dr R. M. Laws was elected Secretary and the following Fellows were elected Members of Council: The Rt. Hon. Peter Archer, The Viscountess Macmillan and Mr T. A. P. Walker (Ordinary Fellows); Professor B. A. Cross, Dr D. C. Evered and Mr J. F. Peake (Scientific Fellows).

The President presented the following awards for contributions to zoology:

THE PRINCE PHILIP PRIZE (awarded for an account of practical work involving some aspect of animal biology, by a pupil under 19 years of age of a school in the United Kingdom) to *Miss Elizabeth M. Attfield,* of Beaconsfield High School, for her essay 'An investigation of the suitability of broad bean plants for *Aphis fabae*'. The award was received on Miss Attfield's behalf by Mrs Margaret Bainbridge, biology teacher at Beaconsfield High School.

THE STAMFORD RAFFLES AWARD (awarded to an amateur zoologist for distinguished contributions to zoology) to *Dr W. Le Quesne,* for distinguished contributions to the taxonomy and biology of Hemiptera with special reference to the leafhoppers (Auchenorhyncha).

THE THOMAS HENRY HUXLEY AWARD (for original work submitted as a doctoral thesis) to *Dr L. Martin,* University College, London, for his thesis 'The relationships of the later Miocene Hominoidea'.

THE SCIENTIFIC MEDAL (awarded to persons under 40 years of age for distinguished work in zoology) to *Dr I. A. Johnston,* University of St Andrews, for research on the comparative physiology of teleost muscle. The President also announced the award of a Scientific Medal to *Dr J. P. Croxall,* of the British Antarctic Survey, Cambridge, for contributions to knowledge of the ecology, population dynamics and energetics of seabirds in relation to the trophodynamics of the marine ecosystem; owing to Dr Croxall's absence abroad the medal could not be presented at the meeting.

THE ZOOLOGICAL SOCIETY OF LONDON FRINK MEDAL FOR BRITISH ZOOLOGISTS (awarded to zoologists for significant and original contributions to zoology in its wider implications) to *Professor P. C. C. Garnham, CMG, FRS,* for distinguished contributions to malarial protozoology, in particular for work on the Haematozoa of mammals, birds and reptiles.

Obituaries

The Council records with deep regret the deaths of Monsieur Jean Delacour, Honorary Fellow since 1945; Professor Ghilarov, Member of the USSR Academy and Honorary Fellow; Dr H. Hoogstraal, Honorary Fellow; Professor Geoffrey Herklots, Corresponding Member; Professor Eric Ashton, Scientific Fellow; Professor Ernest Barrington, Life Scientific Fellow and former Vice-President of the Society who, as sometime Chairman of the Awards, Publications, Zoological Record and Zoological Record Advisory Committees, gave invaluable advice over many years; Professor George Wells, Scientific Fellow and former Vice-President of the Society; Dr Errol White, Life Scientific Fellow, former Keeper of Palaeontology at the British Museum (Natural History) and former member of Council; Professor Sir Alister Hardy, Scientific Fellow; Mr Frank Aspinall Lowe, Scientific Fellow for 61 years, ornithologist, lecturer and author; Sir Iain Moncreiffe of that Ilk, Life Fellow; The Hon. David Hely-Hutchinson, Life Fellow; Mr George H. Newmark, Life Fellow and one of the indefatigable Newmark twins, who, as the result of numerous collecting trips overseas, presented more than 2,000 specimens to the Society, mainly for the Insect and Reptile Houses.

Amendments to Byelaws and Regulations

A resolution recommending amendments to the Byelaws was submitted in February to a postal ballot of Fellows living in the United Kingdom. The result—1,146 Fellows in favour and 32 against the resolution, with 6 spoilt papers—was announced at the Annual General Meeting. The amendments were then submitted to the Privy Council and approved on 17 June 1985.

The Byelaw revisions are summarized in Appendix 6.

Membership

At the end of the subscription year (31 December 1985) there were 2,492 Fellows and 4,317 Associates, including 225 Student Associates.

Professor George Evelyn Hutchinson of the Department of Biology, Osborn Memorial Laboratories, Yale University and Professor Ernst Mayr of the Museum of Comparative Zoology, Harvard University were elected Honorary Fellows. Although neither could attend the Annual General Meeting, it was fortunate that Professor Hutchinson was able to visit the Society in June to be presented with his certificate, and that the President had an opportunity to deliver Professor Mayr's certificate during a visit to Harvard later in the year.

Friends of the Zoos

This new scheme, which replaced the season ticket arrangements and also embodied the former XYZ Club, was launched on 5 March 1985 and by 31 March 1986 totalled 1,718 Family Friends, 3,840 Adult Friends, 69 Student Friends and 434 Junior Friends.

Events

Four evening openings were held at London Zoo, one of which was also open to the public. Two evening openings were held at Whipsnade. The series of lunch-time talks continued to prove popular. We were fortunate in once again having the Chandos Singers for a Carol Concert in December. Open evenings with talks and guided tours, were held in the Aquarium and Insect House, the latter proving so popular that it was repeated. There were three issues of the enlarged and restyled Newsletter.

Finance

Government grants for the period totalled £4.5 million made up of revenue grants of £1.5 million for its year ended 31 March 1985 and £2 million for its year ended 31 March 1986, plus £1 million capital grant. A further £2 million revenue grant will be received for the year ending 31 March 1987 and capital grants of up to £0.75 million to match £ for £ what the Society can raise from private sources. The Government will then review its level of support.

The Society's operating deficit before other and exceptional income for the period is £3.12 million compared with the operating deficit for the restated period of 1 January 1984 to 31 March 1985 of £2.99 million. After deducting Government revenue grants of £3.5 million the surplus for the period is £983,900 which includes £324,500 transferred to the Building and Equipment Fund as a result of consultancy work and £125,500 from the sale of Ashley House. After deduction of the deficit carried forward from the previous year of £255,000 the balance carried forward is £278,900.

The total number of visitors to both Zoos over the period is almost identical to the previous 15 month period, being 0·6% higher. Income from gate receipts has improved as Council increased prices last summer by an average of 7·8% which represents an inflation adjusted increase of 2·7%. Although this was sufficient to offset inflation on most cost heads it was not enough to cover the £508,200 spent on backlog maintenance.

Following the change in the Society's financial year, the accounting year for Zoo Restuarants Ltd and Zoo Enterprises Ltd was changed from October to March. These are five months when income is invariably low and expenditure relatively high and consequently the results of both companies do not fully reflect the improvements that have been achieved over the period.

Donations, Grants and Gifts

Council wishes to express its thanks to all those who made contributions to the Society's general funds, in particular, £1,000 from the Kweller Charitable Trust and £1,608.75 from the Federation of Zoos.

The following legacies were also received: An additional sum of £12,216 from the estate of Mr J. H. Hayes, £5,000 from the estate of Mrs I. G. Ashdown, £1,000 from the estate of Mrs E. M. Tingle and £500 from the estate of Miss D. A. Checkley.

Grants amounting to £555,600 were received to support the important work of the Institute of Zoology: further details are given in Appendix 7.

Again, many additions to the Collections were presented by members of the public and by government, local authorities and other establishments.

The London Zoo

Visitors during the Period: 1,405,000

General

Comparable attendance figures for a 15 month period ended 31 March 1985 were 1,369,000 and the increase of 2.6% can be considered as acceptable. The wet summer of 1985 was offset by good conditions in September/October whilst the severe winter conditions during February 1986 were compensated for by having two Easter holidays in the period under review.

The strategy of making best use of the media by aiming at increased family visits continued and television advertising was used at peak periods. In addition, the London Zoo advertising poster was widely used in the local areas.

The major exhibition of the year was the Plant Eaters which featured the excellent collection of hoofed animals housed on the Cotton Terraces. New informative graphics, thematic displays and hands-on devices were used to increase visitors' knowledge and enjoyment of these animals.

Other smaller exhibitions were opened in the Clore Pavilion for Small Mammals and in the Elephant House.

Daily events continue to play an important part in entertaining and informing visitors to London Zoo.

July was the first National Zoo Month organized by the National Federation of Zoos. Events at London Zoo included a very stimulating performance of Urban Man by Alberto Vidal in conjunction with the London International Festival of Theatre, and a Wonderland Beano evening party. Later in the month the Zoo's own evening opening ' The Do in the Zoo ' was well supported.

Other events were organized in conjunction with the BBC Television Superstore programme, Nicholas Laboratories Ltd, Libby McNeill & Libby Ltd, and the Inner London Education Authority Music Centre.

The Society continues to receive daily requests for information and assistance from a wide national and international range of sources. Major consultant services have been requested for design and management of new zoos being planned in Dubai and Sharjah. Services continue to be provided to Doha Zoological Gardens in Qatar.

The Collection

Mammals

A most welcome and notable arrival to the Mammal Collection was a two-year-old female Asiatic Elephant, kindly presented by the Department of Wildlife and National Parks of Malaysia. The animal had become separated from her herd during translocation operations. She has been named ' Layang-Layang ', which is the local name for a Malaysian kite and the emblem of the Malaysian Airline System who generously flew her to Britain. She provides companionship for our six-year-old female elephant, 'Dilberta'. Both are being brought up to be thoroughly handleable, so that they are able to spend much of each day walking around in the Zoo among the gardens and visitors.

The birth of an Arabian Oryx calf, the first ever in Britain, was a milestone in a 25-year-old conservation success story. In 1963 a female was sent to Phoenix, Arizona, from London Zoo to help found the tiny nine-strong World Herd of this species which was about to be hunted to extinction in the wild. The captive herd has thrived, now numbers over 250 individuals, has been distributed to some 20 different institutions, and is being successfully reintroduced into the wild in Oman and in Jordan.

Breeding among the mammals was generally good, with births in over 90 species. Those which particularly merit mention include a Gaur, Bongo, Brazilian Tapir and Slow Loris; two each of Golden Lion Tamarin, Chimpanzee, Vicuna, Pudu, and Giraffe; three each of Mandrill, Leopard, Jaguar and Roan Antelope; and larger numbers of Beavers, Jerboas and Otters. The two Chimpanzees were the firstborn of inexperienced mothers, and both are having to be handreared.

The ape moves co-ordinated via the Anthropoid Ape Advisory Panel are beginning to show tangible benefits. The male Gorilla received on deposit from Chessington during 1984 has now proved himself, and currently we have pregnant females of all three great ape species. We continued to take in female Orang Utans from other collections for mating, and a young female born in Blackpool Zoo as a result of this co-operative policy, has been transferred to the Collection at London Zoo.

The death of ' Ching-Ching ' the female Giant Panda at the age of 13, from peritonitis was deeply regretted. She had not been in good condition for four years, and had been receiving a great deal of expert treatment for a series of major digestive problems. The male ' Chia-Chia ' continues to enjoy robust good health.

Major disappointments also were the abortion by the female Okapi of twin half-term foetuses, and an abortion by the pregnant female Gorilla, ' Zaire ', on breeding loan from Jersey.

Among species newly acquired were a pair of Bontebok from Rotterdam, a pair of Red Ruffed Lemurs from San Diego, six Brush-tailed Bettongs and six Zebra Mice from New York, two Prevost's Squirrels from Hong Kong, and a group of eight Dwarf Mongooses from West Germany.

Quarantine restrictions are constraints on the range of species which can be imported from overseas, but co-operative programmes within the British Isles flourish. The participation in such schemes has involved over 20 British zoos; among the major moves were those of Orang Utans to and from Blackpool and from Dudley, of Giraffes to and from Chessington, of Californian Sealions to and from Colwyn Bay and to Windsor, of Red Panda and Pygmy Hippo to Marwell, and of Polar Bears to Dudley and from Chessington.

In preparation for the planned development of the Mappin Terraces, homes were found in other collections for all five species of bears, and for the Raccoons, Coatis, Foxes, Barbary Sheep, Mouflon, Markhor and Chamois.

The newly-instituted ' Meet the Animals ' programme proved very successful. Keeper staff brought out a selection of the handleable animals in their care, and exhibited them in the Bovis Hummingbird Amphitheatre. Among the animals shown were Chimpanzee, Camel, Goat and Penguins which were being handreared, and a Llama, Alpaca, and Amazon Parrot which are accustomed to the attentions of large numbers of appreciative visitors.

The Elephant Weighing demonstration, Sealion feeding, and the milking demonstration of domestic cows all provided further opportunities for contact between keepers, their animals and the public. So, too, did the animal rides, of which over 181,000 were given on camels, donkeys and ponies, and in pony trap and Llama carts.

The young Red Squirrels reintroduced into the wild in Regent's Park in late 1984 fared reasonably well and although no breeding took place in 1985, a great deal was learnt from their interactions with the resident Grey Squirrels.

Birds

1985 was in many ways a difficult year for the bird section and this was, to some extent, reflected in a reduction in the number of species and individuals bred compared with previous years. There was considerable disturbance in the Zoo during the breeding season, mainly because of demolition and other essential work. This also led to considerable movement of birds within the Collection, and in some cases out of the Collection. These problems coupled with an unusually long cold spring with its relatively short days and low temperatures, caused an overall reduction in the breeding performance of many species.

However, among the 149 individuals and 35 species successfully bred, there were some of particular interest and value. Perhaps the most significant was the handrearing of three Congo Peafowl. This shy, ground-haunting pheasant which occurs in the rainforests of eastern Zaire is a close relative of the Asiatic Peafowl, and is the only true pheasant found in Africa. Most remarkably, it was not discovered until 1936 when J. P. Chapin found two mounted specimens in the Congo Museum in Tervueren, Belgium. They had been wrongly identified as the Blue Peafowl and were assumed to be birds escaped from captivity, but Chapin realized that they were a species new to science for which he, on the evidence of one feather, had been searching for 23 years.

At present, there are only 60–70 of these birds in 12 zoos and collections, and ours are the only ones on public display in Britain. All Congo Peafowl in captivity belong to the Antwerp Zoo who, as part of a cooperative breeding programme have generously loaned birds to a number of selected zoos and private collections. The parents of the three bred here arrived in November 1984, and laid their first clutch by May 1985. As the birds will re-lay, eggs were taken away and artificially incubated. Four hatched, and three were successfully reared.

Other noteworthy breeding successes included the artificial incubation and handrearing of eight Blackfooted Penguins (the best year yet), two Humboldt's Penguins, two Crowned Cranes, 17 Indian Grey Francolins, a Stone Curlew, four Puna Teal, and a Goosander.

Parent-reared birds included Sacred Ibis, Abdim's Stork, Chilean Flamingos, Hawaiian Geese, Eider Duck, Perfect Lorikeets, Eclectus Parrot, Splendid Grass Parrakeets, Rock Peplars, a Barraband Parrakeet, and seven species and subspecies of owl.

Species introduced into the Collection included Chilean Tinamou, Crested Wood Partridges, a male White-faced Scops Owl, a Rusty-barred Owl, a male Hyacinthine Macaw, White-crested Laughing Thrushes, a pair of Asian Pied Starlings, a Javan Hill Mynah, and a pair of Pileated Jays. An attractive collection of foreign finches was also generously presented.

The Bird of Prey aviaries, opened in 1910 after a design by David Seth-Smith, and the small Tropical House opened in 1897 as a Giant Tortoise House and later converted, were demolished.

They were both in a bad state of repair and their destruction was inevitable. All the birds from the Tropical House were accommodated within the Collection: ten species of Birds of Prey were found other housing and are still on view, and the rest were found homes elsewhere. 'Goldie' the famous Golden Eagle, and the two young Andean Condors bred here, plus a number of other birds were sent to the Birds of Prey Conservation and Falconry Centre in Newent, Gloucestershire. The adult Andean Condors, 'William' and 'Mary', we sent to Chessington Zoo where they now live in a large, well-landscaped aviary. All the birds transferred have settled in well.

Reptiles

Twenty-two species totalling 403 individuals were bred during the year. Of special interest was the breeding of the Lesueur's Water Dragon for the first time both in this Collection and in the United Kingdom. Also of interest was the production of two sets of twins from two eggs of a clutch of five laid by a Stinkpot Mud Terrapin, a rare occurrence among chelonians. Equally rare, if not unique in captivity, were the large number of eggs laid by an Eyed Lizard which produced 101 eggs in 10 clutches, and two Leopard Geckos which produced the normal two eggs per clutch, but each laid ten clutches.

Interesting new acquisitions included Leaf-tailed Geckos, Golden Water Skinks, Brown Pythons, Taipans, and Tiger Snakes from Taronga Zoo. HM Customs presented Namib Geckos and Hallowell's Green Mambas, and this is the first time the former species has been exhibited in the United Kingdom. The Forestry Commission presented two Adders, two Grass Snakes, and one Smooth Snake, all long term captives, from their reptiliary in the New Forest. They will shortly be on view in a new exhibit of British Reptiles.

The continued increase in the number of reptiles bred is a reflection of the improvements being made both in their management, in preventive medicine, hygiene, diets, and environmental conditions, including the use of ultraviolet lighting, and in improved incubation techniques.

New electrical services were installed along the east side of the Reptile House which, in addition to the normal lighting requirements, provided for the use of ultraviolet lighting, heat lamps and heat pads, all controlled by time-clocks.

Work commenced on the Chinese Alligator and Desert Exhibits on the balcony site. An air-conditioning unit was installed which, together with heat pads set on the floor, and basking and ultra-violet lights, will allow for the provision of greatly superior environmental conditions. These exhibitions are scheduled for opening in the summer of 1986.

Refurbishment of a number of exhibits was carried out and, with the help of the Design and Information Unit, a number of graphic displays are being prepared to enhance the educational value of the Reptile House.

The volunteer programme was much appreciated by visitors, and the weekly 45 minute talks, including a commentary while the reptiles were fed were very popular. Snakes were also taken into the public area of the house so that visitors could see them at close quarters.

Aquarium

The prospect of building a new Aquarium has led to the full utilization of the present Aquarium for trial of the newest specialized techniques. These include modern filtration, lighting effects, vegetation growth and improved display. These studies are being largely carried out using the old turtle tank and

the results assist in identifying the optimum specifications for new tanks. A successful conclusion to this work will be greatly helped by the recent appointment of Dr Chris Andrews as Assistant Curator of the Aquarium. Stocks of fish that will be required for the new Aquarium are being built up. A coral tank has been established containing an impressive variety of invertebrates and brightly coloured fish as an indication of what may be expected on a much larger scale in the new coral reef exhibit in the new Aquarium.

The striking community of South American fish in the Tropical Freshwater Hall has continued to develop. The provision of supplementary filtration has produced much better water clarity and observation conditions for the several large Arapaima, Pacu, Sting Ray and Catfish. Other community tanks that have been developed have included a good British river display and an exhibit of feeding techniques with Sterlet and Sturgeon.

The Aquarium now contains among its major features, a fine range of British freshwater fish, an active group of paddlefish, a 16 lb Pike and a 27 lb Carp, some large Moray Eels and Nurse Sharks, as well as Electric Eel and large Lungfish.

Major consignments of freshwater fish have been generously presented by the Thames Water Authority and a large batch of Moonfish or Malayan Angels from Sri Lanka were also donated.

In the Amphibian section, young were bred among the Axolotls, Common Frogs, Oriental Fire-bellied Toads, and Fire Salamanders.

Insect House

Two new displays were prepared, one of South American butterflies, and the other of a variety of large Stick Insects demonstrating natural camouflage. Other improved displays included the development of a nocturnal section exhibiting active Scorpions, Cockroaches, Giant Mealworms and Stick Insects; a split-level display of African Bush Crickets and Millipedes; the installation of filtration systems in the aquatic exhibits, resulting in better water clarity and improved animal survival; better backgrounds for desert beetles and hermit crabs; and the setting up of attractive habitat displays for the large spiders.

The breeding and rearing successes included the hatching, and subsequent rearing, of Lubber Locusts from eggs laid here seven months earlier; the rearing from eggs of hundreds of mantids; the rearing from hatchlings of several large spiders; and among butterflies the continued progress of the *Heliconius melpomene* stock and the breeding of *Demodocus* to the third generation.

Among invertebrates acquired for display in the Insect House were a Red-backed Black Widow Spider, various mantids and Orb Spiders (as egg sacs) from Gambia, Assassin Bugs from Dudley Zoo, Bloodsplasher Crickets and Gem Chafers from Tunisia, Giant Millipedes and a Giant Dung Beetle from Kenya, Giant Millipedes and Centipedes from Seychelles, and Desert Beetles from Qatar.

Building, Services and Grounds

The allocation of funds specifically for Backlog Maintenance enabled a start to be made on renovating some of the many buildings needing attention. The general approach has been to carry out first the necessary repairs to the sounder more recent buildings in order to halt deterioration, apart from older ones that were in critical need of repair, and to concentrate on roofs.

In addition, the programme of improving the Zoo's extensive services has continued. New heating boilers have been installed to serve the Nuffield Building, Main Offices, and Pavilion Building, as well as a number of lesser facilities; these have all been converted to use gas, which has enabled the length of the underground heating mains to be reduced for better energy management and economy. Electrical services continue to be upgraded, with the main effort going into a complete new installation for the East Side of the Reptile House. Closed circuit television was installed at the Zoo Entrance to provide security cover. The ageing telephone services were replaced by Plessey Communications Systems Ltd with a single new system, requiring the installation of new underground ducts throughout the grounds. Removal of asbestos continued to be a priority.

Since Regent's Park is designated a Conservation Area, consent is required to demolish, alter, or construct, buildings. Recently the Westminster City Council consented to the demolition of a number of ageing and out-of-date buildings. During 1985 the Old Education Building, Birds of Prey Aviaries, Tropical Bird House, and South Gate, were demolished and a start made on landscaping the sites to make them more attractive until future development takes place. In 1986 demolition commenced on the TV Offices, once used by Granada Television (and previously the animal Sanatorium).

The complex brief and plans for the New Aquarium were developed through extensive consultation, and staff visited aquaria in England and North America for specialist advice. While this major project has been the main priority for the Architects' Department, some minor improvements and developments have also taken place.

The catering facilities in the Regent Building continued to be improved. The first floor restaurant was redecorated by Compass Services as a functions facility; ground floor toilets were reconstructed and direct access provided from the new 'Café in the Zoo'. Outside, a paved terrace was laid, and has proved a popular extension to the Café in fine weather.

A start was made on the complete renovation of the Pathology Theatre in order to comply with the changes in safety regulations since it was constructed in 1963. Under the same contract, staff facilities are being improved for the Wellcome Laboratories Building. With the advent of the Zoo Act, a small number of safety barriers have been modified and deterrent planting increased. Before the baby elephant 'Layang-Layang' arrived from Malaysia, the elephant paddock was re-surfaced and a tree planted to provide future shade. A bronze head of Lord Zuckerman by Dame Elisabeth Frink, has been installed in the Entrance Hall of the Meeting Rooms.

In line with the policy of increasing the attraction of the gardens and exhibits to the visitor, the Gardening Department has continued to concentrate on public areas. The beds and shrubberies adjacent to the Zoo Entrance were renovated and re-planted, with much of the plant material being propagated in the Zoo, as a result of the re-organization in the glasshouses last year. The boundary planting along the Outer Circle Road and Prince Albert Road was renovated to provide a better impression for visitors coming to the Zoo. Landscape restoration of the New Lion Terraces continued with extensive works to the Tiger enclosure, including the installation of massive tree trunks, two from Whipsnade.

An area on the North Bank of the Regent's Canal, west of the Snowdon Aviary, has been planted with bamboo, *Arundinaria* sp., to act as a food source for the Giant Pandas. The Curator of the Royal Botanic Gardens, Kew, kindly assisted with advice on cultivation and by a generous donation of plants.

The Gardening Department has taken on a contract with Compass Services to maintain the indoor planting in the 'Café in the Zoo'. During the year, colourful plant displays were set up for the visits of H.M. The Queen to a reception given by the Royal Entomological Society of London, and of the Prime Minister, Mrs Margaret Thatcher, to a reception by the Honorary Officers of the Zoological Society of London.

Whipsnade Park

Visitors during the period: 383,000
Cars brought into the Park: 48,500

General

Whipsnade is far more vulnerable to bad weather than London Zoo and the wet summer in 1985, coupled with the worst February for 40 years, resulted in attendances being down by 6.6% against comparable figures for the 15 month period ended March 1985 of 410,000. The number of cars entering the Park increased.

1985 saw the beginning of the remodelling of Whipsnade. In an effort to reduce expenditure so as to bring costs closer to the Park's income, a start was made in concentrating the animal Collection within the main road circuit. By doing this, staff time in moving about the Park can be reduced and utilized more effectively to maintain the smaller Collection on public view. In the process of this reorganization, the Park will concentrate more on species most in need of conservation and introduce greater variety for the visitor without compromising Whipsnade's traditional attractions and its specific purpose of herd breeding.

The profits obtained from consultancy work in the Middle East enabled a series of six new buildings to be constructed:—an animal housing unit for the Institute of Zoology, already in use; a giraffe house; a new rodent-proof store; and three new 'antelope' houses—which were erected by contractors during the autumn of 1985. The fitting out of these buildings is being undertaken by the Society's staff and it is expected that the work will be completed by mid 1986.

A team, working under the auspices of the Manpower Services Commission, started work on converting the existing Asian House for the herds of White Rhinos and Waterbuck. Assistance was also provided by the Youth Opportunities Programme in converting a little-used public shelter in the Children's Zoo into an enclosure for European tortoises to house the nucleus of a breeding unit for these once common, but now threatened species.

The Collection

Amongst the animals disposed of were the North American Bison—long time inhabitants of 'Bison Hill' on the Downs, the flock of Chilean Flamingos and over 300 Bennett's Wallabies which were disposed of to other collections. Amongst other transfers were those of the male Indian Rhino born here in 1983 which was sent to Antwerp to provide what is hoped will be a breeding pair, and the Common Hippopotamus born in 1979 which was sent to the Mlilwane Wildlife Sanctuary in Swaziland as a mate for their lone female. Three White Rhinos were exported, one to Uruguay and two to Moscow. Three Kori Bustards and a Secretary Bird were sent on deposit to join the breeding programmes for these species at the Al-Areen Wildlife Park in Bahrain.

To promote the maintenance and breeding of the Cheetah collections in the British Isles, several movements took place, including animals to Marwell, Twycross and Fota (Eire), while Whipsnade received four from Marwell, two from Windsor, a pair from Regent's Park and one from Twycross. Four young were born at Whipsnade (second generation captive-bred) making a total of 110 born since 1967 in 32 litters from seven different males and eight females. In the White Rhino herd, a further three births were recorded making a total of 32 since 1971, and 29 Humboldt's Penguins were hatched from eggs laid in three periods; April, June and November/December bringing the total hatched since 1968 to 202. This species is now endangered in the wild but through perseverance in improving rearing techniques, virtually all the chicks hatched in captivity now reach maturity. A further six Cuban Flamingos were hatched and reared in the successful breeding flock, making an outstanding group of 65 of which 36 were hatched at Whipsnade. It is also planned to endeavour to breed Greater Flamingos. A new house for these birds will be erected adjacent to one of the ponds close to the Cloisters Cafeteria.

A new departure for Whipsnade was the setting up of a successful breeding unit for two species of European tortoise now listed by the International Union for the Conservation of Nature as threatened species. These are Hermann's tortoise and the Greek Spur-thighed tortoise. Both species were formerly imported into Britain in large numbers as 'household' pets but very little attention was paid to their husbandry and breeding. Eleven eggs were incubated and all hatched with the young flourishing.

With the co-operation of Windsor Safari Park, a female Bottle-nosed Dolphin was obtained to provide a breeding pair with the surviving male at Whipsnade.

Scientific and Educational Activities

Scientific Meetings

Ten Scientific Meetings were held in the fifteen months up to the end of March 1986. As has been the practice in recent years, each meeting was arranged around a theme, and non-members were again invited to attend the meetings, as a means of fostering interest in the work of the Society. Another meeting in the series ' The Scientific Basis of Wild Animal Husbandry ' was held in February 1985, on the subject of reptiles. The March meeting was on the theme of ' Functional aspects of parental investment in vertebrates '. the April meeting on ' Heavy metal contamination ', and the meeting in May on ' Functional aspects of vision in birds '. Sir David Attenborough was among the speakers at the June meeting on ' Measures of success in conservation ', which drew a particularly large audience. Meetings in the autumn covered ' Feeding ecology of seabirds ', in October, ' Invertebrates and the marine ecosystem ', in November and ' Wildlife in London: dispersal and colonization ' in December' ' Environmental sex determination ', in February, provoked some lively discussion. The last meeting in the period, in March, was on ' Primates and their malaria parasites: a phylogenetic approach '. The Society warmly thanks all the speakers who took part in the 1985–86 programme.

Symposia

One Symposium was held in the period: ' Immune mechanisms in invertebrate vectors ', held on 14 and 15 November 1985, and organized by Dr A. M. Lackie.

Publications

From the beginning of 1985, production and distribution of the *Journal of Zoology* and the *Symposia* have been undertaken by Oxford University Press.

Journal of Zoology. The change of publisher was marked by a change in the cover design of the *Journal*. On the recommendation of Oxford University Press, the *Journal* was divided into two series. *Series A* continues to appear monthly. Volumes 205, 206, 207 and 208 Parts 1 to 3 were published in the fifteen months from the beginning of 1985, and together contain 182 papers. *Series B* is a new series, containing longer papers and incorporating the former *Transactions* which was an irregularly published series of monographs. *Series B*, however, is published on a regular basis, each volume containing four parts, with two parts appearing each year, in February and August. Parts 1 and 2 of Volume 1 have been published, and together contain 13 papers.

The number of papers submitted for publication in the *Journal* continues to be very high, and Council is particularly grateful to the many referees who give their time to help in the assessment of these papers.

Symposia Two volumes were published in the period: No. 54, ' Advances in animal conservation ', edited by Professor J. P. Hearn and Dr J. K. Hodges, and No. 55, ' The ecology of woodland rodents: Bank voles and wood mice ', edited by Dr J. R. Flowerdew, Dr J. Gurnell and Dr J. H. W. Gipps.

Zoological Record Volumes 119 (1982 literature) and 120 (1983 literature) were completed during the year and contain references and detailed entries to some 72,000 and 75,000 published items respectively. The plan to overcome the back-log is proceeding satisfactorily and the *Record* is expected to be up-to-date with the publication of Volume 122 (1985 literature) during 1986/87.

Zoological Record Online, the computer-readable version of the *Record*, provides access to over 300,000 items and is updated monthly. The *Zoological Record Search Guide*, which was produced in March, explains how to use the online facility to maximum effect. BIOSIS continues its educational activities with a world-wide programme of training seminars and demonstrations.

The Board of Trustees of BIOSIS met at Garforth House, York, in October 1985, when an informal meeting was arranged with members of the Zoological Record Advisory Committee. This provided an opportunity for a useful exchange of ideas on the future of the *Record*. The Advisory Committee then held its annual meeting.

The Council expresses its gratitude to the Director General of the British Library, Lending Division, and to the Director of the British Museum (Natural History) for their help so generously provided.

International Zoo Yearbook

Volume 24–25 of the *International Zoo Yearbook* will be published in Summer 1986.

The amount of data handled annually by the *Yearbook*, particularly the records of captive breeding, has grown considerably in recent years, not only in respect of mammals and birds for which more species are appearing with increasing regularity in the lists but also with regard to the more neglected classes of fishes, amphibians and reptiles. While this demonstrates that more and more zoos are recognizing their role in the conservation of vertebrate species, it adds considerably to the task of collecting, sorting and recording the data for publication within a 12-month period. To allow more time for this additional work, other data which are regularly revised are being transferred to a computer.

Reflecting the growing interest in zoos in aquatic species, the special theme for Section 1 of Volume 26 is to be ' Aquatic Exhibits '. The broad interpretation which is being given to the term will allow a considerable variety of topics to be covered. These will include papers on breeding different kinds of aquatic animals, discussions on the increasingly diverse techniques being developed for their management and descriptions of recent, often spectacular, improvements in exhibit design and technology. Section 2, ' New Developments in the Zoo World ', will contain the usual wide range of papers on breeding, husbandry, hand-rearing and exhibition techniques. Volume 26 will also include the annual list of vertebrates bred in captivity, the rare animal census to 1 January 1985, the summary of studbooks, and the updated list of zoos and aquaria of the world, including a number of zoos which have not previously submitted data.

The Library

The Library has continued to provide a full service to members of the Society and its staff. A serious space shortage has been alleviated by the introduction of compact shelving into an additional area in the basement stock room. The Library staff is now engaged in the large scale rearrangement of the book stock necessary to take advantage of the extra space available.

Another problem which has been tackled is the organization of the Society's archives. One of the difficulties to be overcome was lack of space to store the bulky archive material. This has been solved by the acquisition of a microfilm camera, and by the use of temporary staff paid for by the Manpower Services Commission.

We are most grateful for the continued generosity of many people who have presented books to the Society. In particular: to Mrs P. A. Boon for her generous contribution for the purchase of the second volume on Kingfishers, published by Lansdowne Editions; to Professor Stacey B. Day, who continues to present valuable books, Professor Ari van Tienhoven from Cornell University, who again presented books, and to Mr A. W. Baker, who is a much appreciated donor of books. A collection of zoological works was donated by Lord Zuckerman, and a collection on fishes by Mr L. Monkhouse.

Others who donated books during the period under review include: Dr E. Barlow, Professor W. Bullough, Miss Ruth Cachemaille-Day, Irene Christie, Mrs S. Clarke, Mr John Edwards, Mr R. Fitter, Dr Harold Fox, Dr I. Krumbiegel, Mr E. Lande, Mr F. Lane, Mr Tom Law, Dr R. M. Laws, Mr Dennis Lock, Dorothy M. Myers, Dr M. Nixon, Professor G. Pilleri, Mr Nigel Sitwell, Professor John Stanley, Mr Vincent Weng-Yew Tung, Mr Vasantha Nugegoda, Mr G. L. Wood, The International Bee Research Association and the Rockefeller Medical Library. Mr P. H. Maxwell donated a set of animal pictures.

Education Department

Programme for Schools

At the beginning of the Summer Term, 1985, Mrs Frances Rogers and Mr Michael Ricketts joined the teaching staff. Mrs Rogers is the first specialist primary teacher to have been employed by the Society, and she has added greatly to the effectiveness of the work with infants' and junior schools. Mr Ricketts is based at Whipsnade, where half of his time is spent on educational matters, and half on promotional activities. Educational programmes at Whipsnade were previously conducted by London-based staff, Mr Ricketts, therefore, is an important addition to the Society's resources. The secondment of Mr Michael Down by the Inner London Education Authority to the Society's Education Department continued throughout 1985, but from January 1986, this was reduced to half-time. During the Spring Term of 1986 work began on the conversion of the former staff canteen at Whipsnade to an Education Centre. This provides a 60 seat lecture theatre, a small classroom, and other facilities. It will replace the prefabricated classroom which has been in use for many years, and will thus greatly improve the educational facilities.

A new tape–slide presentation on the London Zoo was completed, and a comparable tape–slide presentation on Whipsnade was prepared in readiness for the introduction of such aids for schools during the Summer Term of 1986.

Programmes for primary schools at the London Zoo were actively promoted during all three terms of the school year, and a gratifying growth took place in this sector. Schools in the Whipsnade area were visited, and encouraged to use the improved educational facilities at Whipsnade Park. During 1985, national industrial action by teachers began. At first this had minimal effects on zoo visits by schools and during the Spring Term of 1985 attendances by schools at the London Zoo were good. During the Summer Term, they were the best ever recorded, but in the Autumn Term of 1985 and the Spring Term of 1986, attendances fell off markedly. Other zoos, museums, and comparable exhibitions were affected in the same way. Nevertheless, the annual attendance figures for 1985, comparable to those for previous years, were good, being the second highest ever recorded. The numbers taught in London by volunteers and Education Department Staff during the four terms of the period covered by this Report are set out in the accompanying table. The numbers taught at Whipsnade, mainly in the Summer Term, 1985, total 4,862.

Other Courses and Events

During the 15 months period special lectures and demonstrations were organized for Barking College of Technology, Barnet College, the Berkshire College of Agriculture, Byam Shaw School of Art, Cambridge University Institute of Education, Chelsea School of Chiropody, the City Literary Institute, Croydon College, de Havilland College, Digby Stuart College, Guernsey College of Further Education, Hatfield Polytechnic, the International Centre for Conservation, King's College London, Kingston Polytechnic, the Mammal Society, North East London Polytechnic, North London Polytechnic, Norwich City College, Oxford University, Paddington Technical College, Peterborough Technical College, Roehampton Institute, Rose Bruford College, Royal Holloway College, Royal Veterinary College, South Bank Polytechnic, South London College, South Thames College, Thames Polytechnic, University College Cardiff, University College London, University of London Union Natural History Society, University of Buckingham, West Kent College of Further Education, Whitelands College, and Wolverhampton Polytechnic. Once again a half-course unit of the London B.Sc. Zoology degree was conducted in conjunction with the British Museum (Natural History).

In January 1985 a Sixth Form Symposium entitled *Reproduction and Wild Animal Ecology* was held. In both March 1985 and 1986 the Education Department assisted in the organization of special days out for The British Association of Science's Young Scientists. On each occasion several thousand enthusiastic Young Scientists visited the London Zoo, where special events were arranged for them.

Teachers' courses were organized for teachers from Essex, Hampshire, and the London Boroughs of Enfield, Waltham Forest and Haringey. During the Summer Term of 1985 a special symposium for teachers entitled *Advances in Zoology* was held. All of these events were well attended. At Easter 1985 the annual conference of the education staffs of British Zoos was held at the London Zoo. It was attended by 30 teachers from 18 different zoos. Materials were prepared and meetings organized for the new Friends of the Zoo organization.

Volunteer Activities

Additional volunteers were recruited during the Spring Terms of 1985 and 1986 and were trained to conduct tours of the London Zoo for primary school pupils. Volunteers were also trained to provide this service to schools at Whipsnade during 1986.

In the same period, other volunteers were trained to work with the public at the London Zoo. The success of this venture led to the introduction of a similar programme at Whipsnade. A welcome development at London was the setting up of an informal volunteer steering group to liaise with the staff of the Education Department so as to ensure the smooth operation of the volunteer activities.

	London Zoo			
	Spring Term 1985	Summer Term 1985	Autumn Term 1985	Spring Term 1986
Primary school pupils taught by volunteers	1,080	5,292	523	339
Other primary school pupils	2,082	18,781	2,390	2,618
Less academic secondary school pupils	501	280	258	80
11–13 year olds	9,366	8,022	2,467	2,405
14–16 year olds	4,459	596	965	1,414
GCE 'A' level pupils	2,881	191	1,643	1,949
Students from universities, polytechnics etc.	205	253	578	419
Sub-Totals	20,574	33,415	8,824	9,224
Total				72,037

Research

THE INSTITUTE OF ZOOLOGY

The Institute undertakes fundamental research in zoology and animal physiology of relevance to agriculture, conservation and medicine. This work is carried out in the Institute's laboratories at Regent's Park, in the Society's Zoos in London and at Whipsnade, and increasingly in the wild, to translate the results into practical methods of conservation of rare and endangered species. In order to make full use of the expertise in and the unique material available for the Institute's work, every opportunity is taken to collaborate with universities, hospitals, Research Council laboratories and others, both at home and abroad. Much of the Institute's work relies on the close collaboration and support of the Curators and Keeper staff of the Society.

The work of the Institute was independently reviewed in April 1985 by a Visiting Group from the Medical Research Council and the Agriculture and Food Research Council. It reported on progress and prospects to the Advisory Board to the Research Councils of the Department of Education and Science and to the Department of the Environment. It recorded that the Institute is a unique facility being fully exploited in a most imaginative way. It made a number of helpful suggestions for its future development. We are grateful to the members of the Visiting Group and the Institute of Zoology Committee, who regularly review the research programmes of the Institute, for the help they give in improving scientific standards.

This report presents a brief summary of research progress from 1 January 1985 to 31 March 1986. A full account of the research, teaching and other activities of the Institute is published in the Scientific Report (1984–1986) which is available on request. The names of senior staff involved in each of the research programmes are given in Appendix 2.

Veterinary Science

LONDON ZOO

675 animals from the Collection were examined clinically either in their houses or in the Veterinary Hospital. A further 151 patients were referred from private practice; 917 post mortems were performed, including 57 external cases. The health of animals in the Collection remained good. A revised calendar of preventative medicine procedures was developed, including schedules for vaccines, worming and clinical checks.

The Giant Panda Conservation Centre at Wolong was visited on three occasions in continuation of the Institute's programme of research and management of this species. Three scientists from Wolong have now spent six months working in the Institute, studying the reproductive physiology, nutrition and veterinary care of the Panda and learning methods of hormone assay, artificial insemination and anaesthesia.

WHIPSNADE PARK

521 animals from the Collection were examined clinically and 603 post mortems were carried out. Preliminary trials were carried out of new diets for Polar Bears, Reindeer, Moose, Rhinoceros, Red Pandas, Camels and Flamingos. Supplements of vitamin A overcame a problem with skin lesions in Polar Bears. New feeding regimes and diets, differing significantly from those used for domesticated ruminants, provided encouraging improvements in body condition and antler growth in Moose and Reindeer.

PATHOLOGY

All the animals that die in the Zoos are examined to determine the cause of death and to seek to improve diagnosis and treatment. The level of accidental or non-natural deaths are lower than in most collections and considerably lower than would be expected in the wild. However, neonatal losses are high in all collections and a more focused research programme is being developed to reduce such losses to a minimum. Allied to this is the development of better methods of intensive care and the artificial rearing of young. This is especially related to diets and the analysis of their ingredients.

HAEMATOLOGY

The unit provides a diagnostic haematology service for animals referred to the Hospital. Detailed studies of the normal and abnormal haematology of rare Deer, large Cats, Penguins, Flamingos and Tortoises were carried out during the past year. A start was made on computerization of all haematology and pathology results, to provide a basis for a rapid diagnostic service for zoos and animal collections. Research projects were completed on the cytoskeleton and surface properties of blood cells that are affected in diseases such as sickle cell and other anaemias; and on the haematological changes associated with sedation and anaesthesia in ungulates such as the Scimitar-horned Oryx and Black Fallow Deer. An expedition to the Seychelles was undertaken to study the normal haematology and blood biochemistry of the Giant Tortoise, providing important data that will improve the diagnosis and treatment of disease in captive Tortoise.

CONSERVATION GENETICS

Captive populations are playing an increasing role in species conservation. The purpose of research in this area is to develop breeding programmes based on sound genetic principles both in captive collections and in identifying individuals for reintroduction of species to the wild. Emphasis was given to completing an inventory of endangered species in British Zoos and to completing breeding programmes for Great Apes, Scimitar-horned Oryx, Rothschild's Mynah and the Siberian Tiger. Work has continued on reintroduction programmes of Scimitar-horned Oryx to Tunisia and of Père David's Deer to China, scheduled for 1986. A programme is being developed to analyse the loss of significant genes following generations of breeding of animals in captivity, assessing the probability of survival or loss of the genes of the founder animals. This research is supported by the National Federation of Zoological Gardens of Great Britain and Ireland and by the World Wildlife Fund (UK). It is being developed in close collaboration with the International Union for Conservation of Nature and Natural Resources and the Species Survival Commission.

Comparative Physiology

DEVELOPMENTAL BIOLOGY

Two Zebra and four Przewalski's Horse foals were born from embryos transferred as one week old blastocysts to pony mares. Hormonal studies during these pregnancies provided interesting results, raising new questions about the requirements for chorionic gonadotrophin during pregnancy. The project confirms that domesticated horses may be used to accelerate the production of exotic equids.

The freezing, storage and transfer of Marmoset Monkey embryos was developed successfully with 60% survival to term of frozen/thawed embryos and over 75% survival of freshly transferred embryos. The high rate of success suggests that primate embryos can be frozen without damage and the results are relevant both to the conservation of rare primates and to aspects of human infertility. Marmoset chorionic gonadotrophin was purified from trophoblast cell lines that have now been maintained for three years in the laboratory. Monoclonal antibodies raised against this hormone were used to study its function during embryo implantation.

Gamete Biology

Artificial insemination procedures were developed for the Blackbuck, resulting in a total of five live births from nine inseminations with fresh semen. In addition, one young was born following three inseminations with frozen semen. These results are encouraging as they promise good prospects for successful artificial insemination in other Antelope species.

Considerable progress was made in the development of objective methods for assessing sperm motility and fertilizing capacity, using a computerized system in association with *in vitro* fertilization bioassays. The system is now being tested for application to the human and to a range of rare species. Allied studies are in progress to examine the properties of sperm membranes undergoing freezing, the effects of toxic agents in the environment on male fertility, the development of monoclonal antibody markers of sperm maturation and the reproductive biology of marsupials and birds.

Endocrinology and Behaviour

Several new hormone assays were established, including a highly sensitive assay for oestradiol and iodinated assays for progesterone and testosterone. In addition, new enzyme based assays (ELISA) for progesterone and pregnanediol were developed. Research was concentrated on the factors affecting growth of the follicle in Marmoset Monkeys and the use of mini-pumps that deliver tiny pulses of gonadotrophin releasor hormone to induce ovulation in exotic species. Studies are in progress on the detection of ovulation and pregnancy in the White Rhinoceros.

Projects were initiated to study the ways in which the dominant female may inhibit fertility in subordinate Marmoset Monkeys and in Naked Mole Rats. The chemical messages involved in this phenomenon are being isolated and their effects on hypothalamic and ovarian function investigated. A computer programme was developed to allow the sequential analysis of behaviour in these and other species, in order to identify the subtle ways in which individual animals exert dominance. The system may also provide a method for assessing stress in animal groups.

Physiological Ecology

The physiological mechanisms that control seasonal reproduction and metabolism are being studied in Red Deer, Père David's Deer, Axis Deer and in Bennett's Wallaby. The role of melatonin in advancing the breeding season of these species was investigated and shown to have a rapid effect on terminating embryonic diapause in the Wallaby. The physiological development of the Wallaby pouch young does not reach normal mammalian levels until about 80 days after birth, before which time the Wallaby young functions physiologically as a foetus. The opportunities presented for studying the development of physiological mechanisms that normally take place in most mammals during late gestation, should provide a novel field of research.

A new building was completed at Whipsnade to house hand-reared Red and Père David's Deer.

Comparative Medicine

Applied Immunology

A major effort was made to refine methods for the inexpensive, rapid diagnosis of disease in man and animals, by incorporating monoclonal antibodies into previously developed enzyme assays (ELISA). These included assays for the antigens of malaria, Chagas' disease, visceral leishmaniasis; the monitoring of, snake venoms and the antibody response to them in patients suffering from snake bites. In addition, collaborative studies with Developmental Biology and Gamete Biology were pursued in developing monoclonal antibodies against cell surface proteins on sperm and embryos.

Microbiology

A study was completed of ' lumpy jaw ' disease (necrobacillosis) in Wallabies, known to be a serious problem both in captivity and in the wild. Attempts to develop a vaccine were unsuccessful, due to the unusually low antigenecity of the causative agent. However, schedules for treating the disease with antibiotics were refined and a number of preventive measures against the disease were established. A study of bovine and caprine pleuropneumonia, a serious problem of ruminants in many countries, was also completed. The results provided an improved method for serological diagnosis of the disease and a number of interesting basic findings on the taxonomy of the mycoplasmas that cause the infection.

Nutritional Biochemistry

Fundamental research on the metabolism of essential fatty acids and its relation to prostaglandin production showed striking species variations in the utilization of lipids. Research continued on the requirements of essential fats and vitamin E for brain development in chicks, and for normal placental function. From this basic work, projects were carried out to determine the vitmin requirements of Dolphins in captivity; the nutritional requirements of women in late pregnancy, in collaboration with Unilever Research, Holland; and the use of new diets for patients with multiple sclerosis, in collaboration with Action Research for Multiple Sclerosis.

A start was made on a nutritional database that includes the major foods eaten by animals in the wild and the optimal diets for them in captivity. It is hoped that improvements in synthetic diets will result from this study. The database will also carry detailed analyses of milk from a variety of species in order to develop synthetic diets for rare animals being handreared in captivity.

Radiology

The use of ultrasound as a non-invasive diagnostic method was applied in a number of projects, including the diagnosis of pregnancy in Great Apes, New World Monkeys, Dolphins, Killer Whales and Blackbuck. Ultrasound proved useful in monitoring ovulation and early pregnancy in Marmoset Monkeys, checking

the viability of bird and reptile eggs; and in determining the sex of young Beavers, Snakes and Lizards.

The skeletal development of Iguanas maintained under different regimens of light and vitamin D was studied to improve the captive management of reptiles, a high proportion of which survive for only short periods in captivity. The results provided a new regimen for dietary supplementation of vitamin D and also a clearer definition of the thresholds required for normal bone development.

Conservation and Welfare

Mammals, Aquarium and Insects

Of the 25 species of hoofed stock in the Collections, half of them threatened in the wild, 21 species produced offspring. In addition, 25 species of rodents produced young, including, for the first time at Regent's Park, Philippine Cloud Rats and Naked Mole Rats; and there were births from 20 species of primates and 12 of carnivores. In all of these species, careful observations and records will help to ensure greater success in future.

As a part of the joint breeding programmes with British zoos, large numbers of animals, mostly born in the Society's Collections, were transferred elsewhere to join breeding groups. Increasingly, the pedigrees and genetic status of these animals are known, ensuring the preservation of the species on sound genetic principles.

A project was initiated to study the enrichment of environments provided for captive animals in order to introduce procedures of management and feeding that provide greater diversity, activity and enjoyment for the animals and for the public. In the Aquarium and the Insect House, experiments on new methods of management and display are expected to lead to more attractive and natural exhibits.

Birds and Reptiles

New, rapid methods for the sexing of birds, using small fibre-optic laparoscopes, were applied widely in many British zoos, leading to improved breeding in many collections.

Research on the incubation and hatching requirements of eggs continue with the aim of establishing the causes of embryonic mortality. These studies, in collaboration with the Royal Veterinary College, are now focusing on the effects of humidity and airspeed on water loss from eggs. Allied to this work is the development of new diets. As a result of this research, there has been a minor population explosion of birds and reptiles. Among the latter, bred for the first time in Britain, are the Innes Cobra, Long-nosed Viper and Fat-tailed Gecko. Ultrasound was used successfully to determine the viability of eggs and an X-ray survey for nutritional and bone deficiencies in reptiles was completed.

Whipsnade

Breeding successes at Whipsnade are too numerous to list here, but major advances have continued with Cheetah, Rhinoceros, Rosy Flamingos and Humboldt's Penguins. There was a considerable increase in research work at Whipsnade, including the studies referred to under Physiological Ecology. In addition, a study of copper retention in the liver of Chinese Water Deer, in collaboration with the MRC Clinical Research Centre, Harrow, provided novel results, showing the presence of copper in the nuclear and cystolic fractions of the cell. A large number of students in biological and veterinary sciences spent periods of study at Whipsnade, either assisting in research projects or being trained in the veterinary care of exotic species.

Field Studies

A project on the ecology of the Naked Mole Rat in Kenya was completed, providing the first detailed study of these extraordinary animals in the wild. A colony was successfully established in the Institute and is breeding well, enabling detailed research on their behaviour and reproductive physiology. A perspex 'burrow' system was developed in the Institute workshop, to which the animals have adapted well and which allows continuous observation. Sub-colonies were established, one of which was transferred to the Clore Pavilion for display.

Studies of the urban ecology and behaviour of Grey Squirrels were extended to include a reintroduction of Red Squirrels to Regent's Park.

Other projects proceeding in the field are studies of the reproduction of Vervet Monkeys and of the Black Rhinoceros in Kenya. In addition, collaborative projects are in progress on the nutrition and reproduction of the Giant Panda in China and the conservation of Marmoset Monkeys in Brazil.

General Matters

Catering Department and Zoo Restaurants Limited

LONDON ZOO

The catering operations which are managed on the Society's behalf by Compass Services, had a very successful and profitable period. Increased trade in the Café in the Zoo and tighter management control contributed towards greatly improved sales.

The Restaurant in the Zoo had a successful year and the number of functions held in the former Members' Restaurant increased to 230 in the period as opposed to 207 during the comparative period in 1984/85.

WHIPSNADE PARK

Sales continue to be sluggish in the Catering Department due to the increasingly outdated facilities. A major review of the catering operations was carried out for the Society by United Biscuits Ltd and their recommendations will form the basis of future planning for the catering operation at Whipsnade Park.

The function business continued to flourish and there were 53 private functions in the period as opposed to 37 in the comparative period in 1984–85.

Zoo Enterprises Limited

Zoo Enterprises Ltd operates the retail shops at London Zoo and Whipsnade Park on the Society's behalf.

Sales and profits increased very satisfactorily during the period with total sales, excluding VAT, exceeding £1.2 million.

At London Zoo the success was attributed to a new temporary ice cream kiosk, new self-selection merchandising methods in the Gift Shop and a continually improving product range. Whipsnade Park also benefited from new self selection methods and from the improving product range.

The Design and Information Unit

The Design and Information Unit continued to develop interpretative graphics and information for visitors in both zoos.

Among major projects at London Zoo were the Small Mammals exhibition in the Clore Pavilion, graphics for a new Bee display, the Plant Eaters exhibition which was the centrepiece of the Zoo's activities in 1985, and graphics for the Elephants. Other work included a special exhibition of the work of the Society, new signposting and a major review of internal stationery involving the production of leaflets, booklets and amendments to the Zoo Guide.

At Whipsnade Park the Unit conceived and created the new Exhibition Hall in the Children's Zoo, provided informative graphics for the Plant Eaters and Elephants, and introduced new identification signing for the paddock animals.

Public Relations

The Society and its Zoos continued to receive extensive coverage from the media in both editorial and news areas. Topics which were well covered during the period included the launch of the London Zoo Development Plan with details of the proposed new Aquarium, the National Zoo Month activities at London Zoo and of a number of conservation achievements.

It was very pleasing to see the media's response to such projects as the Red Squirrel Watch, the birth of a baby Zebra to a surrogate mother, and the re-introduction of Scimitar-horned Oryx to Tunisia, Père David's Deer to China, and a Hippopotamus to Swaziland.

The appointment of a Public Relations Officer at Whipsnade Park during 1985 greatly improved the liaison with the media and good relationships were established with local newspapers and radio stations. Chiltern Radio carries a fortnightly Zoo spot and the new BBC Radio Bedfordshire station is starting a similar service.

The number of ' photocalls ' at Whipsnade Park also increased covering such events as the arrival of ' Lady ' the new female Dolphin, the birth of White Rhino calves and a Christmas Reindeer event.

Much credit for the Society's good press relations must go to Miss Joan Crammond who retired as Press Officer at the end of 1985 after 28 years' service.

The Animal Adoption Scheme continued to attract positive media support and this helped to raise income of £105,500 for the care and maintenance of the animals and to give enjoyment to no less than 2,268 generous adopters. Well known personalities such as Duncan Goodhew, Lulu, Stephanie Lawrence, David Essex, Paul Young, Bruno Brookes and the team of Queen's Park Rangers Football Club all assisted greatly in the drive for publicity for the scheme.

The Society's marketing and advertising effort remained at a high level and the London Zoo advertising poster came second in the London Visitor and Convention Bureau's President's Award for Marketing. A market research exercise at London Zoo provided useful data for future marketing planning.

Staff

At the 31 March 1986 there were 398 full-time members of staff. A list of the senior members of staff is given in Appendix 2.

GENERAL

At the invitation of the Society ACAS (Advisory, Conciliation and Arbitration Service) undertook a survey of industrial relations, personnel policies and related matters at the end of 1984. Arising from its report and recommendations changes were made in the constitution of the Joint Consultative Committee, and a programme of management and supervisory training was commenced, using mainly courses provided by the Industrial Society.

Seven of the original 10 Youth Training Scheme trainees completed their course and a further 12 started a fresh course in September. We are most grateful to Mrs Ryan and Mr Higgins of Paddington College for the time and effort given to the off-the-job training. Mrs Ryan also ran a course at London Zoo for GLC keepers from Battersea Park Zoo and Brent Lodge.

Periods of training were also arranged for other Zoo personnel, some from overseas, in animal departments, and for veterinary students in the animal hospital, together with short periods of experience in clerical work for some teenagers undertaking office/business studies.

Eight students were successful in the final examination for the Higher Certificate in Zoo Animal Management, a Nobby Ashby Prize being awarded to Marisa Kelly. Fifteen staff were successful in the final examination for the Ordinary Certificate in Zoo Animal Management, a Nobby Ashby Prize being awarded to Shelley Moore.

In the national examinations for the City and Guilds certificate in Animal Management Marisa Kelly and Neil Bemment gained a Distinction and a Credit respectively.

General pay increases were awarded in line with those of various outside bodies, mainly in the public sector, which have been used as analogues under longstanding agreements.

Awards

The completion of 25 years' continuous service was recognized by the presentation of gold watches to Mr R. Ashmore, Groundstaff Foreman, London Zoo; Mr M. K. Boorer, Education Officer; Mr W. Daines, Headkeeper, Bird House, London Zoo; Mrs C. Datlen, Records Clerk, Whipsnade; Mr D. Eyre, Acting Headkeeper, Parrot House, London Zoo; Miss H. Holliday, Senior Keeper, Whipsnade; Mr C. Wears, Deputy Architect.

Retirements

Retirements (years of service in brackets) included: G. Callard (44), Headkeeper, Sobell Pavilions; W. Gribble (42), Senior Keeper, Lion Terraces; S. Oborne (41), Electrician; W. Daines (41), Headkeeper, Bird House; L. Powell (40), Equipment Superintendent, Works Dept; Mrs I. Nicoll (40), Senior Clerk, Whipsnade; N. Thornton (40), Foreman, Purchasing and Transport; G. Dumbelton (39), Senior Keeper, Aquarium; G. Figgett (39), Asst Public Services Manager; G. Stanbridge (38), Senior Overseer, Whipsnade; D. Ellis (37), Headkeeper, Pheasantry and Ostrich House; S. Morton (37), Headkeeper, Mappin Terraces; R. Watkins (37), Headkeeper, Parrot House; R. MacMullen (32), Senior Keeper, Bird House; Miss J. Crammond (28), Press Officer; W. Allsopp (24), Park Policeman, Whipsnade; Mrs N. Cullen (17), Senior Supervisor, Retail Dept.; L. Taverner (17) Maintenance Manager.

Obituaries

We regret to record the deaths of Miss Samantha Coller, YTS trainee, London; Mrs J. Flory, Technician, Wellcome Laboratories; Miss H. Holliday, Senior Keeper, Whipsnade, and of the following pensioners: Mrs E. Read and Messrs P. Bates, L. Gladman, C. Harwood, F. Hughes, M. Magnier, M. Othonos, P. Rook, A. Smith and H. Weber.

Acknowledgements

The Council wishes to thank the many Fellows and others who give their time to serve on advisory committees, thus greatly aiding the work of the Society.

The help and advice provided by scientists, veterinarians and many firms and organizations is much appreciated. Details of this help may be found in Appendix 7.

R. M. Laws.

Secretary

APPENDIX 1

Committees 1985-1986

Management Committee

Terms of Reference: To advise Council on all financial, commercial and marketing aspects of the Society's activities; to be responsible for the preparation of the Society's annual operational budget for the Council's approval and to monitor its progress; to monitor expenditure on capital projects provided for under separate funds; to be responsible for the planning and monitoring of all the Society's commercial activities, including pricing policy and the advertising, promotion and marketing programmes.

Sir David Attenborough, CBE, FRS
C. J. Benson, JP, FRICS
W. P. Bowman, OBE
D. L. Donne
The Hon. William McAlpine
R. Parker
C. J. Perrin, MA, *Deputy Chairman*
The Rt. Hon. Lord Peyton of Yeovil, *Chairman*
W. J. Shively
Sir Richard Way, KCB, CBE
Secretary: J. L. Boyer, OBE

Animal Welfare and Conservation Committee

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

Miss Mary Brancker, OBE, FRCVS
T. Clutton-Brock, MA, PhD
J. E. Cooper, BVSc, MRCVS, DTVM, FIBiol
C. M. Dawes, BSc, PhD
R. Ewbank, MVSc, MRCVS, FIBiol
M. J. Ford, MA, DPhil
I. F. Keymer, PhD, FRCVS, FRCPath, FIBiol
N. King, BVSc, MRCVS
Professor D. E. Noakes, BVetMed, PhD, MRCVS
A. J. Stevens, MA, BVSc, MRCVS, DipBact, *Chairman*
A. D. Walker, BSc, PhD, ARCS, FRSC, MIBiol
Secretary: D. M. Jones, BSc, BVetMed, MRCVS, FIBiol

Awards Committee

Terms of Reference: The Council presents awards for contributions to zoology; The Stamford Raffles Award, The Scientific Metal, The Thomas Henry Huxley Award, The Silver Medal, The Zoological Society of London Frink Medal for British Zoologists and The Prince Philip Prize. The Committee advises Council on all matters relating to these awards.

Professor R. McNeill Alexander, MA, PhD, DSc, FIBiol
Professor A. d'A. Bellairs, DSc, MRCS, FLS
Professor G. Chapman, MA, PhD, ScD, FIBiol
Professor B. K. Follett, PhD, DSc, FRS
P. H. Greenwood, DSc, FIBiol, FLS, FRS
Professor K. Simkiss, PhD, DSc, FIBiol
Mrs Margaret Varley, MA, PhD.
Professor J. E. Webb, DSc, PhD, *Chairman*
Secretary: Marcia A. Edwards, PhD, FLS

Education Committee

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

D. G. Alexander
E. D. Barlow, MA, MB, BChir, FRCPsych
W. Chapman, TD, MSc, BSc(Econ), DipEdAd, MBIM
M. J. Coe, BSc, PhD
S. F. Everiss, MBE, MA, MSc, FIBiol
Mrs Pat Fisher, DipEd
Mrs Judy King
D. Marshall, BSc, FIBiol
D. O'Dell, BSc, PhD
Mrs Marion Rook
J. Sparks, BSc, PhD
D. J. Stanbury, BSc, ARCS, *Chairman*
Secretary: M. K. Boorer, BSc, DipEd

Gardens and Park Committee

Terms of Reference: To consider matters relating to the layout, appearance, animal housing and amenities other than catering, of the Gardens, London Zoo 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 future planning.

Lady Casson, RIBA, FSIA
R. d'Erlanger
A. M. J. Galsworthy
E. Hutchison, MA(RCA), DipLA, ALI
C. Masson
Lady Rupert Nevill
N. Sitwell
H.G. The Duke of Wellington, MVO, OBE, MC, *Chairman*
Secretary: J. W. Toovey, AA(Dipl Hons), FRIBA

Institute of Zoology Committee

Terms of Reference: To advise Council on all matters relating to the Institute of Zoology.

P. P. G. Bateson, PhD, FRS
Professor B. A. Cross, CBE, ScD, MRCVS, FRS
Professor B. K. Follett, PhD, DSc, FRS
Professor R. L. Gardner, PhD, FRS
J. S. Garrow, MD, PhD, FRCP
Professor I. M. Glynn, PhD, MD, FRS
Professor G. E. Lamming, MS, PhD, FIBiol
Professor N. A. Mitchison, DPhil, FRS, *Chairman*
W. Plowright, CMG, DVSc, FRVC, FRS
Professor J. A. F. Rook, CBE, PhD, FIBiol, FRSE, FRSC
Professor A. J. Zuckerman, MD, DSc
Secretary: Professor J. P. Hearn, MSc, PhD, FIBiol

International Zoo Yearbook Editorial

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

The Countess of Cranbrook
S. F. Everiss, MBE, MA, MSc, FIBiol
Miss Janet Kear, PhD, *Chairman*
J. M. Knowles
J. Mallinson
Professor R. D. Martin, BA, DPhil, FIBiol
Miss Jane Thornback
Ir. D. Van Dam
Secretary: P. J. S. Olney, BSc, DipEd, FLS, FIBiol

Publications Committee

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

Professor R. McNeill Alexander, MA, PhD, DSc, FIBiol
Professor R. J. Berry, MA, PhD, DSc, FRSE, FIBiol, FLS, *Chairman*
Professor P. J. Butler, BSc, PhD, FIBiol
C. K. Catchpole, BSc, PhD
Professor A. J. E. Cave, MD, DSc, FRCS, FLS
Professor G. Chapman, MD, PhD, ScD, FIBiol
Miss Barbara M. Gilchrist, PhD
Professor P. A. Jewell, MA, PhD
Professor J. D. Pye, BSc, PhD, FLS
V. R. Southgate, PhD
P. J. Whitfield, MA, PhD
Secretary: Marcia A. Edwards, PhD, FLS

Zoological Record Advisory Committee

Terms of Reference: To advise the Society and Biological Abstracts Inc. under the terms of the Agreement between them; to consider and make recommendations with respect to the activities and future development of the *Zoological Record*.

H. E. Kennedy, PhD
R. A. Neal, DSc, PhD
R. O. Nesheim, PhD
V. R. Southgate, Ph.D. *Chairman*
R. Trumbull, PhD
Secretary: Marcia A. Edwards, PhD, FLS

Zoological Record Editorial Board

Terms of Reference: To advise on the scope, content and format of the *Zoological Record*.

R. Cross, MA
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J. P. Harding, PhD, FLS
C. M. Hutt, FLS
A. K. Kent, PhD
D. Macfarlane, BSc
R. A. Neal, DSc, PhD, *Chairman*
V. R. Southgate, PhD
Secretary: Marcia A. Edwards, PhD, FLS

APPENDIX 2

Staff

Chief Executive Officer: J. L. Boyer, OBE
Director of Science: Professor J. P. Hearn, MSc, PhD, FIBiol*
Director of Zoos: D. M. Jones, BSc, BVetMed, MRCVS, FIBiol*
Assistant Director of Science (Publications & General): Marcia A. Edwards, PhD, FLS*
Architect: J. W. Toovey, AADipl(Hons), FRIBA
Deputy Architect: J. C. Wears, Dip.Arch.(Dunelm)
Commercial Manager: J. P. Griffin, BSc
Curator of Birds/Reptiles: P. J. S. Olney, BSc, DipEd, FLS, FIBiol*
Curator of Mammals/Aquarium/Insects: B. C. R. Bertram, MA, PhD, FIBiol*
Curator, Whipsnade Park: V. J. A. Manton, MRCVS, FIBiol*
Education Department:
Education Officer: M. K. Boorer, BSc, DipEd
Assistant Education Officers: Alison J. Mainwaring, BSc, PhD; Frances A. Rogers; D. T. J. Smith, BSc, MSc; Gillian E. Standring, MA, CertEd
Establishment Officer: M. E. McInerney, FBIM
Finance Officer: P. J. Duckett, FCCA
Librarian: R. A. Fish, FLA
Press Officer: Joan Crammond (to December)
Public Relations Officer: Julie Fitzherbert-Brockholes BSc (from January)
Retail Manager (London & Whipsnade): J. F. Brown

Institute of Zoology (Note the Institute includes the Nuffield Laboratories of Comparative Medicine; the Wellcome Laboratories of Comparative Physiology; the Veterinary Hospital; the Curators' Research Units; and the MRC/AFRC Comparative Physiology Research Group)
Director: Professor J. P. Hearn, MSc, PhD, FIBiol
Administrative Assistant: Connie Nutkins
Laboratory Superintendent (Nuffield): P. R. E. Wallace, FIST
Laboratory Superintendent (Wellcome & Hospital): G. F. Nevill, HNC
Computer Consultant: G. F. Moore, BA, MSc

COMPARATIVE PHYSIOLOGY
(J. P. Hearn, MSc, PhD, FIBiol)
Development Biology
Research Fellows: J. P. Hearn, MSc, PhD, FIBiol; P. M. Summers, BVSc, MSc, PhD, MRCVS
Research Associate: Philippa T. K. Saunders, PhD
Visiting Research Fellows: A. Lopata, MS, BS, PhD(Australia); A. E. Szulman, MB, ChD(USA)
Endocrinology and Behaviour
Research Fellows: D. H. Abbott, PhD; J. K. Hodges, PhD (Zuckerman Research Fellow)
Research Associate: Helen J. Shaw, PhD
Postgraduate Research Students: D. H. R. Harris, BSc (until December 1985); Caroline E. Liddell, BSc
Visiting Research Workers: Liang Ying-nan (China); Wang Xiong-Qing (China)
Gamete Biology
Research Fellows: W. V. Holt, PhD; H. D. M. Moore,. PhD(Zuckerman Research Fellow)
Research Associate: Caroline A. Smith, PhD
Research Assistant: Alison J. Holloway, BSc
Postgraduate Research Scholar: H. J. Samour, DVM, MVZ(Mexico), MIBiol
Postgraduate Research Student: Linda Baggott, BEd, MSc
Visiting Research Fellow: P. D. Temple-Smith, PhD(Australia)
Physiological Ecology
Research Fellow: A. S. I. Loudon, BA, PhD
Research Associate: J. D. Curlewis, BVSc, PhD, MRCVS
Research Assistant: Alison White, MSc

COMPARATIVE MEDICINE
(G. R. Smith, PhD, MRCVS, DVSM, DipBact)
Applied Immunology
Honorary Research Fellow: A. Voller, PhD, DSc, MRCPath
Research Associate: D. E. Bidwell, PhD
Microbiology
Research Fellow: G. R. Smith, PhD, MRCVS, DVSM, DipBact
Nutritional Biochemistry
Research Fellows: M. A. Crawford, PhD; Wendy Doyle, SRD; W. R. Hare, PhD
Research Assistants: M. J. Leighfield, MSc; E. Anne Lennon, BSc
Visiting Research Fellow: K. Ghebremeskel, MSc, PhD(Eritrea)
Radiology
Research Fellow: G. H. du Boulay, CBE, MB, BS, FRCP, DMRD, FRCR
Radiographer: Olivia L. Wilson, DSR

CONSERVATION AND WELFARE
(D. M. Jones, BSc, BVetMed, MRCVS, FIBiol)
Birds/Reptiles
Curator: P. J. S. Olney, BSc, DipEd, FIBiol, FLS
Assistant Curator, Reptiles: D. Ball, AIAT, MIBiol
Postgraduate Research Student: Jacqueline A. Wastell, BSc
Mammals/Aquarium/Insects
Curator: B. C. R. Bertram, MA, PhD, FIBiol
Assistant Curator, Aquarium: C. R. Andrews, PhD
Ethologist: Susan M. Dow, MA, PhD
Honorary Research Fellow: A. J. E. Cave, MA, DSc, FRCS, FLS
Postgraduate Research Students: R. A. Brett, BA (until December 1985); D. P. Moltu, BSc(Norway)
Whipsnade Park
Curator: V. J. A. Manton, MRCVS, FIBiol
Field Studies
Consultant Veterinary Officer: J. A. Knight, BVetMed, MRCVS
Research Associate: R. A. Brett, BA, PhD

VETERINARY SCIENCE
(J. K. Kirkwood, BVSc, PhD, MRCVS)
Clinical Studies
Senior Veterinary Officer: J. K. Kirkwood, BVSc, PhD, MRCVS
Veterinary Officer (Whipsnade): R. A. Kock, MA, VetMB, MRCVS
Veterinary House Surgeon (London): Frances M. D. Gulland, VetMB, MRCVS
Postgraduate Research Student: Margaret J. Leighton, BSc
Conservation Genetics
Honorary Research Fellows: Sir Cyril A. Clarke, KBE, MD, FRCP, FRS; Georgina M. Mace, DPhil
Haematology
Research Fellow: Christine M. Hawkey, PhD
Visiting Research Associate: S. C. Omorphos, PhD
Pathology
Pathologist: G. M. Henderson, BA, VetMB, MRCVS

Publications
International Zoo Yearbook:
Editor: P. J. S. Olney, BSc, DipEd, FIBiol, FLS*
Assistant Editors: Pat Ellis; Benedicte Sommerfelt, BSc
Journal of Zoology (Series A & B), Symposia Nomenclator Zoologicus, Zoological Record:
Editor: Marcia A. Edwards, PhD, FLS*
Assistant Editor: Angela J. Stroud, BSc
Editorial Assistant: Unity M. M. McDonnell, MA

London Zoo
Assistant Curator, Aquarium: C. R. Andrews, PhD* (from December)
Assistant Curator, Reptiles: D. Ball, AIAT, MIBiol*
Head Gardener: P. Summers, DipHort(Kew)
Maintenance Manager: L. G. Taverner (to September); C. R. Hazlehurst MCIOB (from October)
Overseer of Birds: R. Barrow
Overseers of Mammals: T. B. Kichenside; W. B. James
Public Services Manager: J. P. McCorry
Purchasing & Transport Supervisor: N. Thornton (to February 1985); R. R. Smith, FIAT (from March 1985)

HEAD KEEPERS
Aquarium: R. Dumbelton
Aquatic Birds & Birds of Prey: D. N. Wood
Bears: S. Morton (to April)
Bird House: W. G. R. Daines (to April); A. W. James (from May)
Children's Zoo: P. Anscombe
Elephant & Rhino Pavilion: B. Harman (from February 1985)
Insects: M. Roberton (Acting)
Lion Terraces: E. F. Swain
Monkeys: G. Callard (to July); M. Carman (from August)
Parrot House: R. J. Watkins (to September); D. Eyre (Acting, from October)

*Also members of the Institute of Zoology

Pheasantry & Ostrich House: D. R. Ellis (to May); B. Blackburn (from June)
Reptiles: S. B. Savage
Small Mammals: R. R. Smith, FIAT (to February); P. Rodway (from August)
Ungulates: J. Nicklin

Whipsnade Park
Park Manager: O. C. Chamberlain
Veterinary Officer: R. A. Kock, MA, VetMB, MRCVS*
Catering Manager: Sharon Taverner
Head Forester: J. D. R. Fairlamb (to August)
PRO/Asst Education Officer: M. F. Ricketts, BSc
Senior Overseer: G. Stanbridge
Overseer: J. Datlen

HEAD KEEPERS
Central Ungulate Section: V. Curzon
Southern Ungulate Section: A. W. Billington
Northern Ungulate Section: P. J. Williams
Carnivore Section: G. Lucas
Elephant Section: J. Weatherhead
Bird Section: A. White

Consulting Staff
Honorary Herpetologist: Professor A. d'A. Bellairs, DSc, MRCS, FLS
Honorary Veterinary Consultant: W. H. G. Rees, BSc, DVSM, MRCVS
Medical Referee: J. P. Horder. CBE, FRCP, PRCGP, FRCPsych (to March); K. H. Lewis, MA, BM, BCh (from April)

Publications by Society's Staff and Research Workers

ABBOTT, D. H. (1986). Social suppression of reproduction in subordinate marmoset monkeys (*Callithrix jacchus jacchus*). In *A Primatologia No Brasil* No. 2: 1–16. De Mello, M. T. (Ed.) Brasilia: Sociedade Brasileira de Primatologia.

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ANDELMAN, S. J., ELSE, J. G., HEARN, J. P. & HODGES, J. K. (1985). The non-invasive monitoring of reproductive events in wild Vervet monkeys (*Cercopithecus aethiops*) using urinary pregnanediol)-3α-glucuronide and its correlation with behavioural observations. *J. Zool., Lond.* (A) **205**: 467–477.

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Animals in the Collections

column 1	Number of animals in the Collection at 1st January 1985.
column 2	Number of animals received in 1985 by presentation, exchange, purchase or transfer between the Society's two Collections. The figures in brackets indicate animals which have been so transferred.
column 3	Number of animals born or hatched in 1985.
column 4	Number of animals which died in 1985 within 30 days of birth or hatching. The figures in brackets indicate animals born or hatched during December 1984 and which died during January 1985. Stillbirths are not included.
column 5	Number of animals which died from natural causes during 1985 apart from those included in column 4.
column 6	Number of animals disposed of in 1985 by presentation, exchange, deposit, sale or transfer between the Society's two Collections, as well as culled animals and those killed by vermin or vandals. The figures in brackets indicate animals which have been transferred between the two Collections.
column 7	Number of animals in the Collection at 31st December 1985 showing sexes where these are known, e.g. 1/3/1 indicates 1 male, 3 female, 1 sex unknown.

Key

G Genus new to the Collection
S Species new to the Collection
SS Sub-species new to the Collection

*Species subject to the Agreement with the Marwell Preservation Trust on joint ownership and management.

REGENT'S PARK

		1	2	3	4	5	6	7
Mammals								
MONOTREMATA								
Tachyglossus aculeatus	Australian Echidna	1	—	—	—	—	—	1/0
Zaglossus bruijni	Bruijn's Echidna	3	—	—	—	—	—	1/2
MARSUPIALIA								
Metachirops opossum	Four-eyed Opossum	2	—	—	—	1	—	0/1
Phalanger gymnotis	Grey Ground Cuscus	3	—	—	—	—	1	1/1
Petaurus breviceps	Sugar Glider	13	—	—	—	1	—	9/3
Trichosurus vulpecula	Brush-tailed Possum	1	—	—	—	1	—	—
Dasyuroides byrnei	Byrne's Pouched Mouse	3	5	—	—	3	—	2/3
Sarcophilus harrisi	Tasmanian Devil	2	—	—	—	—	—	1/1
Vombatus ursinus	Common Wombat	2	—	—	—	1	—	0/1
Potorous tridactylus	Long-nosed Potoroo	8	1	1	1	1	4	1/3
Bettongia penicillata	Brush-tailed Bettong	—	6	—	—	—	—	3/3
Macropus parma	White-throated Wallaby	3	—	1	—	—	1	2/1
Macropus rufogriseus	Red-necked Wallaby	2	—	—	—	—	2	—
Macropus fuliginosus	Western Grey Kangaroo	3	—	2	—	3	—	1/1
Dendrolagus goodfellowi	Goodfellow's Tree Kangaroo	1	—	—	—	—	—	0/1
		1	2	3	4	5	6	7

		1	2	3	4	5	6	7
INSECTIVORA								
Echinops telfairi	Pygmy Hedgehog Tenrec	2	—	—	—	—	—	1/1
Erinaceus europaeus	European Hedgehog	2	—	—	—	1	—	0/0/1
Paraechinus aethiopicus	Desert Hedgehog	5	—	—	—	—	—	3/2
Crocidura russula	White-toothed Shrew	1	—	—	—	1	—	—
CHIROPTERA								
Pteropus giganteus	Indian Fruit Bat	21	—	4	—	2	1	4/10/8
Carollia perspicillata	Seba's Short-tailed Bat	37	—	12	5	7	—	20/16/1
SCANDENTIA								
Tupaia belangeri	Common Tree Shrew	18	—	7	2	2	5	6/10
Tupaia tana	Large Tree Shrew	6	—	—	—	1	—	3/2
PRIMATES								
Lemur catta	Ring-tailed Lemur	5	—	—	—	—	—	2/3
Lemur fulvus	Brown Lemur	7	—	3	1	—	—	4/5
Lemur mongoz	Mongoose Lemur	2	—	—	—	—	—	1/1
Varecia variegatus	Ruffed Lemur	6	—	—	—	1	1	3/1
Cheirogaleus medius	Fat-tailed Dwarf Lemur	2	—	—	—	1	—	1/0
Microcebus murinus	Grey Mouse Lemur	8	—	—	—	1	—	4/3
Loris tardigradus	Slender Loris	3	—	—	—	—	—	2/1
Nycticebus coucang	Slow Loris	9	—	1	—	—	—	4/6
Galago crassicaudatus	Thick-tailed Bushbaby	1	—	—	—	—	—	1/0
Galago senegalensis	Senegal Bushbaby	2	—	1	1	—	—	1/1
Aotus trivirgatus	Douroucouli	6	—	1	—	1	—	3/3
Pithecia pithecia	White-faced Saki Monkey	5	—	2	1	—	—	3/3
Cebus apella	Brown Capuchin	8	—	2	1	1	—	4/3/1
Saimiri sciureus	Squirrel Monkey (Olive-capped form)	14	—	2	—	—	2	7/5/2
Ateles geoffroyi	Black-handed Spider Monkey	2	—	—	—	—	—	1/1
Callithrix jacchus	Common Marmoset	20	1	9	5	1	4	6/9/5
Callithrix argentata	Silvery Marmoset	—	2	2	2	1	—	1/0
Cebuella pygmaea	Pygmy Marmoset	5	1	—	—	1	1	2/2
Saguinus oedipus	Cotton-headed Tamarin	4	—	2	2	—	—	2/2
Saguinus illigeri	Red-mantled Tamarin	6	—	4	1	1	1	3/2/2
Saguinus imperator	Emperor Tamarin	4	—	—	—	—	—	2/2
Leontopithecus rosalia	Golden Lion Tamarin	7	—	2	—	—	—	3/6
Callimico goeldii	Goeldi's Marmoset	7	1	—	—	—	4	2/2
Macaca silenus	Lion-tailed Macaque	6	—	—	—	1	—	2/3
Macaca nemestrina	Pig-tailed Macaque	18	—	6	—	—	5	4/12/3
Cercocebus atys	Sooty Mangabey	8	—	2	1	—	2	2/4/1
Mandrillus sphinx	Mandrill	6	—	3	—	—	—	2/5/2
Cercopithecus pygerythrus	Vervet Monkey	2	—	—	—	1	1	—
Cercopithecus diana	Diana Monkey	5	—	2	—	—	—	2/4/1
Cercopithecus talapoin	Talapoin Monkey	2	—	—	—	—	—	1/1
Colobus polykomos	Western Black & White Colobus Monkey	3	—	1	—	—	—	3/1
Hylobates lar	Lar Gibbon	2	—	—	—	—	—	1/1
Pongo pygmaeus	Orang Utan	10	3	—	—	1	1	5/6
Pan troglodytes	Chimpanzee	7	1	1	—	—	1	2/6
Gorilla gorilla	Gorilla	3	—	—	—	—	—	1/2
EDENTATA								
Myrmecophaga tridactyla	Giant Anteater	2	—	—	—	—	—	0/2
Choloepus didactylus	Two-toed Sloth	1	1	—	—	—	1	0/1
Dasypus novemcinctus	Nine-banded Armadillo	2	1	—	—	—	—	1/2
Chaetophractus villosus	Hairy Armadillo	2	—	—	—	—	—	1/1
RODENTIA								
Sciurus vulgaris	Red Squirrel	3	2	—	—	1	—	1/3
Sciurus carolinensis	Grey Squirrel	—	4	4	—	—	8	—
Ratufa bicolor	Malayan Giant Squirrel	2	—	—	—	—	—	1/1
Funisciurus pyrrhopus	Fire-footed Squirrel	2	—	—	—	2	—	—
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Callosciurus finlaysoni	Finlayson's Squirrel	1	—	—	—	—	—	1/0
Callosciurus prevosti	Prevost's Squirrel	—	2	—	—	—	—	1/1
Marmota marmota	Alpine Marmot	—	6	—	—	2	—	2/2
Marmota monax	Woodchuck	2	—	—	—	2	—	—
Cynomys ludovicianus	Prairie Marmot	6	—	3	1	—	—	4/2/2
Tamias sibiricus	Siberian Chipmunk	3	—	—	—	1	—	1/1
Petaurista alborufus	Red & White Flying Squirrel	1	—	—	—	1	—	—
Glaucomys sabrinus	Northern Flying Squirrel	5	—	3	—	—	—	2/3/3
Castor canadensis	American Beaver	11	—	5	—	6	6	1/3
Pedetes capensis	Springhaas	3	—	—	—	—	—	2/1
Peromyscus maniculatus	White-footed Mouse	22	—	—	—	5	—	10/7
Sigmodon hispidus	Cotton Rat	37	—	61	1	6	74	5/7/5
Phodopus sungorus	Dwarf Hamster	48	6	35	9	25	32	11/12
Cricetulus barabensis	Chinese Hamster	25	—	12	—	15	6	8/3/5
Meriones libycus	Libyan Jird	—	2	—	—	1	—	0/1
Merionnes unguiculatus	Clawed Jird	7	5	56	—	6	28	20/14
Clethrionomys glareolus	Bank Vole	29	—	17	—	12	12	1/6/15
Microtus orcadensis	Orkney Vole	—	26	10	1	7	—	10/6/12
Microtus agrestis	Field Vole	17	—	21	1	7	1	11/6/12
Phloeomys cumingi	Philippine Cloud Rat	4	—	—	—	1	—	2/1
Apodemus sylvaticus	Field Mouse	32	—	15	1	13	—	8/19/6
Micromys minutus	Harvest Mouse	6	4	4	—	8	—	5/1
Thamnomys dolichurus	Long-tailed Thicket Rat	1	—	—	—	1	—	—
Acomys cahirinus	Arabian Spiny Mouse	87	—	44	1	9	71	0/0/50
Acomys russatus	Golden Spiny Mouse	17	—	5	—	3	3	6/10
Lemniscomys barbarus	Zebra Mouse	—	6	—	—	2	—	1/3
Arvicanthis niloticus	Nile Rat	42	—	209	1	—	202	9/12/27
Rattus rattus	Black Rat	—	6	6	—	1	—	2/3/6
Praomys natalensis	Multimammate Mouse	3	—	—	—	3	—	—
Glis glis	Fat Dormouse	6	—	—	—	2	—	0/4
Jaculus jaculus vocator	Arabian Jerboa	17	—	22	4	16	4	4/11
Hystrix cristata	Crested Porcupine	1	—	—	—	—	—	1/0
Hystrix indica × H. cristata	Hybrid Indian × Crested Porcupine	3	—	—	—	1	—	1/1
Atherurus africanus	African Brush-tailed Porcupine	4	—	2	2	1	—	1/2
Coendou prehensilis	Brazilian Tree Porcupine	2	—	1	1	2	—	—
Kerodon rupestris	Rock Cavy	11	—	26	1	10	2	6/6/12
Dolichotis patagonum	Mara	5	—	3	2	1	2	0/2/1
Hydrochoerus hydrochaeris	Capybara	3	—	—	—	—	3	—
Cuniculus paca	Spotted Paca	2	—	—	—	1	—	1/0
Dasyprocta aguti	Orange-rumped Agouti	7	—	—	—	1	2	2/2
Myoprocta pratti	Green Acouchi	10	—	6	1	1	2	7/3/2
Chinchilla laniger	Chinchilla	3	5	2	—	—	1	5/4
Geocapromys brownii	Jamaican Hutia	7	—	—	—	2	2	2/1
Octodon degus	Degu	8	—	8	—	2	1	0/0/13
Proechimys guairae	Casiragua	13	—	2	—	5	—	4/3/3
Heterocephalus glaber	Naked Mole Rat	49	—	64	50	2	2	28/31
CARNIVORA								
Canis lupus	Grey Wolf	4	—	3	—	1	—	1/2/3
Alopex lagopus	Arctic Fox	2	—	—	—	—	2	—
Fennecus zerda	Fennec Fox	2	2	—	—	—	—	2/2
Urocyon cinereoargenteus	American Grey Fox	2	—	—	—	—	2	—
Selenarctos thibetanus	Asiatic Black Bear	2	—	—	—	—	2	—
Ursus arctos	Brown Bear	4	—	—	—	—	4	—
Ursus americanus	American Black Bear	1	—	—	—	—	1	—
Thalarctos maritimus	Polar Bear	2	2	—	—	—	2	1/1
Melursus ursinus	Sloth Bear	1	—	—	—	—	1	—
Ailuropoda melanoleuca	Giant Panda	2	—	—	—	1	—	1/0
Ailurus fulgens	Red Panda	—	1	—	—	—	1	—
Procyon lotor	Raccoon	2	—	—	—	—	2	—
Nasua nasua	Ring-tailed Coati	5	—	—	—	—	5	—
Potos flavus	Kinkajou	3	—	1	—	—	1	1/1/1
Mustela nivalis	Weasel	2	1	4	—	—	2	0/1/4
Mustela putorius	Polecat Ferret	4	—	15	—	1	8	4/6
Arctonyx collaris	Hog Badger	2	—	—	—	—	—	1/1
Amblonyx cinerea	Oriental Small-clawed Otter	4	—	4	—	—	3	2/3
		1	2	3	4	5	6	7

		1	2	3	4	5	6	7
Genetta tigrina	Blotched Genet	2	—	—	—	1	—	1/0
Arctogalidia trivirgata	Small-toothed Palm Civet	3	—	—	—	—	—	1/2
Paguma larvata	Masked Palm Civet	1	—	—	—	—	—	1/0
Suricata suricatta	Suricate Meerkat	2	6	—	—	—	—	5/3
Mungos mungo	Banded Mongoose	2	—	—	—	—	—	1/1
Cynictis penicillata	Yellow Mongoose	3	—	1	1	—	—	1/2
Felis caracal	Caracal Lynx	2	—	—	—	1	—	1/0
Felis serval	Serval	2	—	2	—	—	—	2/2
Felis wiedi	Margay	4	—	—	—	1	1	1/1
Felis concolor	Puma	1	—	—	—	—	—	0/1
Panthera leo	Lion	4	—	—	—	—	—	2/2
Panthera tigris	Tiger (Sumatran form)	5	—	—	—	—	—	1/4
Panthera pardus	Leopard	5	—	3	3	—	1	2/2
Panthera onca	Jaguar	5	—	3	—	—	5	1/2
Acinonyx jubatus	Cheetah	2	—	—	—	—	2(2)	—
PINNIPEDIA								
Zalophus californianus	Californian Sealion	6	—	1	—	—	—	2/5
Halichoerus grypus	Grey Seal	3	—	—	—	—	3	—
TUBULIDENTATA								
Orycteropus afer	Aardvark	3	—	—	—	—	—	1/2
PROBOSCIDEA								
Elephas maximus	Asian Elephant	1	1	—	—	—	—	0/2
HYRACOIDEA								
Procavia capensis	Rock Hyrax	9	—	5	1	4	1	5/3
PERISSODACTYLA								
*Equus burchelli**	Common Zebra	3	2	2	2	—	2	0/3
Equus przewalskii	Przewalski's Horse	2	2	—	—	—	—	2/2
Tapiris terrestris	Brazilian Tapir	3	—	1	—	—	—	2/2
Ceratotherium simum	White Rhinoceros	2	—	—	—	—	—	1/1
Diceros bicornis	Black Rhinoceros	2	—	—	—	—	1(1)	0/1
ARTIODACTYLA								
Sus scrofa	Wild Boar	7	—	10	5	—	3	4/5
*Tayassu tajacu**	Collared Peccary	4	—	2	2	—	4	—
Choeropsis liberiensis	Pygmy Hippopotamus	2	—	—	—	—	1	0/1
Lama glama	Llama	3	2(2)	—	—	—	—	5/0
Lama guanicoe	Guanaco	2	—	—	—	—	—	2/0
Lama pacus	Alpaca	1	—	—	—	—	—	1/0
Vicugna vicugna	Vicuna	4	—	2	—	—	—	3/3
Camelus bactrianus	Bactrian Camel	6	1(1)	1	—	—	1(1)	1/6
Pudu pudu	Pudu	6	—	2	1	—	3	2/2
Rangifer tarandus	Reindeer	4	2	2	—	1	2	2/3
Okapia johnstoni	Okapi	3	—	—	—	—	—	1/2
Giraffa camelopardalis	Giraffe	4	1	2	—	—	1	3/3
*Tragelaphus euryceros**	Bongo	3	—	—	—	—	—	1/2
*Tragelaphus strepsiceros**	Greater Kudu	8	—	1	—	3	—	3/3
*Bos gaurus**	Gaur	3	—	1	—	—	—	2/2
Bison bison	American Bison	3	—	—	—	1	—	1/1
*Hippotragus equinus**	Roan Antelope	6	—	3	—	—	—	4/5
*Oryx tao**	Scimitar-horned Oryx	2	—	—	—	1	1	—
*Oryx leucoryx**	Arabian Oryx	3	—	2	—	—	—	4/1
*Addax nasomaculatus**	Addax	4	—	—	—	—	2	1/1
*Damaliscus dorcas**	Bontebok	—	2	—	—	—	—	1/1
*Antilope cervicapra**	Blackbuck	24	—	11	5	3	5(1)	5/17
Rupicapra rupicapra	Chamois	4	—	—	—	—	—	1/3
Capra falconeri	Markhor	11	—	4	4	3	—	4/4
Ammotragus lervia	Barbary Sheep	18	—	10	4	2	22	—
Ovis musimon	Mouflon	6	—	2	—	—	8	—
Ovis canadensis	Bighorn Sheep	7	—	2	—	2	—	3/4
		1	2	3	4	5	6	7

		1	2	3	4	5	6	7
DOMESTIC								
Pig: Gloucester Old Spot		2	—	6	—	—	6	1/1
Miniature		3	—	13	6	—	7	1/2
Cattle: Friesian		3	—	—	—	—	1	0/2
Jersey		2	—	1	1	—	1	0/1
Goat: Common		5	—	12	—	—	12	0/5
Golden Guernsey		2	—	1	—	—	1	1/1
Nubian		1	—	—	—	—	—	0/1
Sheep: Dorset Down		9	—	6	2	2	5	1/5
Black Welsh Mountain		1	—	—	—	—	—	1/0
Jacob's		1	—	—	—	—	—	1/0
Rabbit		36	4	67	2	8	74	7/16
Guineapig		12	2	6	—	6	1	3/10
Donkey		2	1	—	—	—	—	2/1
Pony: Cream		4	2(2)	—	—	1	—	2/3
Shetland		1	—	—	—	—	—	0/1
Welsh		—	1	—	—	—	1	—
Total-Mammals		1271	132(5)	933	139	267	716(5)	1214

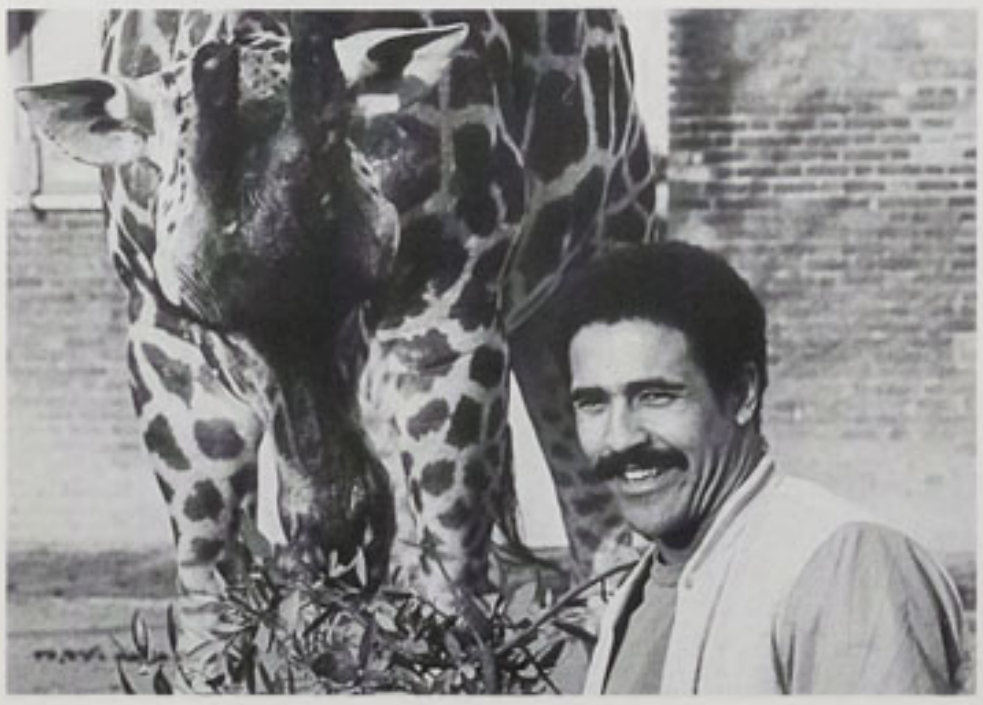
Birds

STRUTHIONIFORMES								
Struthio camelus	Ostrich	3	—	—	—	1	—	1/1
CASUARIIFORMES								
Casuarius bennetti	Bennett's Cassowary	1	—	—	—	—	—	0/1
Casuarius unappendiculatus	One-wattled Cassowary	1	—	—	—	—	—	1/0
Dromaius novaehollandiae	Emu	2	—	—	—	—	—	1/1
APTERYGIFORMES								
Apteryx australis mantelli	North Island Brown Kiwi	1	—	—	—	—	—	0/1
TINAMIFORMES								
Nothoprocta perdicaria	Chilean Tinamou	3	4	—	—	2	—	1/2/2
SPHENISCIFORMES								
Spheniscus demersus	Blackfooted Penguin	20	—	9	—	2	—	5/5/17
Spheniscus humboldti	Humboldt's Penguin	3	—	2	—	—	—	1/1/3
PELECANIFORMES								
Pelecanus onocrotalus	Eastern White Pelican	6	—	—	—	—	—	3/3
Pelecanus crispus	Dalmatian Pelican	2	—	—	—	—	—	1/0/1
Pelecanus erythrorhynchos	American White Pelican	1	—	—	—	—	1	—
Pelecanus occidentalis	Brown Pelican	6	—	—	—	—	—	0/1/5
Morus bassanus	Gannet	3	—	—	—	—	—	0/0/3
Phalacrocorax carbo	Cormorant	5	—	—	—	—	—	2/1/2
Phalacrocorax aristotelis	Shag	3	—	—	—	1	—	2/0
CICONIIFORMES								
Nycticorax nycticorax	Night Heron	4	—	—	—	1	—	0/1/2
Ardeola ibis	Cattle Egret	9	—	1	1	1	—	1/4/3
Butorides striatus	Striated Heron	1	—	—	—	—	—	0/0/1
Ardea cinerea	Grey Heron	5	—	—	—	—	—	0/0/5
Ciconia abdimii	Abdim's Stork	19	—	4	2	2	—	4/4/11
Ephippiorhynchus asiaticus	Black-necked Stork	2	—	—	—	—	—	1/1
Threskiornis aethiopicus	Sacred Ibis	32	—	10	1	4	3	3/3/28
Carphibis spinicollis	Straw-becked Ibis	3	—	—	—	—	2	0/0/1
Eudocimus albus	White Ibis	7	—	—	—	—	7	—
		1	2	3	4	5	6	7

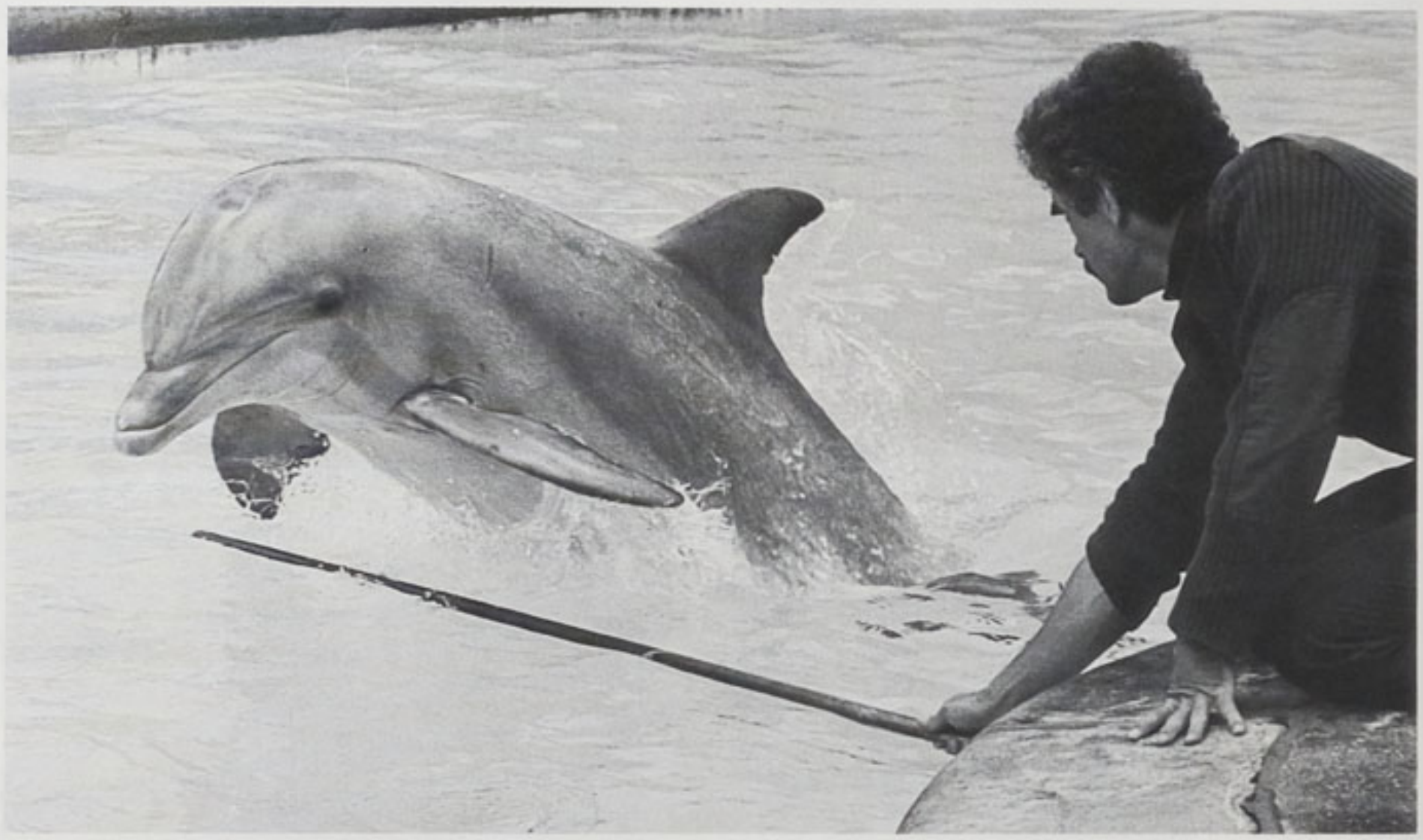
		1	2	3	4	5	6	7
Eudocimus ruber	Scarlet Ibis	9	—	—	—	3	—	3/3
Phoenicopterus ruber roseus	Greater Flamingo	10	—	—	—	—	10(10)	—
Phoenicopterus ruber ruber	Rosy Flamingo	17	—	—	—	—	17	—
Phoenicopterus chilensis	Chilean Flamingo	42	—	3	—	1	1	9/7/27
ANSERIFORMES								
Dendrocygna bicolor	Fulvous Whistling Duck	3	—	—	—	1	1	1/0
Dendrocygna viduata	White-faced Tree Duck	10	—	—	—	—	—	5/5
Dendrocygna arborea	Cuban Tree Duck	2	—	—	—	—	—	1/1
Dendrocygna autumnalis	Red-billed Whistling Duck	4	—	—	—	3	—	0/1
Anser caerulescens atlanticus	Greater Snow Goose	2	—	—	—	—	—	1/1
Anser canagicus	Emperor Goose	2	—	—	—	—	—	1/1
Branta sandvicensis	Hawaiian Goose	8	—	4	—	1	2	3/2/4
Branta leucopsis	Barnacle Goose	6	—	1	—	1	—	3/2/1
Branta bernicla orientalis	Brent Goose	9	—	—	—	—	—	4/2/3
Branta ruficollis	Red-breasted Goose	2	—	—	—	—	—	1/1
Cereopsis novaehollandiae	Cape Barren Goose	3	—	—	—	—	—	1/1/1
Tadorna tadorna	Shelduck	1	—	—	—	—	1	—
Aix sponsa	Carolina Duck	5	—	—	—	1	—	0/0/4
Aix galericulata	Mandarin Duck	6	—	—	—	2	—	2/2
Callonetta leucophrys	Ringed Teal	10	—	—	—	—	—	5/5
Chenonetta jubata	Maned Goose	2	—	—	—	—	—	1/1
Anas penelope	Wigeon	10	—	—	—	1	—	6/3
Anas sibilatrix	Chiloe Wigeon	16	—	—	—	1	3	8/4
Anas strepera	Gadwall	3	—	—	—	—	—	1/2
Anas crecca	Teal	3	—	—	—	1	—	1/1
Anas flavirostris oxyptera	Sharp-winged Teal	2	—	—	—	—	—	1/1
Anas platyrhynchus laysanensis	Laysan Duck	2	—	—	—	—	—	1/1
Anas acuta	Pintail	7	—	—	—	2	—	4/1
Anas bahamensis	Bahama Pintail	1	—	—	—	—	—	0/1
Anas versicolor puna	Puna Teal	4	—	5	1	—	—	2/2/4
Anas querquedula	Garganey	5	—	—	—	—	—	4/1
Anas clypeata	Shoveler	4	—	—	—	1	1	1/1
Marmaronetta angustirostris	Marbled Teal	4	—	—	—	—	—	3/1
Netta rufina	Red-crested Pochard	4	—	—	—	1	—	1/2
Aythya valisineria	Canvasback	4	—	—	—	—	—	2/2
Aythya ferina	European Pochard	3	—	—	—	—	—	2/1
Aythya fuligula	Tufted Duck	6	—	—	—	—	1	1/4
Somateria mollissima	Eider Duck	11	—	1	—	2	—	6/4
Bucephala clangula	Goldeneye	2	—	—	—	—	—	1/1
Mergus merganser	Goosander	2	—	2	1	—	—	1/1/1
Oxyura jamaicensis	North American Ruddy Duck	5	—	—	—	—	—	3/2
FALCONIFORMES								
Vultur gryphus	Andean Condor	4	—	—	—	—	4	—
Milvus migrans migrans	Black Kite	1	—	—	—	—	—	1/0
Milvus migrans parasitus	African Black Kite	1	—	—	—	1	—	—
Haliastur indus	Brahminy Kite	1	—	—	—	—	—	0/1
Haliastur indus intermedius	Javan Brahminy Kite	1	—	—	—	—	—	1/0
Haliaeetus vocifer	Fish Eagle	1	—	—	—	—	1	—
Neophron percnopterus percnopterus	Egyptian Vulture	2	—	—	—	—	—	1/1
Gyps fulvus	Griffon Vulture	2	—	—	—	—	2	—
Torgos tracheliotus	Lappet-faced Vulture	1	—	—	—	—	1	—
Circaetus gallicus gallicus	Short-toed Eagle	1	—	—	—	—	1	—
Terathopius ecaudatus	Bateleur Eagle	3	—	—	—	—	—	1/1/1
Spilornis cheela ricketti	Chinese Serpent Eagle	1	—	—	—	—	1	—
Polyboroides typus	Harrier Hawk	2	—	—	—	—	—	1/1
Butastur rufipennis	Grasshopper Buzzard	1	—	—	—	—	—	0/1
Heterospizias meridionalis	Savannah Hawk	1	—	—	—	—	—	1/0
Geranoaetus melanoleucus	Grey Eagle-buzzard	1	—	—	—	—	1	—
Buteo buteo	Buzzard	2	—	—	—	1	—	0/1
Buteo rufinus	Long-legged Buzzard	2	—	—	—	—	—	1/1
Aquila rapax	Tawny Eagle	2	—	—	—	1	1	—
Aquila rapax orientalis	Western Steppe Eagle	1	—	—	—	1	—	—
Aquila heliaca	Imperial Eagle	1	—	—	—	1	—	—
Aquila wahlbergi	Wahlberg's Eagle	1	—	—	—	—	1	—
		1	2	3	4	5	6	7

Outstanding achievements in breeding rare animals. *Left:* the chicks of this pair of Congo Peafowl were the first ever reared at London Zoo. *Below:* clutching Head Keeper Mick Carman, ' Victoria ' joined the London Orang-utans in October, thanks to co-operation between London and Blackpool Zoos in breeding these apes (photo by Arthur Sidey, courtesy of The Daily Mirror). *Bottom left:* Keeper Gary Miller shows the first Arabian Oryx born at London Zoo to Mr Nassir al Hashar, representing the Sultanate of Oman, where the Society is helping to reintroduce this species; *right:* the remarkable breeding record of the Reptile House included in 1985 the first U.K. hatching of a Lesueur's Water Dragon.

Some special visitors. *Above:* Professor John Hearn and Dr Harry Moore show the Prime Minister the Society's many research projects during her visit to London Zoo in September 1985. *Left:* Lulu, with the Black-footed Penguin she adopted under the very popular Animal Adoption Scheme. *Below left:* Daley Thompson visits the giraffes—a baby giraffe was named after him; *right:* the President Sir William Henderson with Chinese Ambassador Hu Dingyi and Cultural Counsellor Yang Yinglin, admiring the Giant Panda ' Chia Chia '.



Projects to provide more information and interest for visitors. *Above:* the major exhibition in 1985 featured ' The Plant Eaters '. The new ' Meet the Animals ' programme was a great success: young visitors meet the Black-footed Penguin (*right*) and (*below*) baby elephant ' Layang Layang ', who arrived at London in October 1985 (photo by Arthur Sidey, courtesy of The Daily Mirror).



Top: Pelicans appreciating their new enclosure. *Above:* Whipsnade's new Dolphin ' Lady ' with her trainer Les Radford. *Below left:* the Douroucouli born at London in March 1986: *right:* a Giant Millipede from the Seychelles, one of many new arrivals in the Insect House.

		1	2	3	4	5	6	7
Aquila chrysaetos	Golden Eagle	1	—	—	—	—	1	—
Polyborus plancus	Common Caracara	2	—	—	—	—	—	2/0
GALLIFORMES								
Penelope purpurascens	Crested Guan	2	—	—	—	—	—	1/1
Crax fasciolata	Bare-faced Curassow	2	—	—	—	—	—	1/1
Lophortyx californica	Californian Quail	1	1	—	—	—	—	2/0
Lophortyx gambelii	Gambel's Quail	1	—	—	—	1	—	—
Alectoris rufa	Red-legged Partridge	2	—	4	—	—	—	1/1/4
Francolinus pondicerianus	Indian Grey Francolin	—	2	17	—	—	2	1/1/15
Coturnix delegorguei	Harlequin Quail	3	—	—	—	2	—	1/0
Excalfactoria chinensis	Chinese Painted Quail	1	—	—	—	1	—	—
Rollulus rouloul	Crested Wood Partridge	3	3	—	—	2	1	2/1
Bambusicola thoracica	Chinese Bamboo Partridge	2	—	—	—	—	—	1/1
Tragopan satyra	Satyr Tragopan	2	—	—	—	—	—	1/1
Pucrasia macrolopha	Koklass Pheasant	2	—	—	—	1	—	1/0
Lophophorus impeyanus	Impeyan Pheasant	2	—	—	—	—	—	1/1
Gallus sonneratii	Sonnerat's Jungle Fowl	3	—	4	—	1	3(3)	1/1/1
Lophura leucomelana leucomelana	Nepal Kalij Pheasant	2	—	—	—	1	—	1/0
Lophura nycthemera	Silver Pheasant	2	—	—	—	—	—	1/1
Lophura imperialis	Imperial Pheasant	4	—	—	—	1	—	3/0
Lophura swinhoii	Swinhoe's Pheasant	2	—	—	—	—	—	1/1
Lophura ignita ignita	Bornean Crested Fireback	2	—	—	—	—	—	1/1
Lophura diardi	Siamese Fireback Pheasant	2	—	—	—	—	—	1/1
Crossoptilon auritum	Blue Eared Pheasant	2	—	—	—	—	—	1/1
Catreus wallichi	Cheer Pheasant	2	—	—	—	—	—	1/1
Syrmaticus ellioti	Elliot's Pheasant	2	—	—	—	—	—	1/1
Syrmaticus humiae	Hume's Bar-tailed Pheasant	2	—	—	—	—	—	1/1
Syrmaticus mikado	Mikado Pheasant	2	—	1	—	—	—	1/2
Syrmaticus soemmerringi scintillans	Scintillating Copper Pheasant	2	—	—	—	—	—	1/1
Syrmaticus reevesi	Reeves's Pheasant	2	—	—	—	—	—	1/1
Chrysolophus pictus	Golden Pheasant	4	—	—	—	1	—	2/1
Polyplectron chalcurum	Bronze-tailed Peacock Pheasant	2	—	—	—	—	—	1/1
Polyplectron bicalcaratum	Grey Peacock Pheasant	4	—	—	—	1	2	1/0
Pavo cristatus	Common Peafowl	2	1(1)	1	—	1	—	1/1/1
Afropavo congensis	Congo Peafowl	4	1	4	1	1	—	2/2/3
Acryllium vulturinum	Vulturine Guineafowl	5	—	—	—	1	—	1/3
GRUIFORMES								
Grus antigone	Sarus Crane	3	—	—	—	—	1	1/1
Grus rubicunda	Brolga	1	—	—	—	—	—	0/0/1
Anthropoides virgo	Demoiselle Crane	6	—	—	—	—	—	3/3
Anthropoides paradisea	Stanley Crane	2	—	—	—	—	—	1/1
Balearica pavonina	West African Crowned Crane	2	—	—	—	—	—	1/1
Balearica regulorum	South African Crowned Crane	15	—	2	—	2	7(7)	2/2/4
Laterallus leucopyrrhus	White-breasted Crake	2	—	—	—	—	—	0/0/2
Porphyrula alleni	Allen's Gallinule	1	—	—	—	—	—	0/0/1
Porphyrio porphyrio poliocephalus	Grey-headed Gallinule	3	—	—	—	1	—	1/1
Lissotis melanogaster melanogaster	Black-bellied Bustard	1	—	—	—	—	—	0/1
CHARADRIIFORMES								
Haemotopus ostralegus	Oystercatcher	5	—	—	—	—	—	1/2/2
Himantopus himantopus	Black-winged Stilt	1	—	—	—	—	—	0/0/1
Recurvirostra avosetta	Avocet	8	—	—	—	5	1	1/1
Burhinus oedicnemus	Stone Curlew	8	—	1	—	1	—	3/3/2
Glareola pratincola	Collared Pratincole	1	—	—	—	—	—	0/0/1
Vanellus vanellus	Lapwing	1	—	—	—	1	—	—
Pluvialis squatarola	Grey Plover	1	—	—	—	1	—	—
Charadrius hiaticula	Ringed Plover	1	—	—	—	—	—	0/0/1
Numenius arquata	Curlew	2	—	—	—	—	—	1/0/1
Tringa totanus	Redshank	1	—	—	—	—	—	0/0/1
Arenaria interpres	Turnstone	2	—	—	—	—	—	0/0/2
Philomachus pugnax	Ruff	8	—	—	—	2	1	2/3
Catharacta skua antarctica	Antarctic Skua	2	—	—	—	—	—	1/1
Larus cirrocephalus poiocephalus	Grey-headed Gull	23	—	—	—	—	—	7/7/9
		1	2	3	4	5	6	7

		1	2	3	4	5	6	7
Larus novaehollandiae	Silver Gull	2	—	—	—	—	—	0/1/1
Larosterna inca	Inca Tern	3	—	—	—	—	—	1/1/1
Uria aalge	Guillemot	3	—	—	—	1	—	0/0/2
COLUMBIFORMES								
Columba livia	Rock Dove	1	—	—	—	—	—	0/0/1
Columba guinea	Speckled Pigeon	35	—	9	—	4	—	2/3/35
Columba picazuro	Picazuro Pigeon	2	—	—	—	—	—	1/1
Streptopelia tranquebarica humilis	Dwarf Turtle Dove	2	—	—	—	1	—	1/0
Streptopelia chinensis chinensis	Chinese Necklace Dove	5	—	—	—	—	—	1/1/3
Phaps elegans	Brush Bronzewing	2	—	—	—	—	—	1/1
Ochyphaps lophotes	Crested Pigeon	4	—	3	—	2	—	1/1/3
Geopelia cuneata	Diamond Dove	2	—	—	—	—	—	1/1
Zenaida auriculata	Violet-eared Dove	3	—	—	—	—	—	0/3
Geotrygon versicolor	Mountain Witch Dove	3	—	—	—	—	—	0/1/2
Gallicolumba luzonica	Blood-breasted Pigeon	2	—	—	—	—	—	0/0/2
Ducula badia cuprea	Jerdon's Imperial Pigeon	6	—	—	—	—	—	1/0/5
Ducula bicolor	Pied Imperial Pigeon	1	—	—	—	—	—	0/0/1
PSITTACIFORMES								
Pseudeos fuscata	Dusky Lory	1	—	—	—	—	—	0/1
Trichoglossus euteles	Perfect Lorikeet	2	—	4	—	—	2	1/1/2
Lorius garrulus × *L. domicellus*	Scarlet Lory × Purple-capped Lory	1	—	—	—	—	—	0/0/1
Lorius garrulus flavopalliatus	Yellow-backed Lory	1	—	—	—	—	—	0/1
Calyptorhynchus funereus	Funereal Cockatoo	1	—	—	—	—	—	0/1
Callocephalon fimbriatum	Gang Gang Cockatoo	1	—	—	—	—	—	1/0
Eolophus roseicapillus	Roseate Cockatoo	2	—	—	—	—	—	1/1
Cacatua leadbeateri	Leadbeater's Cockatoo	2	—	—	—	—	—	1/1
Cacutua sulphurea	Lesser Sulphur-crested Cockatoo	1	—	—	—	—	1	—
Cacatua moluccensis	Moluccan Cockatoo	2	—	—	—	—	—	1/1
Cacatua sanguinea sanguinea	Bare-eyed Cockatoo	2	—	—	—	—	1	1/0
Cacatua tenuirostris pastinator	Western Slender-billed Cockatoo	3	—	—	—	—	—	2/1
Nymphicus hollandicus	Cockatiel	15	—	6	—	1	—	3/1/16
Nestor notabilis	Kea	3	—	—	—	—	—	1/2
Eclectus roratus	Eclectus Parrot	2	—	1	—	—	1	1/1
Polytelis swainsoni	Barraband Parrakeet	3	—	1	—	1	—	1/1/1
Polytelis anthopeplus	Rock Peplar	12	—	5	1	3	—	1/2/10
Polytelis alexandrae	Princess of Wales' Parrakeet	4	—	—	—	1	—	1/2
Platycercus eximius eximius	Eastern Rosella Parrakeet	4	—	—	—	—	—	3/1
Psephotus haematonotus	Red-rumped Parrakeet	2	—	—	—	—	—	1/1
Neophema bourkii	Bourke's Parrakeet	2	—	—	—	1	—	1/0
Neophema chrysostomus	Blue-winged Grass Parrakeet	2	—	—	—	—	—	1/1
Neophema splendida	Splendid Grass Parrakeet	2	—	4	—	—	4	1/1
Coracopsis vasa	Vasa Parrot	1	—	—	—	—	—	0/1
Psittacus erithacus	Grey Parrot	6	—	—	—	1	1	1/3
Poicephalus robustus suahelicus	Cape Parrot	1	—	—	—	—	1	—
Poicephalus cryptoxanthus cryptoxanthus	Southern Brown-headed Parrot	2	—	—	—	—	—	0/0/2
Poicephalus senegalus versteri	Orange-bellied Senegal Parrot	1	—	—	—	—	—	1/0
Poicephalus rueppellii	Ruppell's Parrot	3	—	—	—	1	—	1/0/1
Agapornis fischeri	Fischer's Lovebird	20	—	15	—	3	—	6/7/19
Loriculus vernalis	Vernal Hanging Parrot	2	—	—	—	—	—	1/1
Loriculus galgulus	Blue-crowned Hanging Parrot	1	—	—	—	—	—	1/0
Psittacula eupatria nipalensis	Alexandrine Parrakeet	2	—	—	—	—	—	1/1
Psittacula krameri krameri	African Ring-necked Parrakeet	1	—	—	—	—	—	1/0
Psittacula krameri manillensis	Indian Ring-necked Parrakeet	7	—	—	—	—	—	3/1/3
Psittacula cyanocephala	Plum-headed Parrakeet	2	—	—	—	—	—	1/1
Anodorhynchus hyacinthinus	Hyacinthine Macaw	4	1	—	—	—	1	2/2
Ara ararauna	Blue & Yellow Macaw	2	—	—	—	—	—	1/1
Ara ambigua	Buffon's Macaw	2	—	—	—	—	—	1/1
Ara macao	Scarlet Macaw	2	—	—	—	—	—	1/1
Ara chloroptera	Green-winged Macaw	3	—	—	—	—	1	1/1
Ara severa severa	Severe Macaw	2	—	—	—	1	1	—
Aratinga erythrogenys	Red-masked Conure	1	—	—	—	—	—	0/1
Aratinga solstitialis	Sun Conure	4	—	—	—	1	—	3/0
Rhynchopsitta pachyrhyncha	Thick-billed Parrot	2	—	—	—	—	2	—
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Cyanoliseus patagonus byroni	Greater Patagonian Conure	4	—	—	—	—	—	2/2
Pyrrhura frontalis	Red-bellied Conure	1	—	—	—	—	—	0/1
Myiopsitta monachus	Quaker Parrakeet	1	—	—	—	1	—	—
Brotogeris versicolurus chiriri	Canary-winged Parrakeet	2	—	—	—	—	—	1/0/1
Brotogeris pyrrhopterus	Orange-flanked Parrakeet	3	—	—	—	—	—	1/1/1
Amazona festiva	Festive Amazon Parrot	2	—	—	—	—	2	—
Amazona ochrocephala	Yellow-fronted Amazon Parrot	1	—	—	—	—	—	0/0/1
Amazona amazonica	Orange-winged Amazon Parrot	2	—	—	—	—	—	1/1
CUCULIFORMES								
Tauraco corythaix corythaix	Knysna Turaco	1	—	—	—	—	—	1/0
Tauraco erythrolophus	Red-crested Turaco	3	—	—	—	—	—	1/2
Tauraco hartlaubi	Hartlaub's Turaco	2	—	—	—	—	—	2/0
Tauraco leucotis	White-cheeked Turaco	7	—	—	—	1	—	0/2/4
Eudynamys scolopacea chinensis	Chinese Koel	1	—	—	—	—	—	0/0/1
STRIGIFORMES								
Tyto alba	Barn Owl	2	—	9	—	—	9	1/1
Otus leucotis	White-faced Scops Owl	3	1	—	—	—	—	1/3
Bubo virginianus	Great Horned Eagle Owl	2	—	2	—	—	2	1/1
Bubo bubo bubo	European Eagle Owl	2	—	—	—	—	—	1/1
Bubo bubo turcomanus	Turkmenian Eagle Owl	2	—	—	—	—	—	1/1
Bubo bubo bengalensis	Indian Eagle Owl	2	—	—	—	—	2	—
Bubo capensis mackinderi	Kenya Eagle Owl	2	—	—	—	—	—	1/1
Bubo africanus africanus	Spotted Eagle Owl	2	—	1	—	—	—	1/1/1
Bubo africanus cinerascens	Abyssinian Spotted Eagle Owl	5	—	3	—	—	6	1/1
Bubo poensis	Fraser's Eagle Owl	1	—	—	—	—	—	1/0
Bubo vosseleri	Nduk Eagle Owl	3	—	—	—	—	—	1/2
Ketupa zeylonensis	Brown Fish Owl	1	—	—	—	—	—	1/2
Ketupa ketupu	Javan Fish Owl	3	—	—	—	—	1	0/1
Scotopelia bouvieri	Vermiculated Fishing Owl	2	—	—	—	—	—	0/2
Pulsatrix perspicillata	Spectacled Owl	2	—	—	—	—	—	1/1
Nyctea scandiaca	Snowy Owl	2	—	—	—	—	—	1/1
Ninox novaeseelandiae	Boobook Owl	4	—	3	—	—	5	1/1
Athene noctua	Little Owl	2	—	5	—	—	—	1/1/5
Athene brama	Spotted Owlet	4	—	—	—	—	—	2/2
Speotyto cunicularia	Burrowing Owl	1	—	—	—	—	—	1/0
Ciccaba woodfordii	African Wood Owl	4	—	—	—	1	—	1/2
Strix aluco sylvatica	Tawny Owl	2	—	2	—	—	2	1/1
Strix hylophila	Rusty Barred Owl	2	1	—	—	—	1	1/1
Asio otus	Long-eared Owl	2	—	—	—	—	—	1/1
Asio flammeus	Short-eared Owl	2	—	—	—	—	1	0/1
APODIFORMES								
Amazilia amazilia	Amazilia Hummingbird	2	—	—	—	1	—	0/0/1
CORACIIFORMES								
Dacelo novaeguineae	Kookaburra	2	—	—	—	—	—	1/1
Momotus momota	Blue-crowned Motmot	4	—	—	—	—	—	2/2
Coracias caudata	Lilac-breasted Roller	1	—	—	—	—	—	0/0/1
Tockus alboterminatus	Crowned Hornbill	2	—	—	—	—	—	0/2
Tockus erythrorhynchus	Red-billed Hornbill	4	—	—	—	—	—	2/2
Tockus deckeni jacksoni	Jackson's Hornbill	1	—	—	—	—	—	1/0
Penelopides panini	Tarictic Hornbill	7	—	—	—	1	—	2/4
Aceros undulatus	Wreathed Hornbill	2	—	—	—	—	—	0/2
Anthracoceros malayanus	Black Hornbill	2	—	—	—	—	—	0/2
Anthracoceros coronatus convexus	Southern Pied Hornbill	1	—	—	—	—	—	0/1
Bycanistes bucinator	Trumpeter Hornbill	1	—	—	—	—	—	1/0
Bycanistes subcylindricus	Black and White Casqued Hornbill	2	—	—	—	—	—	1/1
Buceros bicornis	Great Indian Hornbill	2	—	—	—	1	—	0/1
Buceros hydrocorax	Rufous Hornbill	2	—	—	—	—	—	1/1
		1	2	3	4	5	6	7

		1	2	3	4	5	6	7
PICIFORMES								
Tricholaema lacrymosum	Spotted-flanked Barbet	1	—	—	—	—	—	1/0
Lybius guifsobalito	Black-billed Barbet	1	—	—	—	—	—	0/1
Lybius bidentatus	Double-toothed Barbet	2	—	—	—	—	—	0/1/1
Trachyphonus darnaudii	D'Arnaud's Barbet	1	—	—	—	1	—	—
Pteroglossus torquatus	Chestnut-eared Aracari	1	—	—	—	—	—	0/0/1
Andigena laminirostris	Laminated Hill Toucan	1	—	—	—	—	1	—
Ramphastos vitellinus ariel	Ariel Toucan	1	—	—	—	—	—	1/0
Ramphastos vitellinus culminatus	Yellow-ridged Toucan	1	—	—	—	—	—	1/0
Ramphastos tucanus	Red-billed Toucan	2	—	—	—	—	—	1/1
Ramphastos swainsonii	Swainson's Toucan	2	—	—	—	—	—	0/2
Melanerpes candidus	White Woodpecker	3	—	—	—	—	—	2/1
PASSERIFORMES								
Procnias nudicollis	Naked-throated Bellbird	1	—	—	—	—	—	1/0
Motacilla alba	Pied Wagtail	1	—	—	—	—	—	0/0/1
Pycnonotus leucogenys	White-eared Bulbul	1	—	—	—	—	—	0/0/1
Pycnonotus cafer bengalensis	Red-vented Bulbul	2	—	—	—	—	—	0/0/2
Hypsipetes madagascariensis	Black Bulbul	3	—	—	—	—	—	1/1/1
Chloropsis aurifrons	Golden-fronted Leafbird	2	—	—	—	—	—	1/1
Irena puella	Fairy Bluebird	4	—	—	—	—	1	2/1
Copsychus malabaricus indicus	White-rumped Shama	1	—	—	—	—	—	1/0
Turdus olivaceus	African Thrush	6	—	—	—	1	—	1/1/3
Turdus pilaris	Fieldfare	1	—	—	—	—	—	0/0/1
Turdoides striatus	Jungle Babbler	1	—	—	—	—	—	0/0/1
Garrulax albogularis	White-throated Jay Thrush	1	—	—	—	—	—	0/0/1
Garrulax leucolophus	White-crested Laughing Thrush	4	4	—	—	—	—	2/6
Garrulax pectoralis	Necklaced Laughing Thrush	1	—	—	—	—	—	0/0/1
Garrulax chinensis	Black-throated Laughing Thrush	3	—	—	—	—	—	1/2
Garrulax cineraceus	Moustached Laughing Thrush	2	—	—	—	1	—	0/1
Garrulax poecilorhynchus	Rufous Laughing Thrush	1	—	—	—	—	—	0/0/1
Garrulax canorus	Melodious Jay Thrush	1	—	—	—	—	—	0/0/1
Leiothrix lutea	Pekin Robin	4	4	—	—	1	—	1/0/6
Malurus cyaneus	Superb Blue Wren	2	—	—	—	—	—	1/1
Malurus splendens	Splendid Fairy Wren	1	—	—	—	—	—	1/0
Zosterops palpebrosa	Oriental White-eye	1	—	—	—	—	1	—
Zosterops flava	Javan White-eye	5	—	—	—	1	1	1/1/1
Emberiza rutila	Chestnut Bunting	1	—	—	—	—	—	1/0
Gubernatrix cristata	Green Cardinal	1	—	—	—	—	—	0/1
Paroaria coronata	Red-crested Cardinal	2	—	—	—	—	—	1/1
Tachyphonus rufus	Black Tanager	1	—	—	—	—	—	1/0
Ramphocelus nigrogularis	Masked Crimson Tanager	1	—	—	—	—	—	1/0
Ramphocelus carbo	Silver-beaked Tanager	2	—	—	—	—	—	1/1
Ramphocelus flammigerus icteronotus	Lemon-rumped Tanager	2	—	—	—	1	—	0/1
Thraupis episcopus	Blue Grey Tanager	2	—	—	—	—	—	0/0/2
Cyanerpes caeruleus	Purple Honeycreeper	1	—	—	—	—	—	0/1
Cyanerpes cyaneus	Red-legged Honeycreeper	2	—	—	—	—	1	0/1
Cacicus melanicterus	Mexican Cacique	1	—	—	—	—	—	0/1
Molothrus bonariensis	Shiny Cowbird	3	—	—	—	—	—	3/0
Fringilla coelebs	Chaffinch	1	—	—	—	—	—	0/1
Carduelis chloris	Greenfinch	6	—	—	—	2	—	0/1/3
Carduelis carduelis	Goldfinch	1	—	—	—	—	—	0/0/1
Acanthis flammea	Redpoll	2	—	—	—	—	—	1/1
Acanthis cannabina	Linnet	1	—	—	—	1	—	—
Mandingoa nitidula schlegeli	Schlegel's Twin-spot	—	2	—	—	1	—	1/0
Lagonosticta senegala	Red-billed Fire Finch	—	2	—	—	1	—	0/1
Uraeginthus bengalus	Red-cheeked Cordon Bleu	—	2	—	—	1	—	0/1
Estrilda melpoda	Orange-cheeked Waxbill	2	2	—	—	1	—	1/1/1
Estrilda troglodytes	Red-eared Waxbill	1	2	—	—	—	—	1/2
Amandava amandava	Avadavat	1	—	—	—	—	—	1/0
Amandava amandava punicea	Strawberry Finch	—	2	—	—	—	—	1/1
Amandava subflava	Golden-breasted Waxbill	3	2	—	—	—	—	1/2/2
Neochima ruficauda	Star Finch	—	2	—	—	—	—	1/1
Poephila guttata	Zebra Finch	14	8	—	—	—	20	1/1
Poephila bichenovii	Bicheno's Finch	—	2	—	—	—	—	1/1
Poephila acuticauda hecki	Heck's Grass Finch	—	4	—	—	—	—	2/2
		1	2	3	4	5	6	7

		1	2	3	4	5	6	7
Lonchura malabarica cantans	African Silverbill	—	1	—	—	—	—	1/0
Lonchura striata (domesticated)	Bengalese Finch	—	2	—	—	—	—	1/1
Lonchura malacca	Tri-coloured (Chestnut) Mannikin	—	2	—	—	1	—	1/0
Lonchura maja	White-headed Mannikin	2	2	—	—	1	—	1/1/1
Padda oryzivora	Java Sparrow	4	—	—	—	3	—	0/0/1
Amadina fasciata	Cut-throat Finch	1	2	—	—	—	—	1/1/1
Sp.inc.	Weaver	1	—	—	—	1	—	—
Ploceus cucullatus	Spotted-backed Weaver	1	—	—	—	—	—	1/0
Quelea quelea	Red-beaked Weaver	1	—	—	—	—	—	0/0/1
Euplectes albonotatus	White-winged Whydah	1	—	—	—	—	—	0/1
Vidua chalybeata	Combassou	—	2	—	—	—	—	1/1
Lamprotornis purpureus	Purple Glossy Starling	6	—	—	—	1	—	4/1
Lamprotornis chalybaeus	Green Glossy Starling	4	—	—	—	—	—	4/0
Spreo superbus	Superb Glossy Starling	9	—	—	—	—	2	5/2
Creatophora cinerea	Wattled Starling	10	—	—	—	1	—	4/4/1
Sturnus contra	Asian Pied Starling	—	2	—	—	—	—	1/1
Sturnus pagodarum	Pagoda Starling	1	—	—	—	—	1	—
Sturnus vulgaris	Common Starling	1	—	—	—	—	—	1/0
Leucopsar rothschildi	Rothschild's Grackle	8	—	—	—	1	2	4/1
Acridotheres cristatellus cristatellus	Chinese Crested Mynah	1	—	—	—	—	—	0/0/1
Gracula religiosa religiosa	Javan Hill Mynah	—	1	—	—	—	—	0/0/1
Gracula religiosa intermedia	Nepal Hill Mynah	4	1	—	—	1	1	1/0/2
Struthidea cinerea	Grey Struthidea	2	—	—	—	—	—	0/1/1
Garrulus glandarius	Jay	2	—	—	—	—	2	—
Cyanocorax cyanopogon	Pileated (White-naped) Jay	—	2	—	—	—	—	1/1
Pica pica pica	Magpie	1	—	—	—	—	—	0/0/1
Pyrrhocorax graculus	Alpine Chough	2	—	—	—	—	—	0/0/2
Corvus frugilegus	Rook	1	—	—	—	—	—	0/1
Corvus corone corone	Carrion Crow	2	—	—	—	—	1	0/0/1
Corvus corone corvix	Hooded Crow	1	—	—	—	—	1	—
Corvus corax corax	Raven	2	—	—	—	—	—	1/1
Corvus albicollis	White-necked Raven	2	—	—	—	—	—	1/1
DOMESTIC								
	Common Duck	4	—	—	—	—	—	1/3
	Silky Bantam	3	—	—	—	—	—	1/2
	Brahma Chicken	1	—	—	—	—	1	—
	Old English Game Bantam	—	5	—	—	—	—	3/2
	Total-Birds	1139	75	149	8	120	165	1070

Reptiles

TESTUDINES								
Sternotherus odoratus	Stinkpot	7	—	10	1	2	—	1/1/12
Kinosternon subrubrum	Eastern Mud Terrapin	1	—	—	—	—	—	0/0/1
Kinosternon scorpioides	Scorpion Mud Terrapin	2	2	—	—	—	2	1/0/1
Chrysemys scripta dorbignyi	South American Ornate Terrapin	2	—	—	—	—	—	0/2
Chrysemys scripta elegans	Red-eared Terrapin	5	—	—	—	1	—	1/2/1
Mauremys caspica leprosa	Spanish Terrapin	1	—	—	—	—	—	0/1
Clemmys insculpta	Wood Terrapin	1	—	—	—	—	1	—
Emys orbicularis	European Pond Tortoise	3	—	—	—	—	—	2/1
Terrapene carolina	Carolina Box Terrapin	1	—	—	—	—	—	0/1
Terrapene carolina triunguis	Three-toed Box Terrapin	2	—	—	—	—	—	1/1
Testudo graeca	Spur-thighed Tortoise	3	—	—	—	—	3	—
Testudo hermanni	Hermann's Tortoise	2	1	—	—	—	3(1)	—
Geochelone gigantea gigantea	Aldabra Giant Tortoise	5	—	—	—	—	—	2/3
Geochelone elephantopus elephantopus	South Albemarle Giant Tortoise	1	—	—	—	—	—	0/1
Geochelone carbonaria	Red-footed Tortoise	2	—	—	—	—	—	1/1
Eretmochelys imbricata	Hawksbill Turtle	1	—	—	—	—	—	0/0/1
Chelus fimbriatus	Matamata	2	—	—	—	1	—	0/1
		1	2	3	4	5	6	7

		1	2	3	4	5	6	7
Chelodina longicollis	Long-necked Terrapin	—	2	—	—	—	—	0/0/2
Trionyx hurum	Peacock Soft-shelled Turtle	2	—	—	—	—	—	1/1
Trionyx sinensis	Chinese Soft-shelled Turtle	2	—	—	—	—	—	1/1
CROCODYLIA								
Alligator mississippiensis	American Alligator	3	—	—	—	—	—	1/2
Alligator sinensis	Chinese Alligator	3	—	—	—	—	—	1/2
SAURIA								
Sp. inc.	Gecko	2	2	1	—	2	—	0/0/3
Hemitheconyx caudicinctus	Fat-tailed Gecko	11	1	12	4	1	1	4/8/6
Chondrodactylus angulifer	Namib Sand Gecko	13	—	—	—	1	—	4/8
Phyllurus platurus	Leaf-tailed Gecko	—	4	—	—	—	—	2/2
Diplodactylus ciliaris	Spiny-tailed Gecko	3	—	—	—	—	—	1/2
Gekko gecko	Tokay Gecko	2	—	—	—	—	—	1/1
Ptychozoon kuhli	Flying Gecko	1	—	—	—	1	—	—
Tarentola mauritanica	Moorish Gecko	1	—	—	—	—	—	0/0/1
Phelsuma cepedianum	Jewel Gecko	7	—	2	1	5	—	2/1
Eublepharis macularius	Leopard Ground Gecko	23	1	122	1	3	116	8/10/8
Anolis richardii	Richard's Anole	10	—	2	—	3	—	0/0/9
Laemanctus longipes deborrei	Casque-headed Lizard	1	—	—	—	—	—	0/1
Basiliscus vittatus	Banded Basilisk	7	—	3	—	1	4	2/1/2
Basiliscus plumifrons	Plumed Basilisk	7	—	21	3	1	16	2/3/3
Cyclura cornuta	Rhinoceros Iguana	5	—	—	—	1	—	3/1
Iguana iguana	Common Iguana	2	—	—	—	1	1	—
Dipsosaurus dorsalis	Desert Iguana	2	—	—	—	2	—	—
Sauromalus obesus	Chuckwalla	7	—	—	—	2	—	2/3
Sceloporus poinsetti	Crevice Spiny Lizard	1	—	—	—	—	—	1/0
Sceloporus orcutti	Granite Spiny Lizard	1	—	—	—	—	—	1/0
Amphibolurus vitticeps	Inland Bearded Dragon	4	—	—	—	3	—	1/0
Physignathus lesueurii	Lesueur's Water Dragon	2	3	3	—	1	—	2/2/3
Physignathus cocincinus	Cochin China Water Dragon	2	1	8	—	3	2	1/2/3
Chamaeleo fischeri	Fischer's Chameleon	—	2	—	—	—	—	0/0/2
Chamaeleo tempeli S (Tornier)		—	2	—	—	—	—	0/0/2
Egernia striolata	Australian Tree Skink	12	—	13	—	1	13	2/1/8
Sphenomorphus quoyii S (Dumeril & Bibron)	Golden Water Skink	—	3	—	—	—	—	1/2
Trachydosaurus rugosus	Shingleback	8	—	—	—	3	—	0/1/4
Tiliqua scincoides scincoides	Eastern Blue-tongued Skink	10	—	—	—	3	3	2/2
Tiliqua scincoides intermedia	Northern Blue-tongued Skink	2	—	—	—	—	1	1/0
Tiliqua nigrolutea	Blotched Blue-tongued Skink	4	—	—	—	—	—	0/0/4
Mabuya brevicollis	Short-necked Skink	1	—	—	—	—	—	1/0
Ctenotus taeniolatus	Copper-tailed Skink	18	—	—	—	11	—	0/0/7
Gerrhosaurus major	Tawny-plated Lizard	2	—	—	—	—	—	1/1
Sp.inc.	Lacerta	—	1	—	—	—	—	0/0/1
Lacerta lepida	Eyed Lizard	13	1	91	7	7	81	3/3/4
Lacerta lepida pater	Moroccan Eyed Lizard	4	—	—	—	1	3	—
Lacerta princeps S (Blandford)	Black-headed Scrub Lizard	—	1	—	—	—	—	1/0
Podarcis milensis S (Bedriaga)	Milos Wall Lizard	—	5	—	—	2	—	2/1
Podarcis lilfordi	Lilford's Wall Lizard	2	—	—	—	—	—	1/1
Algyroides nigropunctatus	Corfu Lizard	—	6	—	—	1	—	3/2
Eremias burchelli	Burchell's Sand Lizard	1	—	—	—	1	—	—
Trogonophis wiegmanni	Wiegmann's Burrowing Lizard	1	—	—	—	—	—	0/0/1
Varanus exanthematicus albigularis	Bosc's Monitor	1	—	—	—	1	—	—
Heloderma suspectum	Gila Monster	2	—	—	—	—	—	1/1
Ophisaurus apodus	European Glass Snake	3	—	—	—	—	1	0/0/2
Anguis fragilis	Slow-worm	1	1	—	—	1	—	0/0/1
Cordylus giganteus	Sungazer	1	—	—	—	—	—	0/0/1
Cordylus warreni breyeri	Breyer's Girdled Lizard	3	—	—	—	—	—	1/0/2
Pseudocordylus microlepidotus	Small-scaled Girdled Lizard	5	—	—	—	—	—	1/4
SERPENTES								
Liasis fuscus	Australian Water Python	2	2	—	—	—	—	2/2
Liasis childreni	Children's Python	9	—	—	—	1	—	6/2
Liasis boa	Blue-ring Python	1	—	—	—	—	—	0/1
Morelia spilotus spilotus	Diamond Python	1	1	—	—	—	—	2/0
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Morelia spilotus variegata	Carpet Python	9	—	—	—	4	2	1/2
Python reticulatus	Reticulated Python	2	—	—	—	—	2	—
Python molurus molurus	Indian Python	2	—	—	—	—	—	0/2
Python molurus bivittatus	Malaysian Rock Python	3	—	38	3	—	35	1/2
Python regius	Royal Python	3	—	—	—	—	1	2/0
Calabaria reinhardtii	Calabar Ground Python	2	—	—	—	—	—	1/1
Epicrates cenchris	Rainbow Boa	2	—	—	—	—	2	—
Candoia asper	Fierce Papuan Boa	2	—	—	—	2	—	—
Eunectes notaeus	Yellow Anaconda	3	—	—	—	—	—	1/2
Boa constrictor	Boa Constrictor	13	3	20	—	2	22(2)	3/5/4
Natrix natrix	Grass Snake	—	3	—	—	—	1	1/1
Natrix tessellata	Diced Water Snake	—	2	—	—	—	2	—
Thamnophis sirtalis parietalis	Red-sided Garter Snake	1	2	—	—	1	1	0/0/1
Drymarchon corais couperi	Eastern Indigo Snake	2	—	—	—	—	—	1/1
Elaphe guttata	Corn Snake	3	3	16	—	2	18	1/1
Elaphe obsoleta obsoleta	Black Rat Snake	2	2	—	—	2	—	1/1
Elaphe obsoleta spiloides	Gray Rat Snake	1	—	—	—	1	—	—
Coluber najadum	Dahl's Whip Snake	1	—	—	—	—	—	0/0/1
Pituophis melanoleucus melanoleucus	Northern Pine Snake	3	—	4	—	—	4	2/1
Hydrodynastes gigas	Boipevassu Snake	2	—	—	—	—	—	1/1
Coronella austriaca	Smooth Snake	—	1	—	—	—	—	1/0
Lampropeltis getulus californiae	Californian King Snake	6	3	6	3	1	7	1/2/1
Lampropeltis triangulum sinaloae	Sinaloan Milk Snake	11	—	8	—	1	9	3/3/3
Lampropeltis triangulum hondurensis	Honduras King Snake	4	—	3	1	—	2	2/2
Lampropeltis triangulum annulata	Mexican Milk Snake	4	6	—	—	—	5	3/1/1
Lampropeltis pyromelana pyromelana	Arizona Mountain King Snake	3	—	4	—	—	3	2/1/1
Lampropeltis mexicana alterna	Grey-banded King Snake	4	10	—	—	—	6	1/3/4
Malpolon monspessulanus	Montpellier Snake	1	—	—	—	—	—	1/0
Malpolon moilensis	Moila Snake	1	—	—	—	—	—	0/0/1
Dispholidus typus	Boomslang	2	—	—	—	1	—	1/0
Oxyuranus scutellatus	Taipan	2	1	—	—	1	—	0/2
Notechis scutatus	Tiger Snake	1	3	—	—	—	—	1/2/1
Walterinnesia aegyptia	Innes' Cobra	6	—	—	—	1	2	1/2
Naja melanoleuca	Black & White Cobra	2	—	—	—	—	—	2/0
Naja naja	Indian Cobra	4	—	—	—	—	—	1/1/2
Dendroaspis viridis	Hallowell's Green Mamba	2	—	—	—	—	—	1/1
Dendroaspis angusticeps	Common Green Mamba	1	—	—	—	—	—	0/1
Dendroaspis polylepis	Black Mamba	2	—	—	—	—	—	1/1
Vipera berus	Adder	—	2	—	—	1	—	0/1
Vipera xanthina palaestinae	Palestine Viper	3	—	—	—	—	—	2/1
Vipera ammodytes meridionalis	Long-nosed Viper	3	—	2	—	—	—	2/1/2
Bitis arietans	Puff Adder	1	1	—	—	—	—	0/2
Bitis gabonica	Gaboon Viper	2	—	—	—	—	—	0/2
Echis carinatus	Carpet Viper	—	1	—	—	1	—	—
Agkistrodon bilineatus	Mexican Cantil	2	—	—	—	2	—	—
Agkistrodon contortrix mokeson	Northern Copperhead	2	—	—	—	—	—	1/1
Sistrurus catenatus tergeminus	Western Massasauga	3	—	13	—	—	4	1/2/9
Crotalus atrox	Western Diamond-backed Rattlesnake	1	—	—	—	1	—	—
	Total-Reptiles	401	85	402	24	92	379(3)	393

Amphibians

CAUDATA

Necturus maculosus	Mudpuppy	1	3	—	—	2	—	0/2
Andrias japonicus	Japanese Giant Salamander	1	—	—	—	—	—	0/0/1
Triturus cristatus	Crested Newt	6	—	—	—	—	6	—
Triturus marmoratus	Marbled Newt	1	4	—	—	4	—	0/1
Triturus vulgaris	Common Smooth Newt	12	—	—	—	—	12	—
Cynops pyrrhogaster	Janapense Newt	2	1	—	—	—	—	2/1
Taricha granulosa	Rough-skinned Newt	4	—	—	—	1	3	—
Salamandra salamandra	Fire Salamander	6	1	13	—	—	13	0/0/7
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Ambystoma tigrinum	Tiger Salamander	1	—	—	—	—	—	1/0
Ambystoma mexicanum	Axolotl	81	3	—	—	13	29	0/0/42
Ambystoma maculatus	American Spotted Salamander	1	—	—	—	—	—	0/0/1
ANURA								
Xenopus laevis	Clawed Frog	5	—	—	—	2	—	0/0/3
Xenopus tropicalis	Tropical Clawed Frog	9	—	—	—	—	—	0/0/9
Pipa pipa	Surinam Toad	1	2	—	—	—	—	2/1
Bombina orientalis	Oriental Toad	9	6	14	9	1	—	3/5/11
Bombina variegatus	Yellow-bellied Toad	6	—	—	—	—	6	—
Bufo viridis	Green Toad	3	2	—	—	1	—	2/2
Bufo bufo	Common Toad	4	—	—	—	1	1	2/0
Bufo marinus	Cane Toad	2	1	—	—	—	1	1/0/1
Hyla cinerea	Green Tree Frog	3	3	—	—	3	—	2/1
Hyla gratiosa	Barking Tree Frog	1	3	—	—	4	—	—
Hyla rubra	Daudin's Hyla	1	2	—	—	—	—	1/2
Hyla arborea	European Tree Frog	—	2	—	—	2	—	—
Gastrotheca marsupiata	Marsupial Frog	1	1	—	—	1	—	0/1
Ceratophrys cornuta	Horned Toad	2	—	—	—	2	—	—
Rana ridibunda	Marsh Frog	4	—	—	—	2	—	0/2
Rana temporaria	Common Frog	2	5	200	—	—	200	3/4
Rana catesbeiana	American Bullfrog	2	1	—	—	1	1	0/0/1
Kassina senegalensis	Senegalese Striped Frog	2	—	—	—	1	1	—
Litoria caerulea	White's Tree Frog	—	6	—	—	—	—	4/2
Kaloula pulchra	Malayan Bullfrog	—	3	—	—	2	—	1/0
Rhacophorus leucomystax	Bamboo Tree Frog	—	6	—	—	1	—	0/5
Dendrobates spp.	Poison Arrow Frog	—	4	—	—	2	—	0/0/2
	Total-Amphibians	173	59	227	9	46	273	131

NOTE:
During 1985, nine of the *Xenopus laevis* in the Collection were re-identified as *Xenopus tropicalis*.

WHIPSNADE PARK

Mammals

MARSUPIALIA								
Macropus rufogriseus	Red-necked Wallaby	541	—	265	—	103	308	11/16/368
PRIMATES								
Saimiri sciureus	Squirrel Monkey (Black-capped form)	20	—	3	—	—	5	2/5/11
Pan troglodytes	Chimpanzee	9	—	—	—	—	—	4/5
RODENTIA								
Cynomys ludovicianus	Prairie Marmot	84	—	20	—	—	22	0/0/82
Dolichotis patagonum	Mara	8	12	2	1	2	—	2/2/15
CETACEA								
Tursiops truncatus	Bottle-nosed Dolphin	1	1	—	—	—	—	1/1
CARNIVORA								
Canis lupus	Grey Wolf	15	—	8	—	2	6	5/7/3
Lycaon pictus	Cape Hunting Dog	3	—	—	—	—	—	1/2
Ursus arctos	Brown Bear	3	—	2	—	—	—	1/2/2
Ursus arctos	Brown Bear (Kodiak form)	2	—	—	—	—	2	—
Ailurus fulgens	Red Panda	2	—	—	—	—	—	1/1
Nasua nasua	Ring-tailed Coati	9	—	7	—	2	—	2/12
Felis lynx	Northern Lynx	2	—	—	—	—	2	—
Felis serval	Serval	2	—	—	—	—	2	—
		1	2	3	4	5	6	7

		1	2	3	4	5	6	7
Panthera leo	Lion	3	—	5	2	—	3	1/2
Panthera tigris	Tiger (Siberian form)	2	—	2	—	—	—	1/1/2
Panthera onca	Jaguar	2	—	2	—	—	—	3/1
Acinonyx jubatus	Cheetah	15	6(2)	7	—	4	7	9/8
PINNIPEDIA								
Zalophus californianus	Californian Sealion	2	—	—	—	1	—	1/0
Phoca vitulina	Common Seal	1	—	—	—	—	—	1/0
Halichoerus grypus	Grey Seal	1	—	—	—	—	—	0/1
PROBOSCIDEA								
Elphas maximus	Asian Elephant	1	—	—	—	—	—	0/1
Loxodonta africana	African Elephant	2	—	—	—	—	—	1/1
PERISSODACTYLA								
*Equus grevyi**	Grevy's Zebra	6	3	2	—	4	—	2/5
*Equus hemionus**	Onager (Persian form)	4	—	2	—	—	—	3/3
*Equus przewalskii**	Przewalski's Horse	14	2	2	—	1	4	3/10
Rhinoceros unicornis	Indian Rhinoceros	3	—	—	—	—	1	1/1
Ceratotherium simum	White Rhinoceros	15	—	1	—	—	3	4/9
Diceros bicornis	Black Rhinoceros	1	1(1)	—	—	—	—	1/1
ARTIODACTYLA								
*Phacochoerus aethiopicus**	Wart Hog	1	—	—	—	—	—	1/0
*Tayassu tajacu**	Collared Peccary	10	—	2	1	—	—	4/4/3
Hippopotamus amphibius	Hippopotamus	3	—	—	—	—	1	1/1
Choeropsis liberiensis	Pygmy Hippopotamus	6	—	—	—	1	—	1/4
*Lama glama**	Llama	4	—	—	—	—	4(2)	—
*Lama guanicoe**	Guanaco	10	1	—	—	—	1	2/8
Camelus bactrianus	Bactrian Camel	17	1(1)	3	—	2	8(1)	1/10
Camelus dromedarius	Arabian Camel	7	—	1	—	—	5	1/2
Muntiacus reevesi	Reeves's Muntjac	22	—	8	1	3	5	5/10/6
Dama dama	Fallow Deer	44	—	10	—	8	—	9/20/17
*Axis axis**	Axis Deer	33	—	15	8	5	—	15/17/3
*Axis porcinus**	Hog Deer	33	—	10	4	7	2	12/12/6
*Cervus duvauceli**	Barasingha	18	—	4	2	—	—	10/10
*Cervus nippon**	Sika Deer (Formosan form)	30	—	16	6	3	1	11/24/1
Cervus elaphus	Red Deer	—	24	7	—	—	7	0/24
*Elaphurus davidianus**	Père David's Deer	53	—	11	1	2	10	16/32/3
Alces alces	Moose	1	—	—	—	1	—	—
Rangifer tarandus	Reindeer	12	—	5	2	1	1	6/7
Hydropotes inermis	Chinese Water Deer	109	—	50	—	15	19	0/0/125
Giraffa camelopardalis	Giraffe	3	—	—	—	—	—	1/2
*Tragelaphus spekei**	Sitatunga	10	1	7	2	2	—	7/6/1
*Boselaphus tragocamelus**	Nilgai	18	—	20	9	3	1	4/21
Bos grunniens	Yak	13	—	4	—	4	1	3/7/2
*Syncerus caffer**	African Buffalo	5	—	1	—	—	—	2/4
Bison bonasus	European Bison	9	—	3	—	—	—	2/10
Bison bison	American Bison	5	—	—	—	—	5	—
*Kobus ellipsiprymnus**	Common Waterbuck	6	—	1	—	1	—	1/5
*Oryx gazella**	Gemsbok	3	—	—	—	—	—	2/1
*Oryx tao**	Scimitar-horned Oryx	16	—	5	1	6	—	4/10
*Damaliscus dorcas**	Blesbok	4	—	—	—	—	—	0/4
*Antilope cervicapra**	Blackbuck	5	2(1)	—	—	2	—	5/0
*Gazella thomsoni**	Thomson's Gazelle	16	—	—	—	2	4	1/9
Ovibos moschatus	Musk Ox	5	—	2	1	1	—	1/4
Ovis musimon	Mouflon	23	—	21	4	4	5	7/20/4
DOMESTIC								
	Ponies	19	—	4	—	2	6(2)	5/10
	Pygmy Donkey	2	—	—	—	—	—	1/1
	Windsor White Goat	17	—	12	4	4	1	7/13
Total-Mammals		1365	54(5)	552	49	198	452(5)	1272

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

		1	2	3	4	5	6	7
Birds								
STRUTHIONIFORMES								
Struthio camelus	Ostrich	2	—	—	—	—	—	1/1
RHEIFORMES								
Rhea americana	Common Rhea	6	—	—	—	1	—	1/1/3
CASUARIIFORMES								
Casuarius casuarius	Australian Cassowary	2	—	—	—	—	—	1/1
Dromaius novaehollandiae	Emu	6	—	3	—	—	1	2/2/4
SPHENISCIFORMES								
Aptenodytes patagonica	King Penguin	12	—	1	1	—	—	4/4/4
Eudyptes crestatus	Rockhopper Penguin	8	—	—	—	—	—	5/3
Spheniscus humboldti	Humboldt's Penguin	38	—	29	4	—	12	13/13/25
CICONIIFORMES								
Ciconia ciconia	White Stork	7	—	1	—	—	—	3/4/1
Phoenicopterus ruber roseus	Greater Flamingo	25	10(10)	—	—	—	—	8/17/10
Phoenicopterus ruber ruber	Rosy Flamingo	62	—	6	—	3	—	20/20/25
Phoenicopterus chilensis	Chilean Flamingo	43	—	—	—	—	43	—
ANSERIFORMES								
Dendrocygna bicolor	Fulvous Whistling Duck	1	—	—	—	1	—	—
Cygnus atratus	Black Swan	10	5	—	—	1	—	2/12
Cygnus melanocoryphus	Black-necked Swan	2	—	—	—	—	—	1/1
Cygnus cygnus	Whooper Swan	4	—	1	—	—	1	1/1/2
Anser anser	Greylag Goose	7	—	—	—	1	1	0/2/3
Anser indicus	Bar-headed Goose	40	—	13	—	1	1	8/8/35
Anser caerulescens caerulescens	Lesser Snow Goose	12	—	6	2	3	1	2/3/7
Anser caerulescens atlanticus	Greater Snow Goose	11	—	3	2	1	9	0/0/2
Anser canagicus	Emperor Goose	14	—	2	—	—	1	5/4/6
Branta sandvicensis	Hawaiian Goose	4	—	—	—	—	2	1/1
Branta canadensis	Canada Goose	20	—	—	—	—	—	4/4/12
Branta leucopsis	Barnacle Goose	19	—	16	—	—	—	7/7/21
Branta ruficollis	Red-breasted Goose	32	—	—	—	3	1	18/9/1
Cereopsis novaehollandiae	Cape Barren Goose	11	—	—	—	1	6	3/1
Alopochen aegyptiacus	Egyptian Goose	9	—	—	—	—	1	1/2/5
Tadorna cana	South African Shelduck	20	—	—	—	1	1	6/7/5
Tadorna variegata	New Zealand Shelduck	9	—	—	—	1	2	4/2
Tadorna tadorna	Shelduck	11	—	—	—	2	—	4/3/2
Plectropterus gambensis	Spur-winged Goose	2	—	—	—	—	—	1/1
Aix sponsa	Carolina Duck	9	—	8	—	2	—	9/6
Aix galericulata	Mandarin Duck	9	—	—	—	1	—	2/6
Chenonetta jubata	Maned Goose	6	—	—	—	—	—	4/2
Anas penelope	Wigeon	6	—	—	—	—	—	2/3/1
Anas sibilatrix	Chiloe Wigeon	15	—	5	—	4	—	5/8/3
Anas falcata	Falcated Teal	5	—	—	—	—	—	2/3
Anas strepera	Gadwall	2	—	—	—	—	—	2/0
Anas formosa	Baikal Teal	3	—	—	—	—	—	3/0
Anas crecca	Teal	2	—	—	—	—	—	2/0
Anas specularioides	Crested Duck	11	—	—	—	1	3	2/3/2
Anas acuta	Pintail	3	—	—	—	—	—	1/2
Anas bahamensis	Bahama Pintail	3	—	—	—	—	1	1/1
Anas querquedula	Garganey	6	—	—	—	1	3	1/1
Anas clypeata	Shoveler	4	—	—	—	—	—	0/4
Netta rufina	Red-crested Pochard	6	—	4	—	1	—	6/3
Aythya ferina	Pochard	4	—	—	—	—	—	2/2
Aythya fuligula	Tufted Duck	7	—	—	—	1	—	1/5
Aythya marila	Greater Scaup	4	—	—	—	—	—	2/2
Somateria mollissima	Eider Duck	19	—	1	—	3	—	4/11/2
Bucephala islandica	Barrow's Goldeneye	4	—	—	—	—	—	2/2
Oxyura jamaicensis jamaicensis	North American Ruddy Duck	14	—	—	—	3	—	11/0
Oxyura vittata	Argentine Ruddy Duck	4	—	—	—	—	—	4/0
		1	2	3	4	5	6	7

		1	2	3	4	5	6	7
FALCONIFORMES								
Gyps africanus	African White-backed Vulture	2	—	—	—	—	—	2/0
Gyps rueppellii	Ruppell's Griffon Vulture	2	—	—	—	—	—	1/0/1
Torgos tracheliotus	Lappet-faced Vulture	2	—	—	—	—	—	1/1
Sagittarius serpentarius	Secretary Bird	—	1	—	—	—	1	—
GALLIFORMES								
Meleagris gallopavo	North American Turkey	17	—	10	—	3	6	0/0/18
Lophortyx californica	Californian Quail	2	—	—	—	2	—	—
Francolinus erckelii	Erckel's Francolin	—	6	—	—	—	—	6/0
Lophophorus impeyanus	Impeyan Pheasant	4	—	—	—	1	—	1/2
Gallus gallus	Jungle Fowl	—	19	—	—	—	—	8/11
Gallus sonneratii	Sonnerat's Jungle Fowl	9	3(3)	—	—	3	—	3/6
Lophura nycthemera	Silver Pheasant	3	—	5	—	—	—	1/2/5
Lophura imperialis	Imperial Pheasant	2	—	—	—	—	—	1/1
Lophura swinhoii	Swinhoe's Pheasant	4	—	5	—	1	—	2/6
Crossoptilon mantchuricum	Brown Eared Pheasant	9	—	—	—	2	—	2/5
Crossoptilon auritum	Blue Eared Pheasant	2	—	7	1	1	—	1/1/5
Catreus wallichi	Cheer Pheasant	5	—	—	—	1	—	2/2
Syrmaticus mikado	Mikado Pheasant	2	1	1	—	—	—	2/2
Chrysolophus pictus	Golden Pheasant	8	—	—	—	—	—	2/6
Chrysolophus amherstiae	Lady Amherst's Pheasant	3	—	—	—	—	—	1/2
Pavo cristatus	Common Peafowl	67	3	60	—	9	16(1)	0/0/105
Numida meleagris	Helmeted Guineafowl	14	—	—	—	2	1	0/0/11
GRUIFORMES								
Grus grus	Common Crane	1	—	—	—	—	—	1/0
Grus monacha	Hooded Crane	1	—	—	—	—	—	0/1
Grus canadensis	Sandhill Crane	3	—	—	—	—	—	1/2
Grus japonensis	Red Crowned Crane	7	—	1	1	—	1	4/2
Grus vipio	White-naped Crane	8	—	—	—	1	—	4/3
Grus rubicunda	Brolga	2	1	—	—	—	—	1/2
Bugeranus carunculatus	Wattled Crane	2	—	2	1	—	—	1/1/1
Anthropoides virgo	Demoiselle Crane	4	—	—	—	—	—	2/2
Anthropoides paradisea	Stanley Crane	3	—	—	—	—	—	2/1
Balearica pavonina	West African Crowned Crane	2	—	—	—	—	1	1/0
Balearica regulorum	South African Crowned Crane	14	7(7)	—	—	3	2	7/8/1
Choriotis kori	Kori Bustard	4	1	—	—	—	3	1/1
PSITTACIFORMES								
Pseudeos fuscata	Dusky Lory	2	—	—	—	—	—	1/1
Trichoglossus haematodus	Swainson's Lorikeet	3	—	—	—	—	—	0/0/3
Calyptorhynchus funereus	White-tailed Black Cockatoo	2	—	—	—	2	—	—
Eolophus roseicapillus	Roseate Cockatoo	15	—	—	—	—	—	7/8
Cacatua leadbeateri	Leadbeater's Cockatoo	1	—	—	—	—	—	1/0
Cacatua sulphurea	Lesser Sulphur-crested Cockatoo	1	—	—	—	—	—	0/1
Cacatua galerita	Greater Sulphur-crested Cockatoo	2	—	—	—	—	—	1/1
Cacatua sanguinea	Bare-eyed Cockatoo	3	—	—	—	—	—	2/1
Nymphicus hollandicus	Cockatiel	7	—	3	—	—	2	1/1/6
Alisterus scapularis	King Parrot	3	—	—	—	—	—	1/1/1
Platycercus eximius cecilae	Golden-mantled Rosella	2	—	—	—	1	—	0/0/1
Psephotus haematonotus	Red-rumped Parrakeet	10	—	4	—	—	2	2/1/9
Psittacus erithacus	Grey Parrot	4	—	—	—	—	—	1/1/2
Psittacula eupatria nipalensis	Alexandrine Parrakeet	2	—	—	—	—	—	1/1
Psittacula krameri manillensis	Indian Ring-necked Parrakeet	6	1	—	—	—	1	2/1/3
Ara macao	Scarlet Macaw	4	—	1	—	—	—	2/2/1
Ara chloroptera	Green-winged Macaw	4	—	—	—	—	—	2/2
Amazona aestiva	Blue-fronted Amazon Parrot	1	—	—	—	1	—	—
Amazona ochrocephala	Yellow-fronted Amazon Parrot	1	—	—	—	—	—	0/1
Amazona amazonica	Orange-winged Amazon Parrot	3	—	—	—	—	—	1/0/2
STRIGIFORMES								
Tyto alba	Barn Owl	1	1	1	—	—	—	1/1/1
Nyctea scandiaca	Snowy Owl	2	—	—	—	—	—	0/2
Strix aluco sylvatica	Tawny Owl	2	—	—	—	—	—	1/1
		1	2	3	4	5	6	7

		1	2	3	4	5	6	7
CORACIIFORMES								
Dacelo novaeguineae	Laughing Kookaburra	2	—	—	—	—	—	1/1
PASSERIFORMES								
Estrilda melpoda	Orange-cheeked Waxbill	4	—	—	—	1	—	2/1
Amandava subflava	Golden-breasted Waxbill	2	—	—	—	—	—	1/1
Gracula religiosa	Hill Mynah	1	—	—	—	—	—	0/0/1
Urocissa erythrorhyncha occipitalis	Red-billed Blue Pie	2	—	—	—	1	—	0/0/1
	Total-Birds	895	59(20)	199	12	72	126(1)	943

Reptiles

TESTUDINES								
Testudo graeca	Spur-thighed Tortoise	—	21	11	—	—	—	7/14/11
Testudo hermanni	Hermann's Tortoise	—	10(1)	—	—	—	—	4/6/0
SERPENTES								
Boa constrictor	Boa Constrictor	—	2(2)	—	—	—	—	0/0/2
	Total-Reptiles	—	33(3)	11	—	—	—	44

Summary

Regent's Park

	1	2	3	4	5	6	7	Number of Species (excluding domestic)
Mammals	1271	132(5)	933	139	267	716(5)	1214	154
Birds	1139	75(1)	149	8	120	165(20)	1070	309
Reptiles	401	85	402	24	92	379(3)	393	98
Amphibians	173	59	227	9	46	273	131	25
Total	2984	351(6)	1711	180	525	1533(28)	2808	586

Estimated number of fishes and invertebrates in the Collection at 31 December 1985:

Fishes				Approx 1430		176 species		
Invertebrates (excluding some common species)				3300		112 species		
Whipsnade Park								
Mammals	1365	54(5)	552	49	198	452(5)	1272	57
Birds	895	59(20)	199	12	72	126(1)	943	105
Reptiles	—	33(3)	11	—	—	—	44	3
Total	2260	146(28)	762	61	270	578(6)	2259	165
Grand Total— Zoological Society of London	5244	497	2473	241	795	2111	5067	670*

*The species common to Regent's Park and Whipsnade Park are counted as one.

Advisory and Consultant Services

Animal Management and Conservation

Al-Areen Wildlife Park, Bahrain: Advice on and assistance with animal management. Secondment of specialized staff.

The Alistair Reid Snake Venom Research Unit, WHO Collaborative Centre for the Control of Antivenoms, Liverpool School of Tropical Medicine: Advice on housing and husbandry of venomous snakes.

Corporation of London Veterinary Department: Advice on identification and handling of reptiles.

Doha Zoo, Municipality of Doha, Qatar: Management of the national zoo for the Qatar Government.

Dubai Municipality, UAE (with J. S. Bonnington Partnership): Preparation of masterplan for new national zoo.

Mahidol University, Bangkok: Advice on housing and husbandry of venomous snakes.

Maudsley Hospital, London: Advice on identification and handling of reptiles.

Ministry of Forestry, People's Republic of China (with International Union for Conservation of Nature and Natural Resources, World Wildlife Fund/Woburn Estate/North of England Zoological Society/Oxford University): Collaborative project on reintroduction of Père David's deer to the wild.

Overseas Development Administration: Advice on animal capture techniques.

Police and Local Authorities: Advice on wild animal capture techniques. Advice on identification and handling of reptiles.

Wolong Natural Reserve Panda Research Station, People's Republic of China (with World Wildlife Fund): Advice on and assistance with the development of a management programme for the Giant Panda.

Comparative Medicine and Physiology

Brompton Hospital, London: Collaborative research on supplemental feeding in cystic fibrosis.

Central Middlesex Hospital: Collaborative research on supplemental feeding in cystic fibrosis. (Action for Research into Multiple Sclerosis Unit): Collaborative studies on dietary management in multiple sclerosis.

Charing Cross Hospital Medical School: Collaborative studies on the gonadotrophic control of primate ovarian function.

Clinical Research Centre, Northwick Park Hospital, London: Collaborative investigations on aetiopathogenesis of iron storage disorders in birds.

Consumers' Association: Advice on nutritional recommendations as defined by Committee on Medical Aspect on Diet and Heart Disease (DHSS) and National Advisory Committee on Nutrition Education.

Dalgety (UK), Cambridge: Collaborative research on chemical communication in mammals.

Department of the Environment: Laboratory examinations for diagnosis of botulism, mainly in water birds.

Edward Grey Institute of Field Ornithology, Oxford: Examination of natural material for *Clostridium botulinum* toxin or spores.

European Economic Community: Advice and collaboration on nutritional values of fats and oils.

Greater London Council: Laboratory examinations for diagnosis of botulism, mainly in water birds.

Hospital for Tropical Diseases, London: Laboratory service for testing of serum for diagnosis of *Toxocariasis*.

Institute of Laryngology and Otology, Royal National Throat, Nose and Ear Hospital, London: Studies on comparative anatomy of the mammalian larynx.

Institute of Primate Research, National Museum of Kenya: Joint studies on reproductive endocrinology and behaviour in primates. Development of computerized behavioural recording devices for use in the wild.

Institute of Obstetrics & Gynaecology, Hammersmith: Collaborative research on follicular development and granulosa cell function in primates.

London Food Commission: Advice on computer programming and nutrition dataprocessing.

Maternity Alliance: Advice on nutrition in pregnancy.

Medical Research Council Reproductive Biology Unit, Edinburgh: Development and application of pregnancy tests in elephants.

Middlesex Hospital (Department of Immunology): Collaborative studies on antigenic properties of thyroglobulin in mammals.

Ministry of Agriculture, Fisheries and Food: Collaborative research on role of essential fatty acids. (Shinfield, Reading): Development of enzyme assay techniques. (Veterinary Investigation Services): Laboratory examinations for diagnosis of botulism, mainly in water birds.

Ministry of Defence: Advice on quality of nutrient intake of Royal Navy personnel.

National Institute of Medical Research, London: Collaborative development of micro infusion devices.

National Institutes of Health, Bethesda, USA: Advice on establishment of endocrinological and behavioural research programmes for marmoset monkeys.

Overseas Development Administration, Peru: Examination of natural material for *Clostridium botulinum* toxin or spores.

Queen Elizabeth Hospital, London: Collaborative research on nutrition in cystic fibrosis.

Royal (Dick) Veterinary School, Edinburgh: Laboratory examinations for diagnosis of botulism.

Royal Marsden Hospital, London: Collaborative studies on plasma proteins in the Iguana.

Royal Veterinary College: Laboratory examinations for diagnosis of botulism.

St Helier Hospital, Surrey: Analysis of blood essential fatty acids in patients with melanoma.

St Vincent's Hospital, Dublin: Collaborative research on the resistant ovary syndrome in the human.

Tadworth Court Children's Hospital, Surrey: Collaborative research on essential fatty acid supplements in cystic fibrosis.

TBA Equine Fertility Unit, Cambridge: Collaborative studies on embryo transfer in wild Equidae.

University of Bradford: Collaborative studies on melatonin in primates.

University of Cape Town: Collaborative research on natural suppression of reproduction in the Naked Mole Rat.

University of Kent: Collaborative studies on endocrinology of puberty in primates and endocrine control of granulosa cell function in rodents.

University of Leeds: Collaborative studies on circulating levels of Vitamin D3 metabolites in Iguana plasma.

University of London (University College): Collaborative research on the hormonal basis of maternal behaviour and natural suppression of reproduction in primates.

University of Nottingham School of Agriculture, Sutton Bonington: Collaborative research on induction of ovulation in ungulates.

University of Sydney: Collaborative studies on primate early pregnancy proteins.

Veterinary Practices: Laboratory examinations for diagnosis of botulism.

Westminster Hospital Medical School, London: Collaborative studies on the gonadotrophic control of primate ovarian function.

World Health Organization: The Institute of Zoology is a collaborating centre for malaria reference and research, comparative medicine and pathology of non-domestic vertebrates, reproduction and child health milk.

World Wildlife Fund/Ministry of Forestry, People's Republic of China: Advice on reproductive physiology of the Giant panda.

Zoos: Radioimmunoassay for monitoring hormonal status and pregnancy in primates. Laparoscopic examination of monomorphic birds and reptiles for sex determination.

Training and International Liaison

British Council: Training of visiting workers in hormone assays and serology.

Ministry of Forestry, People's Republic of China: Training of visiting workers in reproductive physiology and veterinary medicine.

University of Beijing, People's Republic of China: Training of visiting workers in reproductive physiology and hormone assays.

University of Brasilia: Scientific exchange visits for specialist training in reproduction, behaviour and ecology of marmoset monkeys in the wild.

University of Milan: Training of visiting workers in gamete biology.

Universities: Training of students from the UK and overseas in microbiology, radioimmunoassay, gamete biology, behavioural studies, neuroendocrinology and veterinary medicine.

Veterinary Consultancy

Longleat Wildlife Park: Ultrasonography of giraffe, camel and elephant.

Rotterdam Zoo: Advice on and assistance with anaesthesia of bull Elephant for tusk extraction.

Saudi Arabia: Advice on and organization of capture and relocation of Arabian Oryx.

World Wildlife Fund/Ministry of Forestry, People's Republic of China: Advice on and assistance with the veterinary care of the Giant panda.

Consultant Histopathology, Pathology and Veterinary Advice: Government departments; Research institutes; Zoological collections, and Veterinary practices both in the UK and abroad.

Representation on Scientific Societies, Zoological, Conservation and Research Organization.

The Society's staff, whether in an individual capacity or as representatives of the Council, play an active role in many organizations concerned with the publication of specialist journals, animal management, conservation and other specialist research activities.

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European Association of Radiology: Professor G. H. du Boulay (President)

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Zoology & Cell Biology Department, University College), Mr J. H. Samour (Visiting Lecturer, Department of Medicine, Royal Veterinary College), Dr P. M. Summers (Course Lecturer, Zoology and Cell Biology Department, University College), Dr A. Voller (Reader in Immunology of Parasitic Diseases, London School of Hygiene and Tropical Medicine: Council Member, London School of Hygiene and Tropical Medicine)

University of Nottingham School of Agriculture: Professor M. A. Crawford (Honorary Professor in Applied Biochemistry and Nutrition)

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Veterinary Deer Society: Mr G. H. Henderson and Mr R. A. Kock (Sub-Editors)

Wild Mammals in Captivity: Dr B. C. R. Bertram (Editorial Board)

World Health Organization: Professor J. P. Hearn (Member, Institution Strengthening (Research Department) Committee; Adviser, Reproductive Physiology and Applied Primate Research, WHO Special Programme of Research in Human Reproduction), Dr H. D. M. Moore (Adviser, Male Infertility, WHO Special Programme of Research in Human Reproduction), Dr A. Voller (Member of Expert Advisory Panel on Parasitology; Member of WHO/IUIS Sub-Committee on Standardization of Reagents for Enzyme Immunoassays)

World List of Scientific Periodicals: Mr R. A. Fish (Council)

World Pheasant Association: Mr P. J. S. Olney (Council)

World Wildlife Fund: Professor J. P. Hearn, Dr A. S. I. Loudon (Consultant Scientists), Mr D. M. Jones (UK Trustee)

Zoo Biology: Professor J. P. Hearn (Editorial Board)

Amendments to the Byelaws

The following amendments to the Byelaws were agreed in a postal ballot of Fellows and approved by the Privy Council on 17 June 1985.

1. *Byelaw 5*—delete sub-paragraphs (i) and (ii) of the existing Byelaw 5 and substitute therefor the following new sub-paragraphs 5(i) and (ii):

5. (i) The entrance fee for Fellows shall be such sum as the Council shall from time to time recommend and the Society in general meeting shall approve. If the Society in general meeting shall not approve the sum recommended by the Council, the entrance fee previously fixed shall apply.

(ii) The annual subscription, which shall be payable on 1st January in every year, shall be such sum as the Council shall from time to time recommend and the Society in general meeting shall approve. If the Society in general meeting shall not approve the sum recommended by the Council, the annual subscription previously fixed shall apply.

2. *Byelaw 10*—delete "14" in line 4 and substitute therefor "16".

3. *Byelaw 12*—delete the existing Byelaw 12 and substitute therefor the following new Byelaw:

12. (i) The entrance fee for Associates shall be such sum as the Council shall from time to time recommend and the Society in general meeting shall approve. If the Society in general meeting shall not approve the sum recommended by the Council, the entrance fee previously fixed shall apply.

(ii) The annual subscription for Associates, which shall be payable on 1st January in every year, shall be such sum as the Council shall from time to time recommend and the Society in general meeting shall approve. If the Society in general meeting shall not approve the sum recommended by the Council, the annual subscription previously fixed shall apply.

(iii) The Council may at its discretion remit in whole or in part the entrance fee and the annual subscription or either of them of any Associate or group of Associates. Any Associate may compound his future subscriptions by the payment of such fee as the Council may determine.

4. *Byelaw 24*—add in the last line thereof the words "supervision of" before the words "the management".

5. (a) *Byelaw 26(i)*—delete "31st January" in the first line and substitute therefor "30th April".

(b) *Byelaw 26(ii)*—delete "1st February" in line 1 and substitute therefor "1st May".

(c) *Byelaw 26(iii)*—delete "20th February" in line 3 and substitute therefor "20th May".

(d) *Byelaw 26(iv)*—delete "20th February" in line 2 and substitute therefor "20th May"

(e) *Byelaw 26(v)*—delete "24th March" in line 2 and substitute therefor "24th June", and delete "15th April" in line 9 and substitute therefor "15th July".

6. *Byelaw 29*—delete the existing Byelaw 29 and substitute therefor the following new Byelaw:

29. A copy of the Annual Report of the Council for each accounting year shall be sent by pre-paid post to every Fellow not less than 21 days before the date of the Annual General Meeting for the calendar year in which the end of the relevant accounting year falls.

7. *Byelaw 31*—delete "31st December" and substitute therefor "31st March".

8. *Byelaw 33*—add in the first line thereof the word "accounting" before the word "year".

9. *Byelaw 39*—delete "29th April" in line 1 and substitute therefor "7th September", delete "22nd April" in line 2 and substitute therefor "1st September" and delete "31st May" in line 2 and substitute therefor "30th September".

10. *Byelaw 43*—delete "1st March" in line 3 and substitute therefor "1st July".

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EDUCATION DEPARTMENT—WHIPSNADE PARK: Mrs C. Addison, Mr K. Alder, Dr J. Aldous, Mrs C. Allsop, Mrs S. Austin, Ms F. Bayley, Miss T. Boundy, Mrs M. Beswick, Mrs V. Blunt, Mrs J. Broad, Mr S. Cocks, Mr F. Cory-Wright, Mr M. Crick, Mrs T. Crouch, Mr N. Davey, Miss V. Dawson, Mrs B. Deacon, Mrs O. Dodd, Mr J. Edwards, Mr R. Edwards, Mrs J. Emery, Mr H. Evans, Mrs W. Evans, Mrs G. Favell, Mrs C. Fetigan, Miss R. Fielder, Ms L. Ford, Mrs P. Francis, Mr K. Gale, Ms H. Gay, Ms L. Gerard, Mrs E. Godman, Mrs A. Kane, Miss T. Kazim, Ms S. Kipping, Miss E. Krupmicki, Miss L. Laird, Mrs E. Lennon, Mrs G. Lumb, Mrs J. Lund, Mrs E. March, Mrs P. Mitchell, Ms K. Morrice, Ms T. Morris, Mrs A. Morrison, Mrs J. Oldfield, Mrs J. Owen, Mr I. Palmer, Mrs C. Partridge, Mrs A. Perrott, Mr L. Perrott, Mrs C. Peterkin, Mrs E. Pickup, Mr G. Pitt, Mrs B. Platten, Mrs A. Plunkett, Mrs I. Putnas, Mr R. Reeks, Mrs J. Roberts, Mr K. Robinson, Mr R. Sharp, Mrs C. Sharpe, Miss E. Smith, Miss F. Stuart, Ms G. Taylor, Mrs C. Thompson, Mr L. Thompson, Mr J. Thornton, Ms F. Tomlin, Mr M. Tomlin, Mrs J. Venn, Mrs J. Warner, Mr J. Whittaker, Mrs S. Williams.

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Financial Statements

Income and Expenditure Account
For the fifteen month period ended 31st March 1986

	Notes	£'000s	15 months 1986 £'000s	12 months 1984 £'000s
Income from Activities	2		5,628·0	4,363.3
Cost of Activities	2		8,639·3	6,307·2
Net Deficit on Activities			(3,011·3)	(1,943·9)
Administrative Expenses			(109·9)	(88·3)
			(3,121·2)	(2,032·2)
Other Operating Income	3		167·7	709·9
			(2,953·5)	(1,322·3)
Income from Investments	4	60·4		131·8
Interest Receivable	5	251·5		20·9
Interest Payable	6	—		(176·0)
			311·9	(23·3)
Operating Deficit for the Period			(2,641·6)	(1,345·6)
Grant—Department of the Environment	9		3,500·0	2,388·0
			858·4	1,042·4
Exceptional Item				
Profit on Sale of Assets			125·5	339·6
Excess of Income over Expenditure			983·9	1,382·0
Appropriation				
Transfer to Building and Equipment Fund			(450·0)	(600·0)
			533·9	782·0
Adverse Balance Brought Forward			(255·0)	(1,037·0)
Balance Carried Forward			278·9	(255·0)

The notes on pages 55 to 63 form part of these accounts.

Balance Sheet at 31st March 1986

	Notes	£'000s	1986 £'000s	31 December 1984 £'000s
FIXED ASSETS				
Tangible Assets	10		1,420·4	733·2
Investments	11		507·2	504·9
			1,927·6	1,238·1
CURRENT ASSETS				
Stocks	12	124·6		48·5
Debtors	13	1,337·5		538·6
Cash at Bank and in Hand		1,452·6		636·0
		2,914·7		1,223·1
CREDITORS: Amounts Falling Due Within One Year	14	(1,362·4)		(1,030·7)
NET CURRENT ASSETS			1,552·3	192·4
TOTAL ASSETS LESS CURRENT LIABILITIES			3,479·9	1,430·5
CREDITORS: Amounts Falling Due After More Than One Year	15		(44·6)	(20·0)
			3,435·3	1,410·5
FUNDS AND RESERVES				
Deferred Government Grant	9		1,000·0	—
Funds	16		582·8	554·3
Building and Equipment Fund	17		1,573·6	1,111·2
Income and Expenditure Account			278·9	(255·0)
			3,435·3	1,410·5

Approved by Council 11th June, 1986

PEYTON
Treasurer

SIR WILLIAM HENDERSON
President

Statement of source and application of funds for the fifteen month period ended 31st March 1986

	£'000s	1986 £'000s	12 months 1984 £'000s
SOURCE OF FUNDS			
Grant from The Department of the Environment		3,500·0	2,388·0
Deficit from Operations		(2,641·6)	(1,345·6)
		858·4	1,042·4
Items not involving the movement of Funds			
Composition Fund—Transfer	(0·8)		(0·7)
Depreciation	88·5		30·0
Transfer from Building and Equipment Fund	(45·8)		(19·8)
		41·9	9·5
Total generated by operations		900·3	1,051·9
Funds from other sources			
Sale Proceeds of Assets	125·5		—
Sales Proceeds of Investments			
General Fund	—		983·8
Surplus on sale of Scientific Fund Investments (note 16)	13·9		80·8
Funds Income	15·4		10·2
Grants for purchase of Fixed Assets			
Department of the Environment	1,000·0		—
Other	58·2		531·0
		1,213·0	1,605·8
		2,113·3	2,657·7
APPLICATION OF FUNDS			
Net Increase in Investments	2·3		—
Purchase of Tangible Fixed Assets	721·4		763·2
Lease Finance	54·3		—
		778·0	763·2
		1,335·3	1,894·5
MOVEMENT IN WORKING CAPITAL			
Increase in Stocks		76·1	31·3
Increase in Debtors		798·9	181·0
Increase in Creditors		(356·3)	(288·5)
		518·7	(76·2)
Increase in net Liquid Funds			
Bank Overdraft	—		1,384·9
Bank Balances and Deposit	816·6		585·8
		816·6	1,970·7
		1,335·3	1,894·5

Report of the Auditors

TO THE COUNCIL OF THE ZOOLOGICAL SOCIETY OF LONDON

We have audited the financial statements on pages 52 to 63 in accordance with approved auditing standards.

In our opinion the financial statements of the Zoological Society of London, which have been prepared under the historical cost convention, give a true and fair view of the state of affairs of the Society at 31st March, 1986 and of the excess of income over expenditure and source and application of funds for the period ended on that date.

ARTHUR YOUNG *Chartered Accountants*

11th June 1986

Notes to the Financial Statements

1. Accounting Policies

(a) *Changes in Accounting Policy*

The Society changed its accounting policy for fixed assets and depreciation to that stated in (d) below from January 1984. Freehold land and buildings acquired prior to December 1983 are fully depreciated; other buildings, plant, vehicles and fittings and furnishings were written off in the year of purchase.

(b) *Basis of Financial Statements*

It has been agreed that the Society will receive from the Department of the Environment a revenue grant of £2 million a year commencing in the Government's financial year to 31st March, 1985 subject to review in the third year, and additional contributions towards repayment of the Society's overdraft and capital expenditure within the same period. The financial statements have accordingly been prepared on a going concern basis and under the historical cost convention.

(c) *Consolidation*

The financial statements do not consolidate the results and the assets and liabilities of the Society's wholly owned subsidiaries, Zoo Restaurants Limited and Zoo Enterprises Limited.

Concession fees, covenanted profits and losses of these companies are included in catering and retail services income, Note 2(f).

(d) *Fixed Assets and Depreciation*

Fixed assets acquired by purchase or gift during the year are shown at cost or valuation depreciated on a straight line basis at rates appropriate to write off the cost over their expected useful lives. Freehold and leasehold buildings are depreciated over a range of 15 to 40 years; plant and equipment 5 to 10 years and motor vehicles 5 years.

(e) *Building and Equipment Fund*

The fund comprises grants received and appropriations from income and expenditure account, which are released back to revenue over the expected useful life of the relevant asset by equal annual amounts.

(f) *Grants*

Government grants received of a revenue nature are credited to income and expenditure account for the year in which they are received. Grants for capital expenditure are credited to a deferred government grant account and are released to revenue over the expected useful life of the relevant asset by equal annual amounts.

(g) *Stocks*

Stocks are stated at the lower of direct cost and net realisable value with the following exceptions: no value is placed on the animals, farm and garden stocks and the library; stocks of scientific publications are included at nominal valuation.

(h) *Special Funds*

Special funds of the Society which have conditions attached to their use are not included in the balance sheet. Details of these are set out in note 19.

(i) *Pension Scheme Arrangements*

The pension scheme of the Society is maintained as a separate trust fund. Payments made to the fund and charged in these financial statements are based on actuarial advice. The fund is actuarially valued every three years.

(j) *Leasing Commitments*

Assets obtained under finance leases are capitalized in the Balance Sheet and are depreciated over their useful lives. The interest element of the rental obligations is charged to Profit and Loss Account over the period of the lease and represents a constant proportion of the balance of the capital repayments outstanding.

2. INCOME AND EXPENDITURE ON ACTIVITIES IS ATTRIBUTABLE AS FOLLOWS:

	Notes	Income £'000s	Expenditure £'000s	1986 Surplus/ (Deficit) £'000s	1984 Surplus/ (Deficit) £'000s
Specific Activities					
Zoological Gardens					
London Zoo	2(a)	3,465·8	4,561·6	(1,095·8)	(655·3)
Whipsnade Park	2(a)	855·4	1,771·0	(915·6)	(527·6)
Education and XYZ Club	2(b)	96·1	173·3	(77·2)	(30·5)
Library	2(c)	—	94·2	(94·2)	(88·2)
Publications	2(d)	337·2	308·4	28·8	(15·9)
Institute of Zoology	2(e)	750·2	1,714·2	(964·0)	(689·4)
		5,504·7	8,622·7	(3,118·0)	(2,006·9)
General Activities					
Members Subscriptions and Fees		139·0	16·6	122·4	88·7
Transfer: Composition Fees	16	0·8	—	0·8	0·7
Donations		27·0	—	27·0	5·9
Less: Investment Income (Institute of Zoology)	16	(43·5)	—	(43·5)	(32·3)
		5,628·0	8,639·3		
Net Deficit on Activities				(3,011·3)	(1,943·9)

2. **(a) Zoological Gardens**

	London Zoo		Whipsnade Park	
	1986 £'000s	1984 £'000s	1986 £'000s	1984 £'000s
Income				
Admission of Visitors	3,040·9	2,429·2	690·7	647·3
Admission of Cars	—	—	86·3	79·6
Catering and Retail Services (Note 2(f))	266·7	144·6	(13·5)	18·3
Miscellaneous Income	67·9	54·9	91·9	83·3
Friends of the Zoos	90·3	—	—	—
	3,465·8	2,628·7	855·4	828·5
Expenditure				
Staff Costs	2,194·4	1,738·8	881·4	715·6
Administration Costs	379·9	312·3	165·0	139·6
Provisions	283·0	224·8	177·1	143·6
Less: Income from Animal Adoption Scheme	(93·6)	(71·1)	(11·9)	(7·4)
Backlog Maintenance	399·4	96·6	108·8	12·3
Minor Works	53·8	61·2	12·0	48·0
Works Materials	57·4	86·8	67·1	21·4
Gardening and Forestry	7·0	6·8	4·2	4·7
Equipment and Supplies	65·2	38·0	60·5	27·7
Miscellaneous Direct Expenses	54·6	35·3	14·5	9·0
Rates and Insurances	76·2	57·3	36·6	24·9
Fuel, Light, Water and Transport	671·3	478·0	148·9	137·1
Advertising and Promotion	214·0	181·4	79·5	76·1
Graphics and Information	87·7	30·3	15·0	0·8
Friends of the Zoos	84·2	—	—	—
Depreciation	71·9	27·3	12·3	2·7
Transfer from Building and Equipment Fund	(44·8)	(19·8)	—	—
	4,561·6	3,284·0	1,771·0	1,356·1
Deficit	(1,095·8)	(655·3)	(915·6)	(527·6)

(b) Education and XYZ Club

Income				
Education Visits and Club Fees (XYZ Club)	95·8	80·3	0·3	—
Expenditure				
Staff Costs	127·6	85·7	11·2	—
Administration Costs	22·1	14·7	2·0	—
Printing	2·2	4·1	—	—
Equipment and Supplies	1·4	0·7	—	—
Sundry	6·4	5·6	0·4	—
	159·7	110·8	13·6	—
Deficit	(63·9)	(30·5)	(13·3)	—

(c) Library

Expenditure		
Staff Costs	61·6	47·7
Administration Costs	10·7	8·2
Equipment and Supplies	21·9	32·3
Deficit	(94·2)	(88·2)

2. **(d) Publications**

	Journal Transactions Symposia	International Zoo Yearbook	Zoological Record Nomenclator	1986 Total	1984 Total
	£'000s	£'000s	£'000s	£'000s	£'000s
Income					
Sales	288·5	35·0	13·7	337·2	157·3
Expenditure					
Staff Costs	67·0	39·6	19·1	125·7	104·8
Administration Costs	11·7	6·9	3·4	22·0	18·0
Paper and Printing	148·2	(0·2)	—	148·0	47·6
Sundry	8·3	1·4	2·7	12·4	2·8
Depreciation	—	0·3	—	0·3	—
	235·2	48·0	25·2	308·4	173·2
Surplus/(deficit)	53·3	(13·0)	(11·5)	28·8	(15·9)

(e) Institute of Zoology

	Veterinary Science	Wellcome Laboratories	Nuffield Laboratories	1986 Total	1984 Total
	£'000s	£'000s	£'000s	£'000s	£'000s
Income					
Fees	5·1	—	—	5·1	6·9
Scientific Fund—					
Investment Income (Note 16)	—	43·5	—	43·5	32·3
Grants					
Specific Projects	18·6	330·5	277·5	626·6	480·6
Wolfson Fund	—	—	75·0	75·0	75·0
	23·7	374·0	352·5	750·2	594·8
Expenditure					
Staff Costs	261·4	374·3	500·9	1,136·6	862·0
Administration Costs	42·9	25·3	67·2	135·4	100·9
Equipment and Supplies	40·1	132·9	220·7	393·7	280·8
Miscellaneous Direct Expenses	8·4	12·7	9·1	30·2	15·5
Sundry	7·3	4·4	6·2	17·9	25·0
Depreciation	0·4	1·0	—	1·4	—
Transfer from Building Fund	—	(1·0)	—	(1·0)	—
	360·5	549·6	804·1	1,714·2	1,284·2
Deficit	(336·8)	(175·6)	(451·6)	(964·0)	(689·4)

2. **(f) Catering and Retail Services**

Included under this heading are concession fees and convenanted profits from Zoo Restaurants Ltd and its subsidiary company Zoo Enterprises Ltd as follows:

	1986			1984		
	London Zoo	Whipsnade Park	Total	London Zoo	Whipsnade Park	Total
	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s
Zoo Restaurants Ltd	82·0	(1·9)	80·1	50·7	9·7	60·4
Zoo Enterprises Ltd	190·1	31·7	221·8	169·2	38·1	207·3
	272·1	29·8	301·9	219·9	47·8	267·7
Less						
Provision for Loss on Zoo Restaurants Ltd	(5·4)	(43·3)	(48·7)	(75·3)	(29·5)	(104·8)
	266·7	(13·5)	253·2	144·6	18·3	162·9
Sales for the period amounted to:						
Zoo Restaurants Ltd						
Own Operations			259·8			243·8
Concession Operations			1,702·7			1,126·2
Zoo Enterprises Ltd			1,249·6			909·9

	1986 £'000s	1984 £'000s
3. OTHER OPERATING INCOME		
Income from Consultancies	167·7	709·9

No provision has been made for taxation on consultancy income received from abroad; the Society does not believe there to be a liability to overseas taxation.

4. INCOME FROM INVESTMENTS		
Listed Investments	60·4	131·8
5. INTEREST RECEIVABLE		
Bank Deposits	206·1	4·4
Zoo Restaurants Ltd and Zoo Enterprises Ltd	45·4	16·5
	251·5	20·9
6. INTEREST PAYABLE		
Bank Loans and Overdrafts	—	176·0
7. OPERATING DEFICIT		
After Charging:		
Auditors' Remuneration	13·2	10·0
Depreciation	88·5	30·0

8. Staff Costs

	1986 £'000s	1984 £'000s
Wages and Salaries	4,173·2	3,356·1
Employers National Insurance Contributions	403·1	319·9
Other Pension costs	452·7	280·9
	5,029·0	3,956·9

The average weekly number of employees during the period was made up as follows:

Zoological Gardens—London Zoo	193	198
—Whipsnade Park	95	*137
Education and XYZ Club	9	7
Library	4	4
Publications	10	10
Institute of Zoology	74	67
Administration	30	28
	415	451

*Twenty six employees engaged in catering were transferred to Zoo Restaurants Ltd in January 1985.

9. Department of the Environment

Revenue grants were received as follows:

During three months to 31st March, 1985	1,500	888
During 12 months to 31st March, 1986	2,000	1,500
	3,500	2,388

Capital grants received in the 12 months to 31st March, 1986 amounted to £1 million (1984–Nil).

10. Tangible Fixed Assets

	Freehold Land and Buildings £'000s	Short Leasehold Buildings £'000s	Plant and Equipment £'000s	Motor Vehicles £'000s	Leased Plant £'000s	Total £'000s
Cost						
At 1st January, 1985	113·2	531·1	205·8	114·1	—	964·2
Additions during the period	266·0	174·0	237·1	44·3	54·3	775·7
Disposals	(27·6)	—	—	(12·0)	—	(39·6)
At 31st March, 1986	351·6	705·1	442·9	146·4	54·3	1,700·3
Depreciation						
At 1st January, 1985	113·2	14·8	11 8	91·2	—	231·0
Charge for the period	1·0	45·5	25·9	15·8	0·3	88·5
Disposals	(27·6)	—	—	(12·0)	—	(39.6)
At 31st March, 1986	86·6	60·3	37·7	95·0	0·3	279·9
Net book value at 31st March, 1986	265·0	644·8	405·2	51·4	54·0	1,420·4
at 1st January, 1985	—	516·3	194·0	22·9	—	733·2

11. INVESTMENTS

	1986 £'000s	1984 £'000s
Investments at Cost:		
Quoted Investments	507·2	492·8
Uninvested Cash Balances	—	12·1
Cost at 31st March, 1986	507·2	504·9
Market Valuation at 31st March, 1986	1,069·8	837·0
These Investments are attributed to:		
Scientific Fund	1,055·4	821·8
Fantham Bequest	14·4	15·2
	1,069·8	837·0

12. STOCKS

Raw Materials and Consumables	123·6	43·6
Finished Goods and Goods for Resale	1·0	4·9
	124·6	48·5

Stocks of works materials of £74,000 have been introduced this year.

13. DEBTORS

Amounts due from Zoo Restaurants Ltd. and Zoo Enterprises Ltd	490·8	9·3
Other Debtors	231·6	510·6
Prepayments and Accrued Income	615·1	18·7
	1,337·5	538·6

14. CREDITORS: Amounts Falling Due Within One Year

VAT, PAYE and National Insurance Contributions	120·6	99·0
Other Creditors	719·3	668·5
Accruals and Deferred Income	522·5	263·2
	1,362·4	1,030·7

15. CREDITORS: Amounts Due After More Than One Year

Deposited Covenant	—	20·0
Finance Lease Obligations	44·6	—
	44·6	20·0

16. FUNDS

	Heer Bequest	Fantham Bequest	Scientific Fund	Composition Fund	Staff Benevolent Fund	Total
	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s
Balance at 1st January, 1985	0·1	7·5	516·6	27·6	2·5	554·3
Investment Income	—	0·5	55·6	—	0·3	56·4
Additional Capital	—	—	0·4	2·1	—	2·5
Profit on sale of Investments	—	—	13·9	—	—	13·9
Transfer to Income and Expenditure Account	—	—	—	(0·8)	—	(0·8)
Transfer to Institute of Zoology	—	—	(43·5)	—	—	(43·5)
Balance at 31st March, 1986	0·1	8·0	543·0	28·9	2·8	582·8

17. BUILDING AND EQUIPMENT FUND

	£'000s
Balance at 1st January, 1985	1,111·2
Grants received during the period for the purchase of Fixed Assets	58·2
Transfer from Income and Expenditure Account	450·0
	1,619·4
Less: Transfer to Income and Expenditure Account	(45·8)
Balance at 31st March, 1986	1,573·6

18. PENSION FUND

At the last triennial valuation at 30th June, 1984, the Pension Fund showed a surplus of assets over liabilities and was solvent in terms of benefits to be provided on winding up. The Society made a contribution of £235,289 to the Pension Fund during the period.

19. SPECIAL FUNDS

(a) De Arroyave Fund

The capital of the fund is held by the Official Custodian for Charities. The net income was £16,806.

(b) Davis Fund

The capital of the fund is held in trust by the Society but is not included on the balance sheet. The income from the fund was £85.

20. Capital Commitments

	1986	1984
	£'000s	£'000s
Expenditure Contracted	202·7	—
Authorised but not yet contracted	—	—

21. Finance Lease Obligations

Net amount payable:		
Next Year	7·8	—
In the second to fifth years	31·0	—
Thereafter	13·6	—
	52·4	—

22. Status of the Society

The Society is incorporated by Royal Charter and is a registered charity, No. 208728. It is exempt from United Kingdom Taxation.

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