THE ZOOLOGICAL SOCIETY OF LONDON

Annual Report 1977

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. Research Laboratories and a modern Veterinary Hospital linked with a Pathology Department, which were established between the years 1956 and 1965, have greatly extended the scope of research which can be undertaken and sponsored by the Society.

Scientific meetings are held on the second Tuesday in the months February to June and October to December. At these meetings the results of new research are communicated and discussed, and specimens and films of zoological interest are exhibited. Symposia on special subjects are also arranged. The Society owns one of the finest zoological libraries in the world, which has been built up over the 151 years of its existence.

The Society's publications include:

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

The *Transactions* are published at irregular intervals.

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

The *Zoological Record*, a comprehensive bibliography of zoological literature with subject and systematic indices, is available either as a complete volume or separately in 27 parts dealing with the different animal groups.

The *Nomenclator Zoologicus* contains the names of all the genera and subgenera in zoology from the 10th Edition of Linnaeus 1758 to the end of 1965, with a bibliographical reference to the original description of each. The work contains approximately 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 149th Annual Report to the Annual General Meeting of the Society to be held on 17th May 1978 at 4.00 pm in the Society's Meeting Room at Regent's Park.

CONTENTS

PATRON: HER MAJESTY THE QUEEN

COUNCIL 1977–1978

President: Professor Lord Zuckerman, OM, KCB, MD, DSc, FRS
Treasurer: Aubrey Buxton, MC, DL
Secretary: Ronald Henderson Hedley, DSc, PhD, FIBiol
Professor E. J. W. Barrington, MA, DSc, FRS, *Vice-President*
E. Michael Behrens
Professor J. M. Dodd, PhD, DSc, FIBiol, FRS
Sir Dudley Forwood, Bt
Miss Barbara M. Gilchrist, PhD
Lord Glenkinglas, PC
Professor Richard J. Harrison, MA, MD, DSc, FRS
The Viscount Head, PC, GCMG, CBE, MC, *Vice-President*
Christopher Marler
The Hon Ivor Montagu, *Vice-President*
Sir Terence Morrison-Scott, DSC, DSc, *Vice-President*
Professor R. V. Short, ScD, FRS
Sir Eric Smith, CBE, ScD, FRS
Lady Daphne Straight
Ronald G. Waterhouse, QC, JP, MA, LLB, *Vice-President*
Sir Richard Way, KCB, CBE
Sir Gordon Wolstenholme, OBE, FRCP, FIBiol, *Vice-President*
C. A. Wright, DSc, PhD, FIBiol

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
1955 Dr G. W. Corner
American Philosophical Society, 104 South Fifth Street,
Philadelphia 6, Pennsylvania, USA
1957 Professor Robert Courrier
L'Institut de France (Académie des Sciences),
23 Quai de Conti, Paris 6, France
1945 Monsieur Jean Delacour
Parc Zoologique de Clères, Clères, Rouen, S-M, France
1975 Professor Jean Dorst
Muséum National d'Histoire Naturelle (Mammifères et Oiseaux),
55 rue de Buffon, Paris 53, France
1975 Dr Harry Hoogstraal
US Naval Medical Research Unit No. 3, c/o Embassy of the USA, Cairo, Egypt
1952 Professor Sven Otto Hörstadius
Zoologiska Institutionen, Uppsala, Sweden
1948 Professor A. R. Jorge
Museu Bocage, Faculdade de Ciências, Lisbon, Portugal
1939 The Rt Hon. Sir Robert Gordon Menzies
2 Haverbrack Avenue, Malvern, Melbourne, 3144,
Victoria, Australia
1974 Dr Roger Tory Peterson
Route 4, Box 131 Neck Road, Old Lyme, Connecticut, USA
1947 Professor G. G. Simpson
Department of Geology, University of Arizona,
Tucson, Arizona 85721, USA
1937 Dr E. A. Stensiö
Naturhistoriska Riksmuseum, Stockholm 50, Sweden

Review of the Year

Annual General Meeting

The President, HRH Prince Philip, Duke of Edinburgh, presided at the Annual General Meeting which was held on 10th May. In accordance with Article 10 of the Charter, His Royal Highness retired from the Presidency at the expiry of his third term of office. In announcing his decision not to seek re-election, Prince Philip commented that he had held office for 17 years, and had enjoyed his association with the work of the Society during a period of consistent and outstanding development.

Professor Lord Zuckerman retired from the Secretaryship and was elected President. Dr Ronald Hedley, Director, the British Museum (Natural History) was elected Secretary. Both took office at the close of the meeting. When declaring the elections, Prince Philip thanked Lord Zuckerman for his services as Secretary for a period of 22 years. During this time he had revitalized the scientific activities of the Society and had made possible the rebuilding and development of the London Zoo and Whipsnade Park.

The following members of Council retired: Dr Francis C. Fraser, Sir Michael Perrin and Dr C. E. Gordon Smith (Scientific Fellows); the Duke of Wellington and Mr Woodrow L. Wyatt (Ordinary Fellows).

The fellows elected to fill these vacancies were: Professor E. J. W. Barrington, Dr Barbara Gilchrist and Sir Eric Smith (Scientific Fellows); Sir Dudley Forwood and Sir Richard Way (Ordinary Fellows).

The Secretary reported, with great regret, the death in January of a member of Council, Professor A. T. Phillipson. During the year Professor J. M. Dodd was appointed to fill the vacancy caused by Professor Phillipson's death.

When the formal business of the meeting had been completed, Lord Donaldson, on behalf of the Fellowship, thanked Prince Philip for his inspiration and guidance which had contributed so much to the continuing stability of the Society. He also thanked Lord Zuckerman and welcomed his continuing association in a presidential capacity. Lord Donaldson also wished Dr Hedley every success. The vote of thanks was seconded by Professor G. H. du Boulay.

The President presented the following awards for contributions to zoology:

THE SCIENTIFIC MEDAL (awarded to persons under 40 years of age for distinguished work in zoology) to *Dr P. P. G. Bateson*, Director, Sub-Department of Animal Behaviour, University of Cambridge, for his work on ethology and on experimental and developmental psychology and neurology; and to *Professor B. K. Follett*, University College of North Wales, for his work on seasonal breeding cycles in higher vertebrates, particularly on photoperiodism in birds.

THE THOMAS HENRY HUXLEY AWARD (for original work submitted as a doctoral thesis) to *Dr D. J. Patterson*, University of Bristol, for his thesis 'Ionic and osmotic regulation by Protozoa: cation accumulation and regulation by *Tetrahymena pyriformis* W., with observations on the behaviour of contractile vacuoles of divers organisms'. The award was a sculpture by Tapio Wirkkala.

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 E. J. W. Barrington*, FRS.

Membership

The Society was honoured when HRH Prince Philip accepted the Council's invitation to become an Honorary Fellow.

At the end of the year there were 2,689 Fellows and 4,157 Associates.

Obituary

The Council records with regret the death of Sir Landsborough Thomson in June, President of the Society from 1954 to 1960. Sir Landsborough held office during a critical and testing time of the Society's affairs and is owed a great debt of gratitude for his patience and wisdom in helping guide the Society's affairs at a time when the rebuilding of the London Zoo was beginning.

The Council also records with regret the deaths of Mr H. R. Romilly Fedden and Sir John Ritchie, both of whom had been Fellows for many years and had served on Council.

Silver Jubilee

On the occasion of Her Majesty's Silver Jubilee, the Council, on behalf of the Fellowship, presented a Loyal Address.

'To Her Most Excellent Majesty, Elizabeth The Second, By the Grace of God of Great Britain and Northern Ireland Queen, Head of the Commonwealth, Defender of the Faith.

The Loyal Address of The Zoological Society of London.

Most Gracious Sovereign,
WE Your Majesty's most loyal and dutiful subjects, the President, Council, Fellows and staff of The Zoological Society of London, humbly beg leave to offer your Majesty our heartfelt congratulations on the 25th Anniversary of your accession to the Throne.

We are proud of your patronage of our Society and are deeply sensible of the benefits you have conferred upon us. We remember with pleasure the occasions when you have so graciously honoured the Society by visiting the Zoological Gardens, accompanied by His Royal Highness The Prince Philip, Duke of Edinburgh, to whom the Society owes an enduring debt for his concern in our work.

We assure Your Majesty of our loyalty and affection, and of our hope that you may continue to reign long over your devoted subjects.

ZUCKERMAN
President.'

June, 1977

CHILDREN'S DAY – Her Majesty's Silver Jubilee was celebrated by the Society on the 21st May and 28th May, when 12,000 children were invited to enjoy a day either at the London Zoo or Whipsnade Park. The invitations were sent to the Social Services Departments of the Local Authorities in South East England, for issue to deprived and handicapped children. On arrival, each child was presented with a commemorative badge and, on the first day, Mr Nicholas Parsons very kindly met and greeted the children. Many letters of thanks and appreciation were received.

Finance

During the year operating expenditure rose by 9·5 per cent. The salaries and wages bill, £1,691,000, represented 56 per cent of expenditure during a period in which salary and wage awards conformed with the Government's current pay policy. Animal foodstuffs were again a substantial item of costs, the total of £236,000 representing 6 per cent of expenditure. Public admission prices were raised early in 1977 by the minimum amount calculated to be necessary to cover rising costs. Attendances at Regent's Park remained at almost the same level as in 1976, but at Whipsnade Park there was a fall of 14 per cent below last year's figure.

No new capital works were undertaken. The balance still due from earlier projects accounted for capital expenditure of £66,000. The national economic situation is not encouraging from the point of view of continuing our rebuilding programme at the rate achieved in recent years. But the replacement of various services, such as the electrical and heating systems have become urgent, and the level of expenditure which will be required to meet these major items is a matter of great concern.

Grants, Donations and Gifts

The Council gratefully acknowledges many grants, totalling £180,865 in support of research projects, and a number of donations, including £4,000 from HM King Hussein of Jordan; £2,000 from Lady Baillie's Charitable Trust, a deed of covenant for seven years of £100 from the Morgan Guaranty Trust. Legacies of £1,460 from Miss E. E. P. Agabeg, £200 from Mrs Jessie Miller, and £117 from Mr John Groombridge were received, and Mr and Mrs D. R. Smith donated a seat at Whipsnade Park in memory of their son. Mr William Timym presented his sculpture of a Lion's Head for exhibition in the New Lion Terraces.

In June, Mrs Alison Johnstone, a direct descendant of Sir Stamford Raffles, deposited with the Society 12 volumes of '*Plantae Asiatica Rariore*' by the botanist N. Wallich who had originally given them to Lady Raffles. To mark the historical ties between the Raffles family and the Society, Mrs Johnstone's great nephew Stamford Galsworthy, who was born in 1976, the Society's 150th anniversary year, and is also a descendant of Sir Stamford Raffles, has become a sponsor of the Orang-utan collection at Regent's Park.

The Council is most grateful to all those who presented books to the Library. Mr A. W. Baker again generously presented four books to the Library. Mr I. C. Orr presented a copy of the Distributional list of Chinese birds, by Cheng Tso-hsin, 2nd ed. 1976, as well as a number of Chinese periodicals, and also translated and summarised them. Mr R. R. Smith, a Senior Keeper in the Sobell Pavilions, presented a copy of his thesis for the Fellowship of the Institute of Animal Technicians, entitled 'Observations on the behaviour of a small captive group of Gelada baboons'. Lord Zuckerman presented the three volumes of the 2nd edition of 'The ovary', edited by him and Dr B. J. Weir. Mr Gerald Smith of the Works Department presented three books, including 'Nicoll's Birds of Egypt', by R. Meinertzhagen, 1930. Among other donors to the Library were Professor J. L. Cloudsley-Thompson, Dr E. Elkan, Professor P. A. Jewell, Professor H. P. Moon, Miss Susan Sweeting and Mr G. L. Wood.

The Council very much appreciates the help and support given to the Society in this way.

The London Zoo

Visitors during the year 1,668,000
Visitors to the Aquarium 480,000

General

HM King Hussein of Jordan visited the Zoo with HM King Constantine, their families and friends, on 5th March.

There are always many official visitors to the Zoo each year, representing several countries and different interests. Among the visitors welcomed this year were the Chairman of the International Air Transport Association Live Animals Board, the Paraguayan Minister of Agriculture, the Director of the Wildlife Service of Queensland, the Deputy Secretary-General of the Malaysian Ministry of Science and Technology, the New South Wales Minister for Lands, Professor A. G. Bannikov of the Soviet Union, and the Chairman of the British Waterways Board. There were also many representatives of other zoos and their governing bodies.

The Society's role as a consultant organization was further developed during the year. The Architect, Mr J. Toovey, completed his plan for the new national zoological park in Khartoum and presented it to the Sudan Government in October.

The Society was also consulted on the design of a new zoo in Tripoli, Libya, and the Curator, Whipsnade Park, visited Jerusalem to advise on the re-development of its Biblical Zoo.

A spot survey of the geographical origin of visitors to the Zoo made during the week beginning 8th August, showed that 38 per cent of all visitors were from overseas countries. This compares with 23 per cent foreign visitors over a similar period in 1969.

On the evening of Sunday, 4th September, an armed gang of four men attacked the Zoo's security vehicle and stole a considerable sum of money. Six members of staff were injured, two seriously but, fortunately, not with permanent effect. No arrests in connection with the raid had been made by the end of the year.

Development

For the first time in over 20 years, no new buildings or exhibits were under construction, but the opportunity was taken to carry out some of the improvements which operational experience has shown to be necessary in the projects finished during this long period of development.

Work in the Children's Zoo, which is now called the Children's Zoo and Farm to indicate the emphasis on domestic animals, included the reinstatement of the area taken out of service in 1974 to provide access for the builders to the site of the New Lion Terraces. New paddocks for sheep and pigs were prepared and the layout of the eastern end improved.

A number of modifications were made in the Elephant and Rhino Pavilion. For security an extra barrier was placed in the exit ramp of the moat round the elephant paddock, and barriers were also installed along the moat in front of the dens. The barriers dividing the dens are also being strengthened and, when complete, these modifications should reduce the need to chain the elephants when they are in the dens. The Rhino paddock was resurfaced; the large main door leading into the Rhino paddock was renewed and a catch-up system built into the moat.

During the very wet winter some enclosures in the New

Lion Terraces, particularly those for the Tigers and Jaguars, were badly damaged by the animals and had to be replanted. The Giant Pandas also tore up grass in their enclosures in the Sobell Pavilions, making themselves very muddy in the process, which led to some complaints from the public about the loss of their picture-book whiteness. The two enclosures were therefore surfaced with blocks which allowed the grass to grow through but prevented mud forming. The sunken garden in the middle of the Sobell Pavilions had also suffered over the years from trampling by visitors; a new planting plan was therefore prepared, making use of prickly shrubs rather than ground plants.

Two paddocks of the lower Cotton Terraces were re-surfaced during the year. The thirteen paddocks on the Cotton Terraces have to be maintained on a regular basis and the operation involves complicated transfers of the animals from paddock to paddock to clear the area for work.

After several years out of service, the former 'flatfish tank' corner of the Aquarium has been re-built with five new tanks, greatly improving the central bay of the building. The rather dilapidated entrance to the Insect House was renovated, giving this building, one of the few old buildings left in the Zoo, an appearance more in keeping with the popularity of the exhibits.

The Gorilla accommodation in the Michael Sobell Pavilions for Apes and Monkeys was extended in preparation for the return of the young Gorilla 'Salome' and a young male early in 1978.

A review of the Regent's Park general development plan was carried out. After detailed preparation with all the staff concerned and in close consultation with the Department of the Environment and the Westminster and Camden Borough Councils, a revised plan to cover the period up to the end of the century was approved, in principle, by the Council and the appropriate advisory Committees.

A number of elms with Dutch Elm disease and some other trees affected by the summer droughts in 1975 and 1976 had to be felled. Unfortunately, more trees will have to be cut down early in 1978.

The Collection

Mammal Section

The New Lion Terraces have proved to be a very successful exhibit and provide eminently satisfactory quarters for the animals. Two Caracal Lynxes, a Serval and two Lions were born and reared during the summer.

So that she should not grow up in isolation after the period of fostering by Senior Keeper R. R. Smith and his wife, the Gorilla 'Salome', born in July 1976, was sent in the spring to join a group of young gorillas at Jersey Zoo. She has done well and is expected to return early in 1978, together with a young male, born in Jersey. Meanwhile, the adult Gorilla 'Lomie' has again been transferred to Bristol Zoo to mate with their male 'Samson'. The Society is grateful to the Bristol and Jersey Zoos for their co-operation. A body representing most of the British owners of Great Apes has now been formed to monitor and advise on the captive breeding of Great Apes in the United Kingdom, and it is hoped that this will enable such co-operative projects to be extended.

Births in the Michael Sobell Pavilions for Apes and Monkeys included a Capuchin, a Vervet Monkey, 3 Pigtail Macaques and a Gelada Baboon. Neither of two Orang-utans which were born survived. The breeding female 'Bunty', one of the Orangs received in 1967 from Hong Kong, also died just before giving birth. A Chimpanzee born in February to the prolific mother 'Brenda' had to be removed after three months, but was successfully fostered by the Keeper staff and is being returned to its family group.

The Giant Pandas continue to flourish. They are now five years old, but according to Chinese Zoo authorities, breeding is unlikely to take place below the age of six or seven years. In the meantime, the staff of the Wellcome Laboratories of Comparative Physiology have been conducting behavioural and hormonal studies of the Giant Pandas, to help towards achieving optimum breeding conditions in the future. The Curator of Mammals, as studbook keeper, has compiled the first edition of a studbook of Giant Pandas outside China.

On the Cotton Terraces the Scimitar-horned Oryx, Reindeer, Giraffes, Greater Kudu, Blackbuck, Yaks, American Bison, Maras, Przewalski's Horses and Zebras continue to breed. On the Mappin Terraces the Barbary Sheep, Markhor and Mouflon have all bred, and Vietnamese Pot-bellied Pigs have been added to the collection of pigs on the Lower Terraces.

An artificial insemination research project has been started by the staff of the Wellcome Laboratories, using the Yak collection. The breeding male Yak at London was transferred to Whipsnade and semen from males at Whipsnade was collected for insemination of the females in the London Zoo.

Early in the year four Indian Muntjac arrived from West Berlin Zoo. They are now in the Park paddocks. The Reeves' Muntjac bred twice during the year. Despite their close relationship, these two species have very different chromosome counts, and Professor R. V. Short, Edinburgh, will be studying the genetics of the former species. Six Red Kangaroos were presented by the Melbourne Zoo in honour of HM The Queen's Jubilee visit to that Zoo. These animals make a welcome addition to our collection of macropods.

In the Children's Zoo and Farm, the Dorset Down Sheep flock has been rehoused in one of the new paddocks, while in the 'contact paddock' there is a new group of Golden Guernsey Goats. The Jersey cow and both Friesian cows gave birth during the year. In the nocturnal house two Douroucoulis were born and reared.

The most notable births in the Charles Clore Pavilion for Small Mammals were Sugar Gliders, Fruit Bats, Ruffed and Brown Lemurs, two Saki Monkeys, a Douroucouli, Silvery and Common Marmosets, Red-mantled Tamarins, Ring-tailed Coatis and many rodents. The first Saki Monkey appeared to be progressing well for the first few months, but died during the weaning period. These animals are very selective about their food. This creates problems, especially at the time of weaning, when the young animal is learning to feed on an adult diet and is losing the nutritional support of its mother. Since 1970, twelve Indian Fruit Bats have been born in the Clore Pavilion for Small Mammals. In this species, weaning is also a particularly sensitive stage of development. The bat cage has therefore been modified to provide better roosting sites and more routes to feeding points.

The trend towards closer co-operation between zoos by the establishment of potential breeding groups or the improvement of existing groups continues, and to this end several

important exchanges were arranged. A female Giant Anteater was deposited by the Frankfurt Zoo as a mate for the single male in Regent's Park and a male Golden Lion Tamarin was sent to Pretoria Zoo. Similarly, the only Maned Wolf left in the Collection was sent to Kilverstone New World Wildlife Park, Thetford, which specialises in the keeping of South American animals.

There were other important inter-zoo animal exchanges, including the sale to Chester Zoo of the female Black Rhino born at the London Zoo in 1975, and the transfer to Blackpool Zoo of a female giraffe which was also born here.

Bird Section

There were some notable hatchings and rearings. The pair of captive-bred Burrowing Owls presented in 1976 by the National Zoological Park, Washington, USA, quickly adapted to their new environment in the Bird House and, early in May, the female laid three eggs in an artificial burrow, which was a drainpipe covered in sand. Two were hatched after nearly a month. Although one chick died immediately, the other successfully fledged in approximately three weeks. This species was first bred in captivity in Britain as far back as 1896, and in the London Zoo in 1905, but second-generation breeding is of particular interest.

Also in the Bird House, a pair of Double-toothed Barbets made a number of nesting and roosting holes in the soft wood of a tree stump and, after approximately four weeks incubation, two fully fledged young appeared. They differed from their parents only in the somewhat duller red on the abdomen.

The concentration of effort on the vulnerable Hornbill family is beginning to have results, and three species bred. Sadly, in June, the male Jackson's Hornbill, the first to breed in captivity and the parent of six young, died whilst the female and her chick were still incarcerated in the nest box. After the eggs are laid the female is walled in by the male and only a slit left through which the male passes food. It was therefore decided to move the complete nestbox to the safety of the Bird Room, where the Keeper staff could act as a surrogate male parent. The female accepted the situation and after a few days the young chick, a male, was feeding from the Keeper's hand. It successfully fledged and has now joined an unrelated female. Later in the year, the Red-billed Hornbills produced four young. This is their second family, having produced, for the first time in the Collection, two young last year.

The third Hornbill breeding success during the year was the Tarictic Hornbill from the Phillipines. Though first bred in the Los Angeles Zoo in 1974, this is the first time this species has bred in Europe. The female did not leave the nesting hole for 98 days, during which time the single egg hatched, the chick fledged, and she moulted.

The Andean Condors, which because of their aggressive natures are only allowed together for short periods during the breeding season, produced a single fertile egg. The female alone incubated, and though the egg hatched on 7th July, the chick died after only two days. Breeding in captivity is extremely rare.

Two Black-footed Penguins were reared; one by the parent, and one hand-reared from an egg hatched in the incubators, where a number of eggs from pheasant species were also hatched, continuing the successful record of the new incubation facilities built up in 1976. Pheasant species bred, both in incubators and in the Pheasantries, included Blue Eared and Brown Eared, Cheer, Swinhoe's, Mikado, Nepal Kalij and Sonnerat's Jungle Fowl.

Three Ruffs were bred in the new Waterbirds Aviary on the New Lion Terraces; White-faced Turacos, Sacred Ibis, Grey-headed Gulls, Cattle Egrets, Speckled Pigeons and Chinese Necklace Doves in the Snowdon Aviary; and Mountain Witch Doves in the Bird House.

Three species of Pelicans (Brown, Eastern White and Crested) are now in the Collection, and are being exhibited together in the former Penguin Pool at the foot of the Mappin Terraces. The Penguins which were there have been moved to the main Penguin Pool, and the Rockhoppers to the Southern Aviary.

During the night of 19th/20th May, a Snowy Owl and two species of Eagle Owls were killed by thieves who were in search of eggs. Two of the birds were sitting on eggs. A female Snowy Owl has since been acquired, and birds to replace the losses among small owls in 1976, as a result of Dieldrin poisoning, have been obtained.

Two deaths which probably established longevity records were a Saddle-billed Stork, after nearly 30 years in the Zoo, and an Argentine Lapwing after 23 years.

Aquarium

As already reported, five new tanks in the sea-water hall were completed at the end of the year, when they were being stocked with a large collection of marine fishes and invertebrates from the coasts of South Devon. A further collection of marine invertebrates is expected from the Channel Islands.

An unusual exhibit has been a Remora, which has been kept in a large marine tank with a Green Turtle. The fish usually swims just below the turtle, but from time to time has been seen to attach itself by its dorsal sucker to the carapace of the turtle. It is believed that this is the first time this fish has been shown in the Aquarium.

A fine specimen of the Arapaima from South America has been on exhibition in the large tank at the end of the tropical hall. The related Arawana was also exhibited.

Insect House

As well as the improvement to the entrance porch, one of the breeding rooms has been renovated and the outside butterfly cage re-glazed.

The staff have succeeded in breeding several spiders, stick-insects, grasshoppers, mantids and butterflies. They have also maintained the supply of large numbers of locusts for the feeding of small mammals, birds and reptiles.

Reptile House

Improved lighting has been installed in the west and central exhibition cages.

There have been several births or hatchings during the year. These included a clutch of 17 eggs laid by a female Boipevussu Snake in April, the seventh successive year that this female has laid eggs.

Six Rufous-beaked Snakes were hatched and eggs were laid by an Indian Python. A female Leopard Ground Gecko, hatched in the Reptile House in 1971, laid eggs in February

Whipsnade Park

and March which hatched a few weeks later. Two European Pond Tortoises were hatched on 29th November after an incubation period of 54 days, and ten Thailand Water Lizard eggs were laid.

Veterinary Report

A brief account of veterinary work undertaken during the year is included in the report of the Institute of Zoology (page 13).

A detailed, comprehensive account is also included in the Scientific Report published in the Journal of Zoology (1978) volume 184.

For the first time a complete list of all the animals in the Collections at the London Zoo and Whipsnade Park is given in Appendix 4.

Visitors during the year 415,000
Cars brought into the Park 50,000

General

There was again no major building work at Whipsnade Park during the year, but much maintenance and renovation of buildings and installations was carried out.

The painting of buildings, fences and other barriers in animal exhibits is an essential maintenance task which is sometimes difficult to accomplish because of the presence of the animals. Thus when the inside pools of the Water Mammals Exhibit were due to be painted early in 1977, the dolphins had to be kept in the large outside pool and protected from the winter weather by a tented construction, under which they lived satisfactorily.

A similar but more difficult problem had to be solved in order to paint the fence of the Lion Dell. To assure the safety of the painters, and since there was no other secure place at Whipsnade, the group of seven lions was moved to Regent's Park for a month while the work was in progress.

Over the last few years, the antiquated coke boilers providing heating for animal houses and installations have been progressively replaced by oil-fired equipment. The last coke boiler, which had been in use for 27 years in the Common Hippo House, was taken out of service. An extension from the new heating unit for the Pygmy Hippos was installed to serve the Common Hippo House.

A gate was built into the fence of the Elephant Paddock to allow access for vehicles, and the Park's radio-telephone system was replaced by new equipment.

A fire in the Asian Exhibit in the early morning of 9th December damaged half of the building, and caused the loss of 200 tons of hay, most of which had been harvested at Whipsnade.

The Collection

The Cheetah 'Juanita', mother of the first four litters of cubs born at Whipsnade, died on 19th September at Regent's Park, where she had been moved earlier in the year, almost ten years after the birth of her first litter in 1967. 'Jack', the father of the four litters and of several other Cheetahs born at Whipsnade, also died from an unidentified pox virus. This virus also caused the death of the other breeding male, which had been born in Montpellier Zoo, France. 1977 thus marks the end of a period of highly successful achievement in the breeding of Cheetahs which enhanced Whipsnade's reputation as one of the leading wild animal breeding centres in the world.

In ten years 44 Cheetahs were born at Whipsnade, 20 to parent animals which were themselves born in captivity and four to one of the second-generation females. Although Cheetahs are now being bred more and more regularly in zoos, no second-generation births in captivity have been recorded other than at Whipsnade.

There were two litters of four and three cubs born in 1977, the first sired by 'Jack' before he died, and the second by a new male, acquired from Marwell Zoological Park, which also died before the cubs were born.

The birth of a White Rhino calf late in the year provides a suitable point at which to review briefly another notable breeding success over recent years.

A pair of animals were already in the Park when seven female and 13 male White Rhinos arrived in August 1970. By the end of 1977, 15 young had been born either in the Park or elsewhere from a Whipsnade mating. The experience gained during this time has led to changes in the numbers of animals kept in order to achieve the best size and composition of the herd to sustain future breeding. The way in which these changes have taken place is shown in the table: (males/females).

NEW HERD 1970	*Add* RESIDENTS	BIRTHS	*Of which* DIED	OTHER DEATHS	SENT ELSEWHERE	BALANCE 31.12.77
7/13	1/1	*9/7	3/2	1/3	*11/4	2/12

* Includes one conceived in the wild.

San Diego Zoo has been equally successful, and with Whipsnade has shown how to sustain captive breeding of the species. The two Zoos have thus made a significant contribution to the long-term conservation of the White Rhino.

The need to add a male Bottle-nosed Dolphin to the stock in the Water Mammals Exhibit, where there have only been two females since 1974, has been evident both for management and for research reasons, and an application was made in 1976 to the appropriate US Government agency for a permit to acquire one. The permit has now been granted and the animal should be available during 1978. In the meantime, the opportunity arose of borrowing a pair of animals from the Clacton Dolphinarium to spend the winter at Whipsnade. They were successfully installed at Whipsnade at the beginning of November.

The penguins and flamingos have bred well. Nine Humboldt's Penguins were hatched in the spring and another five, unusually, in November and December. There were three King Penguin chicks, one from a mother bird itself hatched at Whipsnade three years earlier.

The successful rearing of nine Rosy and ten Chilean Flamingos means that these two species are now among the many animals which breed regularly at Whipsnade.

After two years when only one Red-breasted Goose hatched, there were five additions to this important flock.

A gift to the Society, in honour of the visit by HM The Queen to Melbourne Zoo during her Jubilee tour of Australia, included a pair of Australian Cranes, or Brolga, which have joined the collection of cranes at Whipsnade, which is now made up of twelve species. Two more White-naped Cranes were acquired to make up pairs.

The close co-operation between the Society and Marwell Zoological Park, in order to improve breeding prospects, was taken a step further with an agreement for common ownership and management of their separate groups of the endangered species of Hartmann's Mountain Zebra.

The giraffe 'Victor', which in September gained an international reputation because of the sad circumstances of its death, was born at Whipsnade on 9th January 1963. It had been sent to Marwell Zoological Park in an exchange earlier in the year.

The Polar Bear male cub born at the end of 1976 was sent to Edinburgh Zoo, on deposit.

Two Musk Oxen were born, one of which is a second-generation animal, both parents having been born at Whipsnade; this is yet another breeding achievement of more than usual note. It was also another good year for the Barasingha or Indian Swamp Deer herd, with four young born, these being the progeny of the stag received in 1976 from the East Berlin Zoo.

Seven Sitatunga births makes this species one of the most successful at Whipsnade in recent years, and adds to the list of those which are self-sustaining in the Collection. European Bison, Père David's Deer, Jaguar, Przewalski's Horse, Reindeer, Thomson's Gazelle, Common Zebra, Hog Deer and Brindled Gnu, were some of the other species which bred during the year.

Another step towards the building up of a herd of Scimitar-horned Oryx, a species now seriously endangered in the wild, was taken with the transfer of four males from Marwell Zoological Park to join the two which were sent from London in 1976. The natural grazing conditions at Whipsnade are unsuitable for animals from so arid a region as the Sahel, and the herd of Llamas was put into the paddock to keep down the grass, before the Oryx were let out. The experiment has worked well.

As noted in the London Zoo's report, the staff of the Wellcome Laboratories began a study of artificial insemination in Yaks, on the males at Whipsnade and females at Regent's Park. To ensure the right conditions, the breeding male from Regent's Park was moved to Whipsnade and two other males were acquired from the stock of Belle Vue Zoo, which had closed.

Scientific and Educational Activities

Scientific Meetings

The first of the eight scientific meetings held during the year was devoted to 'The scientific basis of wild animal husbandry', introduced by Dr M. Peaker. It contained contributions by Dr R. B. Heap on 'Hormones in body fluids as a guide to reproductive status' and by Dr P. F. Watson on 'Artificial insemination in captive breeding'. It is hoped that there will be a series of meetings on this topic. 'The Luminescence of euphausiid crustaceans' was the subject of papers given by Dr P. J. Herring, Dr N. A. Locket and Dr M. G. Hardy. Contributions to other meetings included: Dr Findlay E. Russell on 'Venomous animals and their toxins'; Mr Maurice Wilson on 'Some aspects of drawing animals'; Dr S. K. Bearder and Dr R. D. Martin described a study, using radio tracking techniques, of the ecology and behaviour of the Bush Baby, *Galago senegalensis*; Mr Jonathan Kingdon gave a talk, illustrated by his own drawings, on 'The facial patterns of African Guenon Monkeys and their evolution'; Dr R. Mead-Briggs described the significance of the rabbit flea in the evolution of myxomatosis in Britain; Professor K. Ronald spoke about the life of the Harp Seal.

Many of the other papers given at the meetings have been accepted for publication in the *Journal of Zoology*.

Symposia

The following Symposia were held:
27th July/4th August 'Seventh International Congress of Arachnology', at the University of Exeter and arranged in conjunction with the Centre International de Documentation Arachnologique and The British Arachnological Society.
7th/8th September 'Artificial breeding of non-domestic animals' organized by Dr P. F. Watson.

Publications

Journal of Zoology
Transactions of the Zoological Society of London
Symposia of the Zoological Society of London
Zoological Record. Nomenclator Zoologicus
Editor: H. Gwynne Vevers, MBE, DPhil, FLS, FIBiol
Assistant Editor: Marcia A. Edwards, PhD, FLS
Editorial Assistant: L. G. Ellis
Administrative Assistant: Unity M. M. McDonnell, MA

Journal of Zoology Volumes 181, 182 and 183 were published and contain a total of 108 papers. The Council is most grateful for the generous help given by the referees who assess the considerable number of manuscripts which are submitted.

Transactions Two parts were published. Volume 33, part 4, 'The sciaenid fishes (croakers or drums) of the Indo-West-Pacific' by Ethelwynn Trewavas. Volume 34, part 1, which contains four papers: 'Anatomical changes in nervous and vascular systems during the transition from prosobranch to opisthobranch organization' by R. C. Brace; 'Shell attachment and associated musculature in the Notaspidea and Anaspidea (Gastropoda: Opisthobranchia)' by R. C. Brace; 'Functional anatomy of the buccal apparatus of *Onchidoris bilamellata* (Mollusca: Opisthobranchia) by Denise M. Crampton, and 'Aplysiid species from Eastern Australia with notes on the Pacific Ocean Aplysiomorpha (Gastropoda, Opisthobranchia)' by A. Bebbington.

Symposia Three volumes were published. No. 38 'The biology of cephalopods' edited by Dr Marion Nixon and Dr J. B. Messenger. No. 39 'Comparative biology of skin' edited by Dr R. I. C. Spearman. No. 41 'Comparative aspects of lactation' edited by Dr Malcolm Peaker.

Zoological Record

Managing Recorder: Michael N. Dadd, BSc, FLS, AIInfSci
Systems Analyst: Stuart J. Rammell, BSc, AIInfSci
Senior Recorder: Judith M. Howcroft, BSc

Volume 109 (1972 literature): publication of this volume is nearly complete and is expected to be completed with the publication of Section 20 (List of New Genera and Subgenera) towards the end of the first half of 1978.

Volume 110 (1973 literature): twelve sections of this volume have been published; the remainder have been delayed to allow additional checking after some errors were found in the corresponding sections of volume 109. Publication of the volume is expected to be completed by mid-1978.

Volume 111 (1974 literature): nine sections of this volume have been published. The initial computer processing stage (keying) of another seven sections has been completed and an editorial check is in progress.

Volume 112 (1975 literature): indexing was completed during the year. The first group of sections is now undergoing initial processing and keying is expected to be completed early in 1978.

Volume 113 (1976 literature): indexing of the literature for this volume began towards the end of 1977.

In an attempt to improve the accuracy of the *Record*, and because of the many difficulties experienced by the recorders – who are mainly young graduates without taxonomic research experience – in interpreting and reconciling different views of classification, a certain amount of time has been spent in the preparation of reference tools. This work is proceeding in co-operation with the staff of *Biosciences Information Service of Biological Abstracts*, Philadelphia, to develop common practices in the treatment of biological nomenclature. While this diversion of resources has temporarily slowed down the production of the printed sections, it was felt that this would be outweighed by the long-term improvements in accuracy.

Members of the Zoological Record staff, especially B. D. S. Smith and D. R. Duggleby, have provided assistance during the year to the Curator of Birds, Mr P. J. Olney, for his work on the compilation of the *Birds of the Western Palaearctic*.

The Council is grateful to the British Museum (Natural History) for accommodation and help, to the Board of the British Library, and to the Director-General of its Lending Division for access to the library and for other assistance. The Council is also grateful to the staff of the United Kingdom Chemical Information Service (a Directorate of the Chemical Society) for much valuable advice and for their assistance in the operation of the computer-assisted system; to the zoologists who continue to assist in the compilation of the Record, and to the institutions (Listed in Appendix 6) whose donations help to defray the very heavy expenses involved.

International Zoo Yearbook

Editor: P. J. S. Olney, BSc, DipEd, FLS
Advisory Editor: H. Gwynne Vevers, MBE, DPhil, FLS, FIBiol
'Penguins' is the theme of section 1 of Volume 18 of the *International Zoo Yearbook*, which has been prepared during the year and will be published in the spring of 1978. The Consultant Editor, Professor William J. L. Sladen, is a well known authority on this group of birds, and the 17 papers cover a useful cross-section of species found in captivity. A world survey of institutions which keep and breed penguins sets the scene for contributions from 13 zoos with widely differing, and sometimes contradictory, views on ideal exhibits and methods of husbandry. The two species most frequently kept and bred – and therefore those dealt with in the greatest detail – are the Black-footed *Spheniscus demersus* and Humboldt's penguin S. *humboldti*. As Roger Tory Peterson points out in the opening article these are possibly the most vulnerable of penguin species. The establishment of regular successful breeding and, ultimately, of self-sustaining captive colonies is of first importance if these popular birds are to remain as common in zoos as they are today. The informative articles on zoo management, together with useful information from studies in the wild, which are included in this section, will, it is hoped, help to further this aim.

The 51 papers in Section 2, 'New developments in the zoo world', again cover a wide range of reptiles, birds and mammals under the general headings of Breeding, Husbandry, Hand-rearing, Buildings and Exhibits, Education and Conservation. As always, there is a strong emphasis on breeding, especially of difficult or rare species. In the interest of correct pairing, the Husbandry section also includes two studies on species identification, one covering some commonly confused marsupials, and the other on gibbons.

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

Library

During the past year the Library has continued to provide a service to members of the Society and to the staff. In order to meet the needs of our research staff, there is a considerable borrowing of books and journals from other libraries. In return our own books are lent to academic and specialist libraries throughout the country.

A re-organisation of the arrangements for the exchange of publications with other institutions, both in Britain and overseas, has helped to keep down the cost of journals without adverse effect on the Library's acquisition programme. The problems of accommodation created by the continuous increase in the Library's stock, together with the need to economise, as far as possible, on binding costs have necessitated a large scale re-arrangement of books in the Library.

Education Department

Programme for Schools

Admission charges for school pupils were once again increased during the year but, despite this, attendances were the highest for three years. In each term there was an increase over the corresponding figure for 1976. The total for the spring term was particularly satisfactory as, although Easter was earlier than the previous year and the term two weeks shorter, the number of attendances was a record. The average number of pupils taught during each week of this term, almost all for a period of two hours, was 1,951, a figure which approaches the maximum possible with existing resources. The most disappointing attendance figure was that from junior schools at the London Zoo during the summer term. Although over 28 per cent higher than in 1976, it was still appreciably lower than the figures achieved in earlier years. This may be due, in part, to the declining number of pupils in primary schools in the London area. The numbers of pupils attending were:

Regent's Park:	Spring Term (Secondary Schools)	23,411
	Summer Term (Primary Schools)	11,914
	Autumn Term (Secondary Schools)	18,444
Whipsnade Park:	Summer Term (Secondary Schools)	4,006
		57,775

Other Courses and Events

During the Easter vacation a short course for university students of zoology was held, and the Council is very grateful to the distinguished zoologists who conduct these courses. Special lectures and demonstrations were also organised for students from various universities, colleges of education and technical colleges. Members of the staff of the Education Department participated in an enrichment course for sixth form pupils organised by the Inner London Education Authority at the end of the summer term. Co-operation with the staff of the Authority's Centre for Life Studies continued.

Christmas Lectures

In the period immediately after Christmas three meetings were organised for the children and young friends of members of the Society. Dr David Bellamy gave a talk entitled *Half of Paradise*, and Dr Malcolm Coe gave a talk entitled *The Tortoise Story*. Walt Disney's film 'Perri' was also shown. All three meetings were well attended.

Young Zoologists' Club

Membership of the Young Zoologists' Club rose slightly during the year. Club meetings included a talk by Dr A. J. Charig entitled *An Introduction to the Dinosaurs*, film shows, and 'Zoo Quest' competitions at both Regent's Park and Whipsnade Park. Visits were organised to Bristol Zoo, the Cotswold Wildlife Park, Kilverstone Hall Wildlife Park, and three issues of *Zoo Magazine* were published.

Research

Institute of Zoology

For some years, many of the research projects carried out in the Nuffield and Wellcome Laboratories have been supported by grants from the Research Councils. In July 1977, the whole of the Society's scientific work was reviewed by a Visiting Group appointed by the Advisory Board to the Research Councils. The Group consisted of Professor Henry Harris (ARC; Chairman), Professor R. McM. Alexander (SRC), Professor G. M. Dunnet (NERC) and Dr I. A. McGregor (MRC).

Two demonstrations, one on the control of dangerous animals, and one on the enzyme-linked immunosorbent assay, were given by Mr D. M. Jones and Dr A. Voller at the Soirées of the Royal Society.

A comprehensive Scientific Report covering the years 1975–77 has been published in the *Journal of Zoology* (1978) **84**: 287–401, and therefore only a brief outline of the work is given here. The papers published during the year are listed in Appendix 3.

Department of Veterinary Science

Regent's Park

Admissions to the Animal Hospital from the Collection totalled 376 and a further 166 were referred for treatment by Veterinary Surgeons in practice or by research laboratories. During the year 769 necropsies were carried out, 640 on animals from the Collection and 129 from outside sources. 30 mammals and 108 birds were brought into the Collection; all the mammals and 36 birds underwent periods of isolation or quarantine in the Hospital.

The standard of health of the Collection was good, and although nutritional problems still exist in a few groups of reptiles and insectivores they are seldom serious. Investigations into the best methods of sedating and anaesthetising the various species of animals that need to be handled are continuing. Ketamine hydrochloride has been found to be of particular value for birds and reptiles. Research work, in collaboration with the Wellcome Laboratories, was carried out on methods of artificial insemination for breeding non-domestic cats and ungulates, and on techniques for monitoring sexual cycles and pregnancy by hormone assay and laparoscopic examination.

The Senior Veterinary Officer, Mr D. M. Jones, visited the Ouadi Rimé – Ouadi Achim reserve in Tchad, where the last population of any size of the Scimitar-horned Oryx still exists, to advise on management.

Whipsnade Park

During the year 372 necropsies were carried out. Mr D. G. Ashton has examined the use of the new steroid anaesthetic mixture Alphaxalone and Alphadolone, especially in cats and marsupials. The parasitic nematode *Camelostrongylus mentulatus* has been identified from some of the Thomson's Gazelles and from a Blesbok that died in 1974. This worm is closely related to *Osteragia*, a common parasite of domestic animals.

Nuffield Laboratories of Comparative Medicine

Haematology

Dr Christine Hawkey's routine diagnostic service now includes a special study of the methodology and the diagnostic value of blood counts in birds. The white cell count promises to be a useful aid to clinical diagnosis.

Mr P. D. Butcher began a study of the properties of the haemoglobins found in red cells that show the 'sickling' phenomenon in animals. This will be made less difficult by his discovery that the Hog Deer (*Axis porcinus*) possesses only one haemoglobin type, and it sickles.

Genetic Studies

In collaboration with Dr Rachel Fisher (MRC Human Genetics Unit, University College, London) and Dr M. Scott (Equine Research Station, Newmarket), Dr Hawkey has studied the karyotypes and the red and white cell isoenzymes of selected groups of animals. It is now possible to identify individually each of the Przewalski's Horses at Regent's Park and Whipsnade by its blood type. It is hoped to obtain data on Przewalski's Horses from other collections as a guide to future breeding programmes.

Nutrition

Dr M. A. Crawford and his colleagues continued their work on the essential fatty acids and Mr J. P. W. Rivers, Dr A Hassam and Miss Theresa Frankel discovered further evidence that carnivores need long-chain polyunsaturated fatty acids in their diet. These animals lack the enzymes needed to carry out at least two of the desaturation steps required for the production of their lipids. If deprived of them, the animals fail to breed.

Dr A. W. M. Hay completed his project on the comparative metabolism of Vitamin D. An assay for the vitamin and its metabolites, depending on competitive protein binding, has been used to assess the vitamin D status of animals in the Collection.

Infectious Diseases

Dr G. R. Smith and Dr Jennifer Graham have made further studies of the distribution of *Clostridium botulinum*, the cause of botulism, which destroys many wild birds every year. Mud from the Carmargue, which is free from *C. botulinum*, was found to contain bacteria that inhibit its growth. These organisms, identified as *Bacillus* species and including *Bacillus cereus*, *B. polymyxa* and *B. pumilus* produce peptide antibiotics which may well be responsible for the failure of *C. botulinum* to establish itself in the mud.

Dr Smith and Dr Jane Hooker tested new adjuvants in an attempt to produce an effective vaccine against contagious bovine pleuropneumonia.

Dr Vija Dent continues to co-operate with the London Hospital Medical College in her survey of the bacteriology of dental plaque in animals. Studies over the past year have been concentrated towards the identification of streptococci and *Neisseria* spp.

Dr A. Voller made advances in the application of the enzyme-linked immunosorbent assay (ELISA) to serological surveys of human disease. Immunological techniques for surveillance have been set up in Nigeria, Cameroon and Iraq, and local scientists were trained by Dr Ann Bartlett and Dr D. E. Bidwell.

Collaboration with the ARC Institute for Animal Diseases, Compton, has helped in the development and assessment of an irradiated vaccine for use against *Babesia* infections ('red-water') in cattle.

Mr P. K. C. Austwick has shown that a strain of *Pencillium verrucosum*, var. *cyclopium* which he isolated from stored maize in Bulgaria, produces a powerful mutagenic mycotoxin which causes kidney lesions in rats. The organism came from an area in which the human 'Balkan nephropathy' occurs and it may well be a factor in the cause of this disease. This work will be continued by Mr Austwick at the MRC Toxicology Unit, Carshalton.

Mr C. D. V. Black is investigating the use of liposomes (microscopic closed phospholipid vesicles) as carriers of drugs for the treatment of protozoal infections.

Radiology

Professor G. du Boulay and his colleagues from the National Hospital, Queen Square, and Dr D. J. Boullin of the MRC Clinical Pharmacology Unit, Oxford, have studied the pharmacology of the cranial arterial spasm that occurs after subarachnoid haemorrhage. They have shown that 5-hydroxy-tryptamine is not the major spasmogenic agent and that dopamine is of value in causing relaxation of the spasm. Methods of producing slow-release preparations are being explored.

Workshop

Mr P. R. E. Wallace and Mr W. G. Ray have completed the automation of a colorimeter for reading ELISA plates and have made a range of precision electronic temperature control units and timers for various research projects. They have also constructed a device for dehusking seeds, an incubator for crane eggs, and an electronic thermostat system for use in the sea water tank of the Aquarium.

Wellcome Laboratories of Comparative Physiology

Reproductive Physiology of Zoo Animals

Routine radioimmunoassay of steroid hormones in urine and blood samples is now a well established feature, supporting research on zoo animals as well as on the laboratory colonies. The assay system, originally developed by Dr B. Seaton, has been expanded by Dr Rosemary Bonney and is used in various zoo animal projects. Hormone assays and pregnancy test-kits have been used to monitor reproduction of primates (particularly Great Apes) in the Collection; the results from pilot studies are being used to assess fertility and to predict birth-dates in our own and other zoological collections, in conjunction with the scheme to coordinate the breeding of Great Apes in the United Kingdom, which is mentioned in the section, 'London Zoo'.

Miss Susan Kingsley has been observing the orang-utan colonies at Regent's Park and at the Jersey Wildlife Preservation Trust in order to relate behaviour to urinary hormone levels.

Dr R. D. Martin and Miss Maya Stavy have also used the assays to monitor steroid hormones in the urine of the Giant Pandas.

Testosterone : oestrogen ratios in faecal samples are also being used for sexing monomorphic birds, and a service system has been established to assist other collections.

Unfortunately, the initial attempt at artificial insemination of the elephant 'Toto' was unsuccessful. However, new hormonal information can be used to decide the time for a second attempt and Dr A. S. McNeilly (MRC Unit of Reproductive Biology, Edinburgh) has been able to identify changes during pregnancy using blood samples brought back from the Kruger National Park by Dr Martin.

In collaboration with the Department of Veterinary Science and with Dr P. F. Watson (Royal Veterinary College), techniques for the collection and preservation of semen from Yak and White-tailed Gnu have been developed for the purpose of artificial insemination; work on the Gnu has been carried out at Marwell Zoological Park. Mrs Frances D'Souza and Mr G. F. Nevill have conducted preliminary studies on semen collection, vaginal smear examination and laparoscopy in large cats.

Mr W. V. Holt has used histochemical and electron-microscope techniques to examine the maturation of spermatozoa. His work has yielded new information on the nature and development of the membranes of the sperm head.

Primates

Dr A. F. Dixson made notable progress in his studies of the reproduction of Owl Monkeys. The colony now contains 74 animals, of which 12 have been born in captivity. Work has concentrated on identification of the oestrous cycle, diagnosis of pregnancy, study of rearing behaviour and investigation of an unusual testicular condition in males. Laparoscopic techniques are being developed in collaboration with the Senior Veterinary Officer.

Mr B. Rudder is continuing to collect and analyse quantitative information on primate reproduction, with special emphasis on the relationship of various features to body size. The study has led to identification of relationships between body size and placental function, and to the prediction of gestation periods for little-studied species.

Mrs Heather Brand is studying the reproductive endocrinology and behaviour of Common Marmosets, Saddleback Tamarins and Cotton-top Tamarins.

Tree Shrews

Mrs Frances D'Souza completed her work on the reproduction and maternal behaviour of Tree Shrews. A total of 45 infants were born in the colony over the past two years and the study yielded much new information on oestrous cycles, pregnancy and maternal care.

Field Projects

Dr S. K. Bearder has joined the staff following his two-year field study of the behaviour and ecology of the Lesser Bush-baby in the Northern Transvaal, conducted in collaboration with Dr Martin. The data analysis of this study will clarify the social organisation of this species in relation to diet and other ecological factors. Data on East African bushbabies collected by Professor W. H. R. Lumsden and his colleagues will also be studied. Blood samples collected in the field are being analysed for genetic variation by Mr F. Brett of University College, London.

Photographic Archives

Mr T. B. Dennett and Mrs Lisette Allard have completed the

contact-printing and re-packing of about 15,000 photographic plate negatives in the Society's archives. The collection now contains a catalogued, well-preserved record of animals in the London Zoo from 1900 to 1940.

Curators' Departments

Dr H. G. Vevers has continued to work with Dr G. Y. Kennedy of the Cancer Research Laboratory. They have completed and published a survey on eggshell pigments and are now working on the pigments of ratite eggshells, using material from the Society's Collection and Kiwi eggshells from New Zealand.

The first of the seven volumes of 'The Birds of the Western Palearctic', for which Mr P. J. S. Olney acts as one of the Honorary Editors, is now published. Work is going ahead on the next volume, which will cover the families Accipitridae to Otididae, *c.* 95 species.

Several projects are in progress in the mammal section which involve cooperation with the staff in the Wellcome Laboratories; in particular, studies on reproduction and behaviour in the Orang-utan colony and the Giant Pandas, and artificial insemination in Yaks. These projects require considerable care and attention to detail by the Keeper staff, who have been collecting the samples and organising the animal management to fit in with research schedules.

Several degree course students carried out observational project work on animals in the Collection. Most were from colleges in the University of London, but one from as far away as Aberdeen. During the summer vacation Miss Caroline Boydell of Queen Mary College helped prepare the Society's first entry into the International Species Inventory System, which coordinates the animal record keeping of a great many zoos throughout the world, with the aim of improving the scientific management of zoo stocks of many endangered and vulnerable species.

Staff

INSTITUTE OF ZOOLOGY

Director of Science: L. G. Goodwin, CMG, FRCP, FRS.

DEPARTMENT OF VETERINARY SCIENCE

Senior Veterinary Officer: D. M. Jones, BSc, BVetMed, MRCVS
Veterinary Officer (Whipsnade): D. G. Ashton, BA, VetMB, MRCVS; *Senior Technician:* A. K. Fitzgerald, RANA.

NUFFIELD LABORATORIES OF COMPARATIVE MEDICINE

Heads of Departments: Biochemistry: M. A. Crawford, PhD; *Infectious Diseases:* G. R. Smith, PhD, MRCVS, DVSM, DipBact; *Haematology Section:* Christine Hawkey, PhD; *Radiology:* G. H. du Boulay, MB, BS, DMRD, FRCR, FRCP; *Research Assistants, Infectious Diseases:* Ann Bartlett, PhD; D. E. Bidwell, PhD; *Haematology:* P. D. Butcher, MIBiol; *Laboratory Superintendent:* P. R. E. Wallace, FIST; *Administrative Assistant:* Patricia E. Wright; *Research Fellows:* C. D. V. Black, SRN, BSc; Vija E. Dent, PhD; Jennifer M. Graham, PhD; A. G. Hassam, PhD; A. W. M. Hay, PhD; Jane M. Hooker, PhD; J. P. W. Rivers, MIBiol, BSc; A. Voller, PhD, DSc; *Research Students:* N. A. Flint, BSc; Theresa L. Frankel, BVetSci (Sydney), DipNutr (Cambridge); Isabella A. Quakyi, MIBiol, BSc.

WELLCOME LABORATORIES OF COMPARATIVE MEDICINE

Senior Research Fellow: R. D. Martin, DPhil, FIBiol; *Research Fellows:* Frances D'Souza, BSc; A. F. Dixson, PhD; Rosemary C. Bonney, PhD; S. K. Bearder, PhD; H. D. Moore, PhD; *Temporary Research Fellow:* D. Gilbert, PhD; *Visiting Research Fellows:* Maya Stavy, BSc; G. Crowcroft, PhD; *Research Students:* Heather Brand, MA; Susan Kingsley, BSc; B. Rudder, BSc; Jacqueline Orchard, BSc; *Chief Technician:* G. Nevill, HNC; *Histologist:* W. V. Holt, AIMLS, HNC, MIBiol.

Miss Jane Hooker joined the Nuffield Laboratories to work on the development of a mycoplasma vaccine and Miss Isabella Quakyi and Mr N. A. Flint joined as students. Dr Jennifer Graham, Mrs Barbara Hall, Mrs Janet Oxberry and Dr A. W. M. Hay left at the completion of their contracts. Mrs Vija Dent and Miss Jane Hooker were awarded PhD degrees; Dr A. Voller was awarded the William Julius Mickle Fellowship 1977–78 (University of London) for work carried out in the field of immunology; Mrs Frances D'Souza left to take an appointment as Senior Lecturer at the Oxford Polytechnic, and was replaced by Dr H. D. Moore who was appointed in December to conduct research on aspects of male fertility.

Visitors who worked at the Institute of Zoology during the year included:
Department of Veterinary Science: Dr C. Machado (USA) and Dr V. Wurth (Australia).
Nuffield Laboratories of Comparative Medicine: Mr A. Coppola (USA), Mr G. Denton (UK), Dr L. Ethridge (UK), Dr R. Finlayson (UK), Mr D. Jones (UK) and Mr D. de Savigny (Canada). Visitors from many countries received training in the ELISA technique.
Wellcome Laboratories of Comparative Physiology: Dr Gillian Crowcroft (Jersey) and Miss Maya Stavy (Israel).

General Matters

Catering Department

Once again the Catering Department had a busy and successful year. The interior of the Pavilion Cafeteria was redesigned to provide more modern facilities and various measures to streamline the catering and administrative staff structure, and thus reduce costs, have proved effective.

Zoo Restaurants Ltd

At Regent's Park the Late Evening Openings for members were well attended, and about 350 members and their guests dined on each of the four evenings. At Whipsnade Park the Evening Opening was held in June when 160 members and their guests attended.

Zoo Enterprises Ltd

Despite the reduction in the number of visitors to both Zoos, the company produced successful trading results. The gross turnover was maintained, although sales of photographic material and equipment suffered a modest setback.

Staff

At the end of the year there were 497 full-time members of staff as follows:

	London	Whipsnade
Animal Management	95	43
Construction, maintenance, gardening, general and public services	94	36
Catering and Retail departments	70	12
Institute of Zoology	67	
Education and other scientific departments, including publications and Zoological Record (of whom 25 work at the Zoological Record Office, Boston Spa, Yorkshire)	45	
Administrative departments	35	

A list of the senior members of staff is given in Appendix 2.

General

The Director of Science, Dr L. G. Goodwin, was elected an Honorary Fellow of the Pharmaceutical Society.

The Director of Zoos, Mr C. G. C. Rawlins, was elected President of the International Union of Directors of Zoological Gardens.

The Curator of Mammals, Dr M. R. Brambell, was appointed Chairman of the Scientific Authority for Animals which advises the Department of the Environment on all matters connected with the administration of the Endangered Species (Import and Export) Act 1976.

With the advice of the Society's Actuary, and after consultation with members of staff and their representative bodies, the Council agreed a revision of the Pension Scheme to take account of the changes to be effected under the Social Security Pensions Act 1975. The revised pension arrangements will come into force in April 1978. Provision was also made for a measure of improvement, on an ex gratia basis, of pensions already in payment.

A staff newsletter, with the title 'Parks News' has proved popular with staff and pensioners, and has earned well deserved compliments for its initiators and producers, Miss J. Jupp and Miss C. Nutkins of the Accounts Department.

At the beginning of September an exhibition of the art and craftwork of members of the Society's staff was organised by one of the Assistant Education Officers, Mr W. G. Griffiths. The exhibits were of a high standard, and were judged by Mr William Timym.

Training

Senior Keeper R. R. Smith, the Michael Sobell Pavilions for Apes and Monkeys, was the first Keeper to gain the Fellowship of the Institute of Animal Technicians. It was awarded for his thesis on the changes in the coloration of the pectoral skin of Gelada Baboons.

Twenty-seven members of staff were successful in the final examinations for the Ordinary and Higher Certificates in Zoo Animal Management, distinctions being gained by Messrs R. Catchpole, J. Foster, P. Harrington, A. Maskell, C. Tack and Miss P. Rivers (Ordinary Certificate), and by Messrs R. Dillingham, M. Gibbons, R. Hutton, J. Ffinch and P. Rodway (Higher Certificate).

Messrs Tack and Ffinch, who achieved the highest marks in the Ordinary and Higher Certificate examinations, received the Ashby prizes.

Another exchange of keeper staff was arranged with a Canadian Zoo; Senior Keeper F. Smith (Aquatic Birds and Birds of Prey, Regent's Park) changing jobs for a period of one year with Mr R. Johnson of Metropolitan Toronto Zoo. Two keepers from Nigeria received in-service training.

Awards

Mr G. Callard, Headkeeper, the Michael Sobell Pavilions for Apes and Monkeys, was awarded the Society's Bronze Medal for long and meritorious service. Mr C. Smith (Gardener, Whipsnade Park) received a gold watch on completion of 25 years' continuous service.

Appointments and Promotions

J. Barkham, *Superintendent, Retail Department*
D. Hill, *Chef de Cuisine*
L. Howard, *Supervisor, Staff Cafeteria, Regent's Park*
R. Raft, *Works Supervisor, Whipsnade Park*
M. J. Swallow, *Maintenance Supervisor, Regent's Park*
P. Williams, *Headkeeper, Whipsnade Park*

Retirements

Retirements during the year included Headkeeper A. G. Thorne, Whipsnade Park, after 43 years' service; W. Dixon, Works Foreman, Whipsnade Park, after 32 years' service; G. Evans, Works Department, Whipsnade Park, and J. Gillard, Works Department, Regent's Park, both after 31 years' service; E. Brauer, Chef de Cuisine, after 18 years' service.

Obituary

We regret to record the deaths of Mr F. A. P. Stengelhofen, the Society's Architect from 1947 until his retirement in 1966; Miss Kathleen Clarke, Publications Department; Mr S. C. Cole, Catering Department; Mr M. Lynch, Works Department, and of two pensioners, Mr E. B. Tanner and Mr J. Turvey.

Acknowledgments

The Council records its gratitude to the members who serve on its Committees; their expert advice and assistance is invaluable and of great help in carrying out the work of the Society.

We are also indebted to the many Fellows and others who have sent specimens for the Collection and who help us in so many ways.

The Council also gratefully acknowledges the assistance of many scientists, veterinarians, departments, organizations and firms for their ready co-operation. We constantly receive help from the British Museum (Natural History) and are most grateful to all the staff, including Miss A. Grandison, Dr N. Arnold, Mr Andrew S. Stimson and Mr J. E. Hill for their help in the identification of animals. We are also grateful to Mr N. Whittaker of the RSPCA London Airport, for the care of animals in transit and for the presentation of animals; to Kew Gardens for many exotic plants to decorate our tropical houses; to Dr P. A. J. Ball and his staff at the Middlesex Hospital for their assistance in emergency snake-bite treatment; Mr S. F. Everiss and Mrs M. Ryan of Paddington College for their co-operation in organising the keepers' courses; the Commanding Officer, Training Battalion, RAOC, for providing facilities for staff to practise the use of emergency weapons; and to the St John Ambulance Brigade for their constant help at the First Aid Centre, Regent's Park.

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

The Department of Veterinary Science by Mr S. A. Ahmed, Dr W. H. Allan, Dr E. S. Anderson, Dr E. C. Appleby, Professor N. Ashton, Mr P. Austwick, Dr J. R. Baker, Dr D. Baxby, Dr W. P. Beresford-Jones, Dr J. P. Blackburn, BP Nutrition Ltd, Dr R. Clampitt, Mr C. M. Colles, Dr W. R. Cook, Mr J. E. Cooper, Crown Chemical Ltd, Dr G. A. Cullen, Dr N. F. Cunningham, Dr D. S. Dane, Professor M. de Burgh Daly, Dr J. Delhanty, Mr K. E. Elgar, Dr R. Finlayson, Dr R. Fisher, Dr D. G. Fleck, Dr A. L. Furniss, Dr D. A. Gardner, Dr S. D. Gardner, Dr E. P. J. Gibbs, Glaxo Laboratories Ltd, Dr E. J. G. Glencross, Dr J. Grant, Hoechst UK Ltd, Dr H. Hoogstraal, ICI Ltd, Mr H. V. Ilsley, Dr I. F. Keymer, Dr L. F. Khalil, Mr P. A. Kingsbury, Dr S. P. Lapage, Dr B. R. Laurence, Dr W. M. F. Leat, Dr P. Lees, Miss G. Lewis, Mr G. H. Lowe, Miss M. H. Lucas, Professor W. H. R. Lumsden, Dr D. W. Mackenzie, Dr N. S. Mair, Mr J. G. Matthews, Merck Sharp and Dohme Ltd, Miss B. Noddle, Mr T. Northwood, Dr A. C. Palmer, Dr M. Peaker, Mr D. Prentice, Reckitt and Colman, Richard Wolf Ltd, Dr J. Riley, Dr J. Robinson, Dr B. Rowe, Mr P. G. Sargeaunt, Mr A. M. Scott, Professor G. B. D. Scott, Mr K. G. V. Smith, Mr S. Sparrow, Mr L. R. Thomsett, Dr L. H. Turner, Mr P. F. Wadsworth, Dr D. Warhurst, Wellcome Foundation Ltd, Dr G. B. White, Dr A. T. Willis, Dr S. Willmott and Professor A. Zuckerman.

The Nuffield Laboratories of Comparative Medicine and the Wellcome Laboratories of Comparative Physiology for financial support provided by the Medical Research Council, the Ministry of Overseas Development, the Natural Environment Research Council, the Science Research Council, the Wellcome Trust, the World Health Organization, Action Research on Multiple Sclerosis, the Boise Fund, British Cod Liver Oils Ltd, Cadbury Schweppes Ltd, the Central Research Fund (University of London), the Council for Scientific and Industrial Research (South Africa), the Drapers' Company, the Fauna Preservation Society, the Gatsby Charitable Foundation, the International Olive Oil Council (Madrid), the Leverhulme Trust, Merck Sharp and Dohme, the New York Zoological Society, Pedigree Petfoods Ltd, the Pilgrim Trust, Roche Products Ltd, the Royal College of Veterinary Surgeons, the Royal Society, Unilever NV (Vlaadingen) and Van den Berghe and Jurgens Ltd. The donations which have been received from the Caribbean Welfare Foundation (through Mrs Dorothy Rand), Ciba-Geigy, Mr Rueben Rausing Tetra Pak International AB, and the Medical Research Council of Nigeria, and the many colleagues and friends who have provided research material.

Supplies, and Transport Department by the Department of Trade and Industry, Ministry of Agriculture, Fisheries and Food, HM Customs and Excise, Anglia Laboratory Animals, the many people who have kindly offered and sent bamboo for the two Giant Pandas and also Evergreen Oak for other animals, British Airways, British Caledonian Airways, British Rail, RL Dobbs Transport, Brentport Ltd, KLM Royal Dutch Airlines, Industrial Freight Ltd, Lufthansa German Airways, Pan American World Airways, Qantas Airways, Swiss Airlines and Union-Castle Mail Steamship Company.

Whipsnade Park by Mr R. Bloom of Clacton Dolphinarium, British Rail and United Counties Omnibus Co. Ltd, Detective Sergeant D. Coulson for training in the use of aqua equipment, 'D' Division of the Bedfordshire Police, Mr J. A. Lyon from Edlesborough for evergreen oak, the personnel at the depot of the Queen's Division and Fire Officers in attendance at the fire during the night of 8th/9th December, Mr P. O. J. Scott of the Kensworth Saw Mills for sawdust, Dr C. P. Royall, Mr V. Sherriff and the members of the British Red Cross who help to staff the First Aid Post.

The Council also wishes to thank the press representatives and photographers for their co-operation and interest in the Collection.

Finally, the Council wishes to record its appreciation to all members of staff for their co-operation and contribution to the well-being of the Society during the year.

R. G. Hurley

Secretary

APPENDIX 1

Committees 1977-1978

Gardens and Park Committee

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

Lady Casson, RIBA, FSIA
Sir Dudley Forwood, Bt
A. M. Hassell, MA
Christopher Marler
The Hon Ivor Montagu, *Chairman*
Geoffrey Schomberg, FLS
Nigel Sitwell
Lady Daphne Straight
Lady Anne Tree
The Duke of Wellington, MVO, OBE, MC
C. A. Wright, DSc, PhD, FIBiol
Secretary: C. G. C. Rawlins, OBE, DFC

Finance Committee

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

E. Michael Behrens
Aubrey Buxton, MC, DL, *Chairman*
Lord Donaldson, OBE
Sir Terence Morrison-Scott, DSC, DSc
Sir Michael Perrin, CBE, FRIC
C. E. Gordon Smith, CB, MD, FRCP, FRCPath
Ronald G. Waterhouse, QC, JP, MA, LLB
Sir Richard Way, KCB, CBE
The Duke of Wellington, MVO, OBE, MC
Frank Yates, CBE, ScD, FRS
Secretary: R. R. G. Abbotts, ACMA, FCIS

The Institute of Zoology Committee

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

S. K. Eltringham, PhD
Professor B. K. Follett, PhD, DSc
Sir William Henderson, FRS
C. E. Gordon Smith, CB, MD, FRCP, FRCPath, *Chairman*
Sir Eric Smith, CBE, ScD, FRS
D. W. Snow, DSc, DPhil
P. Whittlestone, PhD, MRCVS
C. A. Wright, DSc, PhD, FIBiol
Professor A. J. Zuckerman, MD, DSc
Secretary: L. G. Goodwin, CMG, FRCP, FRS

Animal Welfare and Husbandry Committee

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

Professor G. H. Arthur, DVSc, FRCVS
Professor R. J. Berry, MA, PhD
Miss Marie E. Coates, PhD
A. R. Jennings, DVSc, MA, MRCVS
J. M. Knowles
Professor J. A. Laing, BSc, PhD, MRCVS
W. Lane-Petter, MA, MB, BChir, FIBiol, *Chairman*
Miss Gwyneth Lewis, BSc
A. J. Stevens, MA, BVSc, MRCVS, DipBact
A. D. Walker, PhD
W. L. Whitehouse, RD, MB, FRCS, FRCOG
A. N. Worden, PhD, DVetMed, DrMedVet, FRCPath, FRCVS, FRIC, FIBiol
Secretary: D. M. Jones, BSc, BVetMed, MRCVS

Education Committee

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

Professor W. S. Bullough, DSc, *Chairman*
R. J. Court, BSc
S. F. Everiss, MBE, MA, MSc, FIBiol
J. S. Everton, MA
Miss Barbara M. Gilchrist, PhD
P. H. Greenwood, DSc, PLS
J. E. Spice, MA, DPhil
D. J. Stanbury, BSc, ARCS
C. J. M. Trewhella, BSc
Peter Ward, BSc, MIBiol
C. H. Selby, HMI
Secretary: M. K. Boorer, BSc, DipEd

Publications Committee

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

Professor E. H. Ashton, PhD, DSc, *Chairman*
Professor A. d'A. Bellairs, DSc, MRCS, FLS
Professor A. J. E. Cave, MD, DSc, FRCS, FLS
Professor J. L. Cloudsley-Thompson, MA, PhD, DSc
Professor J. Green, DSc, PhD
P. H. Greenwood, DSc, PLS
J. P. Harding, PhD, FLS
H. N. Southern, MA, DSc
V. R. Southgate, PhD
Professor J. E. Webb, DSc, PhD
Professor G. P. Wells, ScD, FRS
Secretary: H. Gwynne Vevers, MBE, DPhil, FLS, FIBiol

Zoological Record Committee

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

Professor E. J. W. Barrington, MA, DSc, FRS, *Chairman*
J. Clevedon Brown, PhD, FLS
Francis C. Fraser, CBE, DSc, FRS
P. Freeman, DSc, ARCS, FIBiol
Professor J. Green, DSc, PhD
J. P. Harding, PhD, FLS
C. M. Hutt, FLS
A. K. Kent, PhD
R. A. Neal, DSc, PhD
Donn E. Rosen, PhD
J. G. Sheals, PhD, FIBiol
Errol White, CBE, DSc, FRS
Secretary: H. Gwynne Vevers, MBE, DPhil, FLS, FIBiol

International Zoo Yearbook Editorial Board

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

Miss Molly Badham
Lord Craigton, PC, CBE
Professor P. A. Jewell, MA, PhD, *Chairman*
Miss Janet Kear, PhD
J. M. Knowles
Christopher Marler
Lord Medway, MA, PhD
Walter Van den bergh
Secretary: P. J. S. Olney, BSc, DipEd, FLS

Awards Committee

Terms of Reference: The Council presents the following awards for contributions to zoology: The Stamford Raffles Award, the Scientific Medal, 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 advise Council on all matters relating to these awards.

Professor E. J. W. Barrington, MA, DSc, FRS, *Chairman*
The Earl of Cranbrook, CBE, MA, FLS
Professor J. M. Dodd, PhD, DSc, FIBiol, FRSE, FRS
Miss Vera Fretter, DSc
Miss Barbara M. Gilchrist, PhD
H. N. Southern, MA, DSc
Professor J. E. Webb, DSc, PhD
C. A. Wright, DSc, PhD, FIBiol
Secretary: H. Gwynne Vevers, MBE, DPhil, FLS, FIBiol

Promotion Committee

Terms of Reference: To consider and advise Council on all measures relating to the promotion of the Society's aims and activities in order to ensure the long term stability of the Society.

E. Michael Behrens
Aubrey Buxton, MC, DL, *Chairman*
Lord Donaldson, OBE
The Hon Ivor Montagu
Sir Michael Perrin, CBE, FRIC
Secretary: Miss E. M. Owen, CBE

APPENDIX 2

Staff

Directors:
Administration: Miss E. M. Owen, CBE
Science: L. G. Goodwin, CMG, FRCP, FRS*
Zoos: C. G. C. Rawlins, OBE, DFC
Architect: J. W. Toovey, AADipl(Hons), FRIBA
Assistant Director of Science, Curator of Aquarium and Invertebrates, Acting Curator of Reptiles: H. Gwynne Vevers, MBE, DPhil, FLS, FIBiol*
Catering Manager (London and Whipsnade): C. P. C. Garland
Curator of Birds, Editor International Zoo Yearbook: P. J. S. Olney, BSc, DipEd, FLS*
Curator of Mammals: M. R. Brambell, VetMB, PhD, MRCVS, FLS*
Curator, Whipsnade Park: V. J. A. Manton, MRCVS*
Education Officer: M. K. Boorer, BSc, DipEd
Establishment Officer: M. E. McInerney
Finance Officer: R. R. G. Abbotts, ACMA, FCIS
Institute of Zoology:
Department of Veterinary Science: See page 15
Nuffield Laboratories of Comparative Medicine: See page 15
Wellcome Laboratories of Comparative Physiology: See page 15
Librarian: R. A. Fish, FLA
Publications Department: See pages 11 & 12
Public Relations Officer: J. A. Dale, MIPR
Retail Manager (London and Whipsnade): J. F. Brown
Senior Veterinary Officer: D. M. Jones, BSc, BVetMed, MRCVS*

London Zoo

Gardens Executive: J. McCorry
Head Gardener: T. Law
Maintenance Manager: L. G. Taverner
Overseer of Birds: D. H. Newson
Overseers of Mammals: T. Sangster, J. Lambden
Overseer of Reptiles: D. Ball, AIAT
Purchasing and Transport Manager: H. J. Mason, MInstPS, MASMC
HEAD KEEPERS:
Aquarium: R. Dumbelton
Aquatic Birds and Birds of Prey: A. E. Scrivener, AIAT
Bears: S. Morton
Bird House: W. G. R. Daines
Children's Zoo: P. Anscombe
Elephant Pavilion and Aquatics: W. G. Crompton
Insects: R. P. Humphrys, AIAT
Lion House: E. F. Swain
Monkeys: G. Callard
Parrot House and Eastern Aviary: R. J. Watkins
Pheasantry and Ostrich House: R. Barrow
Reptiles: S. B. Savage
Small Mammals: R. B. Willis
Ungulates: T. B. Kitchenside

Whipsnade Park

Park Manager: O. C. Chamberlain
Veterinary Officer: D. G. Ashton, MA, VetMB, MRCVS*
Office Manager: M. L. Taverner
Head Gardener: J. Folds
Senior Overseer: G. Stanbridge
Overseer: J. Datlen
HEAD KEEPERS:
Central Ungulate Section: H. Stevens
Southern Ungulate Section: A. W. Billington
Northern Ungulate Section: P. J. Williams
Carnivore Section: F. Hughes
Elephant Section: J. Weatherhead
Bird Section: A. White
Children's Zoo: P. C. Milne

Consulting Staff

Consulting Architect: Sir Hugh Casson, PRA, RDI, RIBA
Consulting Landscape Architect: Professor Peter F. Shepheard, CBE, BArch, PPRIBA, MRTPI, PPILA
Honorary Herpetologist: Professor A. d'A. Bellairs, DSc, MRCS, FLS
Honorary Veterinary Consultant: A. C. L. Brown, MRCVS
Medical Referee: J. P. Horder, OBE, MA, MB, BCh, FRCP, FRCGP
Honorary Consultant Photographer: W. G. Vanderson
Consultant Typographers: Colin Banks, FSIA and John Miles, FSIA, FSTD

*Also members of the Institute of Zoology

APPENDIX 3

Publications by Society's Staff and Research Workers

ASHTON, D. G., JONES, D. M. & GILMOUR, J. S. (1977). Grass sickness in two non-domestic equines. *Vet. Rec.* **100:** 406–407.

BARNES, J. M., AUSTWICK, P. K. C., CARTER, R. L., FLYNN, F. V., PERISTIANIS, G. C. & ALDRIDGE, W. N. (1977). Balkan (endemic) nephropathy and a toxin-producing strain of *Penicillium verrucosum* var *cyclopium:* an experimental model in rats. *Lancet* **1977 (i):** 671–676.

BARTLETT, A., BIDWELL, D. E. & VOLLER, A. (1976). Practical methods for detection of antigen by ELISA. *Protides biol. fluids* **24:** 767–771.

BIDWELL, D. E., BARTLETT, A. & VOLLER, A. (1977). Enzyme immunoassays for viral diseases. *J. Infect. Dis.* **136:** S274–S278 (ELISA suppl.).

BLACK, C. D. V., WATSON, G. J. & WARD, R. J. (1977). The use of pentostam liposomes in the chemotherapy of experimental leishmaniasis. *Trans. R. Soc. trop. Med. Hyg.* **71:** 550–552.

BORLAND, E. D., MORYSON, C. J. & SMITH, G. R. (1977). Avian botulism and the high prevalence of *Clostridium botulinum* in the Norfolk Broads. *Vet. Rec.* **100:** 106–109.

BOULLIN, D. J., ADAMS, C. B. T., MOHAN, J., GREEN, A. R., HUNT, T. M., du BOULAY, G. H., & ROGERS, A. T. (1977). Effects of intracranial dopamine perfusion: behavioural arousal and reversal of cerebral arterial spasm following surgery for clipping of ruptured cerebral aneurysms. *Proc. R. Soc. Med.* **70:** Suppl. 2, 55–70.

BRAMBELL, M. R. (1977). Reintroduction. *Int. Zoo Yb.* **17:** 112–116.

BRAMBELL, M. R. & JONES, D. M. (1977). The management of young mammals. *Symp. zool. Soc. Lond.* No. 41: 333–339.

BUTCHER, P. D. & HAWKEY, C. M. (1977). A comparative study of haemoglobins from the Artiodactyla by isoelectric focusing. *Comp. Biochem. Physiol.* **56B:** 335–339.

BUTCHER, P. D. & HAWKEY, C. M. (1977). Haemoglobins and erythrocyte sickling in the Artiodactyla: A survey. *Comp. Biochem. Physiol.* **57A:** 391–398.

CAVE, A. J. E. (1975). The morphology of the mammalian cervical pleurapophysis. *J. Zool., Lond.* **177:** 377–393.

CAVE, A. J. E. (1976). The thyroid and parathyroid glands in the Rhinocerotidae. *J. Zool., Lond.* **178:** 413–442.

CAVE, A. J. E. (1976). The epipharyngeal bursa of an Indian rhinoceros. *Mammalia* (*Paris*) **40:** 123–126.

CAVE, A. J. E. (1976). Note on rhinoceros thyroid gland constitution. *J. Zool., Lond.* **179:** 567–570.

CAVE, A. J. E. (1976). The Zoological Society and nineteenth century comparative anatomy. *Symp. zool. Soc. Lond.* No. 40: 49–66.

CAVE, A. J. E. (1977). Observations on rhinoceros tongue morphology. *J. Zool., Lond.* **181:** 265–284.

CAVE, A. J. E. (1977). Robert Jacob Gordon's original account of the African Black rhinoceros. *J. Zool., Lond.* **182:** 137–156.

CRAWFORD, M. A. (1977). Are certain lipids and phospholipids essential for man and animals? *Proc. 13th IPI-Colloquium*, York: 1–8.

CRAWFORD, M. A., HALL, B., LAURANCE, B. M. & MUNHAMBO, A. (1976). Milk lipids and their variability. *Curr. med. Res. Opin.* **4:** (Suppl. 1) 33–43.

CRAWFORD, M. A., HASSAM, A. G. & HALL, B. M. (1977). Metabolism of essential fatty acids in the human fetus and neonate. *Nutr. Metab.* **21** (suppl. 1): 187–188.

CRAWFORD, M. A., HASSAM, A. G., WILLIAMS, G. & WHITEHOUSE, W. L. (1977). Fetal accumulation of long-chain polyunsaturated fatty acids. In *Proceedings International Symposium on Function and Biosynthesis of Lipids:* 135–142. Bazan, N. G., Brenner, R. R. & Guisto, Norma M. (Eds.). New York & London: Plenum Press.

CRAWFORD, M. A., RIVERS, J. P. W. & HASSAM, A. G. (1977). Comparative studies on the metabolic equivalence of linoleic and arachidonic acids. *Nutr. Metab.* **21** (suppl. 1): 189–190.

DENT, V. E., HARDIE, J. M. & BOWDEN, G. H. (1976). A preliminary study of dental plaque on animal teeth. *J. Dent. Res.*, Special issue D, Abstract No. 85 D, 127.

DIXSON, A. F. (1977). Observations on the displays, menstrual cycles and sexual behaviour of the 'Black Ape' of Celebes (*Macaca nigra*), *J. Zool., Lond.* **182:** 63–84.

DIXSON, A. F. & HERBERT, J. (1977). Gonadal hormones and sexual behaviour in groups of adult Talapoin monkeys (*Miopithecus talapoin*). *Hormones & Behaviour* **8:** 141–154.

DIXSON, A. F. & HERBERT, J. (1977). Testosterone, aggressive behaviour and dominance rank in captive adult male Talapoin monkeys (*Miopithecus talapoin*). *Physiology & Behaviour* **18:** 539–543.

DIXSON, A. F. & VAN HORN, R. N. (1977). Comparative studies of morphology and reproduction in two subspecies of the Greater bushbaby, *Galago crassicaudatus crassicaudatus* and *G. c. argentatus. J. Zool., Lond.* **183:** 517–526.

DYSON, D. A. & SMITH, G. R. (1977). Inhibition of the growth of some strains of *Mycoplasma mycoides* subsp. *mycoides* by the blood of certain horses. *Res. vet. Sci.* **23:** 252–254.

FRANKEL, T. L. & RIVERS, J. P. W. (1977). The nutritional and metabolic impact of γ-linolenic acid (18:3 ω6) upon the cat. *Proc. Int. Conf. Boichem. Lipids* **20:** Abstract C 18: 31.

GLATSTON, A. R. (1976). Aspects of stress as observed in the lesser mouse lemur, *Microcebus murinus* – a preliminary report. *Rep. Jersey Wildl. Preserv. Trust* **12:** 78–81.

GOODWIN, L. G. (1976). Vasoactive amines and peptides: their role in the pathogenesis of protozoal infections. In *Pathophysiology of parasitic infection:* 161–170. Soulsby, E. J. L. (Ed.). New York, San Francisco, London: Academic Press.

GOODWIN, L. G. (1977). *Tetrahymena pyriformis* as a laboratory animal. *Protozoology* **3:** 11–16.

GOODWIN, L. G. & TIERNEY, E. D. (1977). Trypanocidal activity of blood and tissue fluid from normal and infected rabbits treated with curative drugs. *Parasitology* **74:** 33–45.

GRAHAM, J. M. & SMITH, G. R. (1977). Observations on the possible invasiveness of *Clostridium botulinum* for waterfowl. *Res. vet. Sci.* **22:** 343–346.

HALL, BARBARA M. & OXBERRY, JANET M. (1977). Comparative studies on milk lipids and neonatal brain development. *Symp. zool. Soc. Lond.* No. 41: 231–240.

HASSAM, A. G. (1977). The influence of α-linolenic acid (18:3 ω3) on the metabolism of γ-linolenic acid (18:3 ω6) in the rat. *Br. J. Nutr.* **38:** 137–140.

HASSAM, A. G., RIVERS, J. P. W. & CRAWFORD, M. A. (1977). Metabolism on gamma-linolenic acid in essential fatty acid-deficient rats. *J. Nutr.* **107:** 519–524.

HASSAM, A. G., RIVERS, J. P. W. & CRAWFORD, M. A. (1977). The failure of the cat to desaturate linoleic acid; its nutritional implications. *Nutr. Metab.* **21:** 321–328.

HASSAM, A. G., RIVERS, J. P. W. & CRAWFORD, M. A. (1977). Metabolism of gamma-linolenic acid in essential fatty acid-deficient rats. *J. Nutr.* **107:** 519–524.

HASSAM, A. G., RIVERS, J. P. W. & CRAWFORD, M. A. (1977). Potency of γ-linolenic acid (18:3 ω6) in curing essential fatty acid deficiency in the rat. *Nutr. Metab.* **21** (suppl. 1): 190–192.

HAWKEY, C. (1977). The haematology of exotic mammals. In *Comparative clinical haematology:* 103–160. Archer, R. K. & Jeffcott, L. B. (Eds). London: Blackwell Scientific Publications.

HAWKEY, C. M. (1977). The importance of comparative studies. *Thrombos. Haemostas.* (*Stuttg.*) **38:** 395–398.

HAY, A. W. M. (1976). A possible role for vitamin D_2 in vertebrate evolution. (Abstract). *Israel J. med. Sci.* **12:** 31–32.

HAY, A. (1977). Vitamin D at Asilomar. *Nature, Lond.* **266:** 17–18.

HAY, A. W. M. (1977). Combatting rickets. *Nature, Lond.* **270:** 289.

HAY, A. W. M. & WATSON, G. (1977). The binding of 25-hydroxycholecalciferol to receptor proteins in a New World and an Old World primate. *Comp. Biochem. Physiol.* **56B:** 131–134.

HAY, A. W. M. & WATSON, G. (1977). Vitamin D_2 in vertebrate evolution. *Comp. Biochem. Physiol.* **56B:** 375–380.

HAY, A. W. M. & WATSON, G. (1977). Evolution of vitamin D serum transport proteins. In *Vitamin D: biochemical, chemical and clinical aspects related to calcium metabolism:* 483–489. Norman, A. W., Schaefer, K., Coburn, J. W., DeLuca, H. F., Fraser, D., Grigoleit, H. G. & Herrath, D. V. (Eds). (*Proc. Third Workshop on Vitamin D, Asilomar, Pacific Grove, California, U.S.A.* January 1977.)

HAY, A. W. M. & WATSON, G. (1977). Binding properties of serum vitamin D transport proteins in vertebrates for 24R, 25-dihydroxycholecalciferol and 24S, 25-dihydroxycholecalciferol *in vitro*. *Comp. Biochem. Physiol.* **58B:** 43–48.

HERBERT, A. T. (1977). *Dietary vitamin D_2 and D_3 and the matabolism of bone in New World primates.* Ph.D. Thesis, University of London.

HOLT, W. V. (1977). Postnatal development of the testes in the cuis, *Galea musteloides*. *Lab. Anim.* **11:** 87–91.

HOUBA, V., LAMBERT, P. H., VOLLER, A. & SAYANVO, M. (1976). Clinical and experimental investigations of immune complexes in malaria. *Clin. Immunol. Immunopath.* **6:** 1–12.

JONES, D. M. (1977). The occurrence of dieldrin in sawdust used as a bedding material. *Lab. Anim.* **11:** 137.

JONES, D. M. (1977). The sedation and anaesthesia of birds and reptiles. *Vet. Rec.* **101:** 340–342.

JONES, D. M. (1977). Immobilising exotic animals. *Vet. Rec.* **101:** 352–353.

JONES, D. M. & CARROLL, C. M. M. (1977). Debilitating syndrome in budgerigars (*Melopsittacus undulatus*). *Vet. Rec.* **101:** 188.

JONES, D. M. & FITZGERALD, A. K. (1977). Location of metal fragments in a python. *Mod. Vet. Pract.* **58:** 861.

JONES, R. C., BAILEY, D. W. & SKINNER, J. D. (1975). Studies on the collection and storage of semen from the African elephant, *Loxodonta africana*. *Koedoe* **18:** 147–164.

KING, G. J. & RIVERS, J. P. W. (1977). The affluent anthropoid. *Rep. Jersey Wildl. Pres. Trust* **13:** 86–95.

LEIBOLD, W., HULDT, G., FLANAGAN, T. D., ANDERSSON, M., DALENS, M., WRIGHT, D. H., VOLLER, A. & KLEIN, G. (1976). Tumorgenicity of Epstein Barr virus transformed lymphoid line cells in autologous Squirrel monkeys. *Int. J. Cancer* **17:** 533–541.

MANTON, V. J. A. (1977). 1975 World register of Père David's deer. *Int. Zoo Yb.* **17:** 238–240.

MARTIN, R. D. (1977). Translation from the French of *Ecology and behaviour of nocturnal primates* by P. Charles-Dominique. London: Duckworth & Co. Ltd.

NURDEN, A. (1977). A different organization of bound carbohydrate within cat platelet membranes. *Thrombos. Haemostas.* (*Stuttg.*) **37:** 358–359.

NURDEN, A. T., BUTCHER, P. D. & HAWKEY, C. M. (1977). Comparative studies on the glycoprotein composition of mammalian platelets. *Comp. Biochem. Physiol.* **56B:** 407–413.

OLSEN, E. G. J., SYMONS, C. & HAWKEY, C.M. (1977). The effect of Triac on the developing heart. *Lancet* **1977 (ii):** 221.

PHOENIX, C. B., DIXSON, A. F. & RESKO, J. A. (1977). Effects of ejaculation on levels of testosterone, cortisol and luteinizing hormone in the peripheral plasma of rhesus monkeys. *J. Comp. Phys. Psych.* **91:** 120–127.

PURNELL, R. E., HENDRY, D. J., BIDWELL, D. E. & TURP, P. (1976). Microplate enzyme linked immunosorbent assay for antibody to *Babesia divergens* in cattle. *Vet. Rec.* **99:** 102.

SCHODDE, R. & MATHEWS, S. J. (1977). Contributions to Papuasian ornithology. V. Survey of the birds of Taam Island, Kai group. *Techn. Pap. Div. Wildl. Res. C.S.I.R.O. Aust.* No. 33: 1–29.

SEATON, B. (1976). The detection of periodicity in irregular data. *J. theor. Biol.* **63:** 311–324.

SMITH, G. R. (1977). *Aspergillus fumigatus:* a possible relationship between spore size and virulence for mice. *J. gen. Microbiol.* **102:** 413–415.

SMITH, G. R. & MILLIGAN, R. A. (1977). *Clostridium botulinum* type D in Britain. *Vet. Rec.* **100:** 121–122.

SMITH, G. R. & MORYSON, C. J. (1977). A comparison of the distribution of *Clostridium botulinum* in soil and in lake mud. *J. Hyg., Camb.* **78:** 39–41.

SMITH, G. R., MORYSON, C. J. & WALMSLEY, J. G. (1977). The low prevalence of *Clostridium botulinum* in the lakes, marshes and waterways of the Camargue. *J. Hyg., Camb.* **78:** 33–37.

TOOVEY, J. W. (1977). Tropical houses. *Symp. Assoc. Br. Wild Anim. Keep.* No. 2: 28–32.

VAN HORN, R. N., BEAMER, N. B. & DIXSON, A. F. (1976). Diurnal variations of plasma testosterone in two prosimian primates (*Galago crassicaudatus crassicaudatus* and *Lemur catta*). *Biol. Reprod.* **15:** 523–528.

VEVERS, H. G. (1977). The influence of the ovaries on secondary sexual characters. In *The Ovary* **1:** 447–473. 2nd Edit. Zuckerman, Prof. Lord & Weir, Barbara J. (Eds). New York, San Francisco, London: Academic Press.

VOLLER, A. (1977). Serological methods in the diagnosis of Chagas' disease. *Trans. R. Soc. trop. Med. Hyg.* **871:** 10–11.

VOLLER, A. & BIDWELL, D. E. (1977). Enzyme immunoassays and their potential in diagnostic virology. In *Comparative diagnosis of viral diseases* **2** *Human and related viruses*, Part B. Kurstak, E. (Ed.) New York: Academic Press.

VOLLER, A., BIDWELL, D. E. & BARTLETT, A. (1976). Practicable microplate enzyme immunoassays. *Protides biol. fluids* **24:** 751–759.

VOLLER, A., BIDWELL, D. E., BARTLETT, A. & EDWARDS, R. (1977). A comparison of isotope and enzyme-immunoassays for tropical parasite diseases. *Trans. R. Soc. trop. Med. Hyg.* **71:** 431–437.

VOLLER, A., MARINKELLE, C. J., SUAREZ, H. F. & BIDWELL, D. E. (1976). Estudios sero-epidemiologicos de malaria en Colombia. *Antioquia Medica* **26:** 89–196.

WARREN, R. C., BARTLETT, A., BIDWELL, D. E., RICHARDSON, M. D., VOLLER, A. & WHITE, L. O. (1977). Diagnosis of invasive candidosis by enzyme immunoassay of serum antigen. *Br. med. J.* **1977 (i):** 1183–1185.

WILLIAMS, G., DAVIDSON, B. C., STEVENS, P. & CRAWFORD, M. A. (1977). Comparative fatty acids of the dolphin and the herring. *J. Am. Oil Chem. Soc.* **54:** 328–330.

APPENDIX 4

Animals in the Collections

column 1	Number of animals in the Collection at 1st January 1977.
column 2	Number of animals received in 1977 by presentation, exchange, deposit, 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 1977.
column 4	Number of animals which died in 1977 within 30 days of birth or hatching. The figures in brackets indicate animals born or hatched during December 1976 and which died during January 1977. Stillbirths are not included.
column 5	Number of animals which died from natural causes during 1977 apart from those included in Column 4.
column 6	Number of animals disposed of in 1977 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 1977, 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

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

REGENT'S PARK		1	2	3	4	5	6	7
Mammals								
MONOTREMATA								
Tachyglossus aculeatus	Australian Echidna	3	—	—	—	—	—	1/2
Zaglossus bruijni	Bruijn's Echidna	3	—	—	—	—	—	0/0/3
MARSUPIALIA								
Echymipera rufescens	Rufous Bandicoot	1	—	—	—	1	—	—
Petaurus breviceps	Sugar Glider	10	—	10	—	1	3	9/7
Dactylopsila trivirgata	Striped Possum	2	—	—	—	—	—	1/1
Trichosurus vulpecula	Brush-tailed Possum	3	—	2	—	—	—	3/1/1
Vombatus ursinus	Common Wombat	1	—	—	—	—	—	1/0
Potorous tridactylus	Long-nosed Potoroo	6	—	3	1	—	3	2/3
Macropus parma	White-throated Wallaby	3	—	—	—	—	—	3/0
Macropus bicolor × Macropus agilis	Swamp/Agile Wallaby	1	—	—	—	—	—	1/0
Macropus rufogriseus	Red-necked Wallaby	2	—	1	—	1	—	1/1
Macropus fuliginosus	Western Grey Kangaroo	4	—	2	—	2	—	1/2/1
Megaleia rufa	Red Kangaroo	—	6	—	—	—	—	2/4
Dendrolagus goodfellowi	Goodfellow's Tree Kangaroo	3	—	—	—	1	2	—
INSECTIVORA								
Setifer setosus	Spiny Tenrec	3	—	—	—	2	—	0/0/1
Erinaceus albiventris	East African Hedgehog	—	9	2	2	4	—	2/3
Crocidura russula	Lesser White-toothed Shrew	—	6	—	—	—	—	2/4
CHIROPTERA								
Pteropus giganteus	Indian Fruit Bat	15	—	4	—	—	—	3/4/12
Desmodus rotundus	Vampire Bat	3	—	—	—	2	—	0/0/1
MENOTYPHLA								
Tupaia belangeri	Common Tree Shrew	10	2	13	6	—	4	5/3/7
Tupaia minor	Gunther's Tree Shrew	—	5	—	—	3	—	1/1
Lyonogale tana	Large Tree Shrew	2	4	—	—	—	2	2/2
PRIMATES								
Lemur fulvus	Brown Lemur	8	—	1	—	—	2	2/4/1
Lemur catta	Ring-tailed Lemur	8	—	—	—	—	1	3/4
Lemur variegatus	Ruffed Lemur	6	—	3	1	—	2	2/2/2
Cheirogaleus medius	Fat-tailed Dwarf Lemur	2	—	—	—	—	—	0/2
Microcebus murinus	Grey Mouse Lemur	—	5	—	—	—	—	3/2
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Microcebus rufus	Brown Mouse Lemur	—	1	—	—	—	—	1/0
Loris tardigradus	Slender Loris	5	—	—	—	1	—	2/2
Nycticebus coucang	Slow Loris	8	—	2	1	1	—	3/4/1
Arctocebus calabarensis	Angwantibo	2	—	—	—	—	—	2/0
Perodicticus potto	Potto	1	—	—	—	1	—	—
Galago crassicaudatus	Thick-tailed Bushbaby	4	—	—	—	—	—	2/2
Galago senegalensis	Senegal Bushbaby	4	1	1	—	1	1	2/1/1
Aotus trivirgatus	Douroucouli	4	—	3	—	—	—	3/2/2
Pithecia pithecia	White-faced Saki Monkey	2	—	2	—	1	—	1/1/1
Cebus apella	Brown Capuchin	7	—	1	—	1	—	4/3
Saimiri sciureus	Squirrel Monkey	4	—	—	—	—	—	2/2
Ateles belzebuth	Long-haired Spider Monkey	3	—	—	—	1	—	1/1
Callithrix jacchus	Common Marmoset	5	—	2	—	—	1	1/1/4
Callithrix argentata	Silvery Marmoset	4	—	3	1	—	—	2/2/2
Leontideus rosalia	Golden Lion Marmoset	1	—	—	—	—	1	—
Saguinus oedipus	Cotton-headed Tamarin	2	2	2	2	—	—	2/2
Saguinus illigeri	Red-mantled Tamarin	6	—	7	—	—	2	2/2/7
Macaca nemestrina	Pig-tailed Macaque	15	—	3	—	1	1	6/6/4
Cercocebus atys	Sooty Mangabey	4	1	—	—	—	—	1/4
Mandrillus sphinx	Mandrill	6	—	—	—	—	1	3/2
Theropithecus gelada	Gelada Baboon	7	—	1	—	—	—	2/6
Cercopithecus pygerythrus	Vervet Monkey	6	—	1	—	—	1	4/1/1
Cercopithecus diana	Diana Monkey	2	—	—	—	—	—	1/1
Cercopithecus neglectus	De Brazza's Monkey	—	2	—	—	—	—	1/1
Cercopithecus talapoin	Talapoin Monkey	5	—	—	—	—	—	2/3
Hylobates lar	Lar Gibbon	4	—	—	—	—	—	2/2
Pongo pygmaeus	Orang Utan (Bornean form)	11	—	2	2	1	—	5/5
	(Bornean × Sumatran form)	1	—	—	—	—	—	0/1
Pan troglodytes	Chimpanzee	8	—	1	—	—	1	2/6
Gorilla gorilla	Gorilla (Lowland form)	3	—	—	—	—	2	1/0
EDENTATA								
Myrmecophaga tridactyla	Giant Anteater	1	1	—	—	—	—	1/1
Choloepus didactylus	Two-toed Sloth	1	—	—	—	—	—	0/1
Chaetophractus villosus	Hairy Armadillo	2	—	—	—	—	—	1/1
Priodontes giganteus	Giant Armadillo	1	—	—	—	—	—	1/0
RODENTIA								
Ratufa bicolor	Malayan Giant Squirrel	3	—	—	—	—	—	1/2
Ratufa indica	Indian Giant Squirrel	1	—	—	—	—	—	0/1
Funisciurus pyrrhopus	Fire-footed Squirrel	7	—	—	—	1	—	1/3/2
Callosciurus erythraeus	Pallas's Squirrel	2	—	—	—	1	—	0/0/1
Callosciurus finlaysoni	Finlayson's Squirrel (Red-tailed form)	1	—	—	—	1	—	—
Callosciurus finlaysoni	Finlayson's Squirrel (Grey form)	1	—	—	—	—	—	0/0/1
Callosciurus prevosti	Prevost's Squirrel	1	—	—	—	1	—	—
Callosciurus bocourti	Bocourt's Squirrel	1	—	—	—	—	—	1/0
Menetes berdmorei	Berdmore's Squirrel	1	—	—	—	—	—	0/0/1
Cynomys ludovicianus	Prairie Marmot	2	8 (8)	—	—	3	—	1/4/2
Tamais sibiricus	Siberian Chipmunk	4	—	3	—	1	3	1/1/1
Petaurus alborufus	Red & White Flying Squirrel	1	—	—	—	—	—	1/0
Glaucomys sabrinus	Northern Flying Squirrel	2	—	—	—	1	—	0/1
Glaucomys volans	Southern Flying Squirrel	1	—	—	—	1	—	—
Castor fiber	Beaver	1	—	—	—	—	—	0/0/1
Pedetes capensis	Springhaas	1	—	—	—	—	—	0/0/1
Peromyscus sp., maniculatus group	White-footed Mouse	20	—	84	3	12	56	6/8/19
Phodopus sungorus	Dwarf Hamster	95	—	196	19	50	153	10/20/39
Cricetulus barabensis	Chinese Hamster	24	—	82	—	20	75	6/5
Clethrionomys glareolus	Bank Vole	13	—	4	—	14	—	1/2
Lagurus lagurus	Steppe Lemming	2	—	—	—	2	—	—
Gerbillus pyramidum	Greater Egyptian Gerbil	17	2	24	9	20	—	4/6/4
Meriones shawi	Shaw's Jird	7	1	—	—	7	—	1/0
Meriones unguiculatus	Clawed Jird	13	—	30	4	11	9	6/8/5
Cricetomys gambianus	Giant Pouched Rat	3	—	—	—	—	—	2/1
Acomys cahirinus	Arabian Spiny Mouse	25	2	18	—	8	—	3/30/4
Arvicanthis niloticus	Nile Rat	26	—	81	—	7	67	3/3/27
Grammomys dolichurus	Long-tailed Thicket Rat	27	—	21	—	15	13	7/13
Mastomys natalensis	Multimammate Mouse	23	9	22	—	15	16	6/7/10
Micromys minutus	Harvest Mouse	2	—	50	4	11	19	12/6
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Rhabdomys pumilio	Four-striped Rat	—	6	—	—	—	—	3/3
Notomys alexis	Brown Hopping Mouse	3	—	—	—	—	—	1/2
Pseudomys australis	Minnie Downs River Mouse	5	—	—	—	1	—	0/0/4
Pogonomys macrourus	Prehensile-tailed Tree Mouse	4	—	—	—	4	—	—
Glis glis	Fat Dormouse	5	—	—	—	1	—	1/1/2
Hystrix indica	Indian Porcupine	5	—	—	—	—	—	1/1/3
Atherurus africanus	African Brush-tailed Porcupine	7	—	1	—	1	2	3/2
Trichys lipura	Long-tailed Porcupine	1	—	—	—	—	—	1/0
Erethizon dorsatum	Canadian Porcupine	1	1	—	—	2	—	—
Coendou prehensilis	Brazilian Tree Porcupine	1	—	—	—	—	—	0/1
Galea musteloides	Cuis	13	4	13	3	16	—	0/0/11
Dolichotis patagonum	Mara	7	—	14	7	2	5 (3)	1/1/5
Myoprocta pratti	Green Acouchi	2	—	—	—	—	—	2/0
Lagostomus maximus	Viscacha	2	—	—	—	2	—	—
Capromys pilorides	Cuban Hutia	2	—	—	—	—	—	1/1
Geocapromys brownii	Jamaican Hutia	2	—	—	—	—	—	2/0
Myocastor coypu	Coypu	1	3	—	—	—	—	1/3
Octodon degus	Degu	5	—	—	—	2	—	0/0/3
Proechimys guairae	Casiragua	5	—	21	1	8	8	0/0/9
CARNIVORA								
Canis lupus	Grey Wolf	5	—	—	—	1	—	2/2
Canis latrans	Coyote	2	—	—	—	—	—	1/1
Canis familiaris	Dingo × Singing Dog	2	—	—	—	—	—	1/1
Chrysocyon brachyurus	Maned Wolf	1	—	—	—	—	1	—
Fennecus zerda	Fennec Fox	4	2 (2)	—	—	—	—	2/4
Otocyon megalotis	Bat-eared Fox	1	—	—	—	1	—	—
Selenarctos thibetanus	Asiatic Black Bear	3	—	—	—	1	—	0/2
Ursus arctos	Brown Bear	3	1 (1)	—	—	—	—	2/2
Ursus americanus	American Black Bear	5	—	—	—	—	—	2/3
Thalarctos maritimus	Polar Bear	2	—	1	1	—	—	1/1
Ailuropoda melanoleuca	Giant Panda	2	—	—	—	—	—	1/1
Ailurus fulgens	Red Panda	3	—	—	—	—	—	1/2
Nasua nasua	Ring-tailed Coati	4	—	1	—	—	2	2/1
Potos flavus	Kinkajou	3	—	—	—	—	—	2/1
Mustela nivalis	Weasel	1	—	—	—	—	—	0/1
Mustela putorius	Polecat	1	—	—	—	—	—	1/0
Martes flavigula	Yellow-throated Marten	1	—	—	—	—	—	1/0
Eira barbara	Tayra	1	—	—	—	—	1	—
Ictonyx striatus	Zorilla	3	—	—	—	2	—	1/0
Arctonyx collaris	Hog Badger	1	—	—	—	—	—	0/1
Melogale moschata	Chinese Ferret Badger	1	—	—	—	—	—	1/0
Lutra lutra	European Otter	—	2	—	—	—	2	—
Lutra canadensis	Canadian Otter	1	—	—	—	1	—	—
Genetta genetta	Spotted Genet	3	—	—	—	1	—	1/1
Genetta tigrina	Blotched Genet	4	—	—	—	—	2	1/1
Arctogalidia trivirgata	Small-toothed Palm Civet	4	—	—	—	—	—	2/2
Paguma larvata	Masked Palm Civet	2	—	—	—	—	—	2/0
Suricata suricatta	Suricate Meerkat	4	1	1	1	1	1	1/2
Herpestes edwardsi	Indian Grey Mongoose	—	3	—	—	1	—	0/0/2
Herpestes urva	Crab-eating Mongoose	1	—	—	—	—	—	1/0
Felis caracal	Caracal Lynx	2	—	2	—	1	—	1/2
Felis lynx	Northern Lynx	2	—	—	—	—	2	—
Felis serval	Serval	2	—	2	1	—	—	1/2
Felis wiedi	Margay	3	1	—	—	—	1	1/2
Felis concolor	Puma	2	—	—	—	1	—	1/0
Panthera leo	Lion	5	1 (1)	4	2	2	1	2/3
Panthera tigris	Tiger (Bengal form)	1	—	—	—	—	—	1/0
	("Sumatran" form)	2	—	—	—	—	—	0/2
Panthera pardus	Leopard	2	—	—	—	—	—	1/1
	(Chinese form)	2	—	—	—	—	—	1/1
Panthera onca	Jaguar	2	—	—	—	—	—	1/1
Acinonyx jubatus	Cheetah	2	2 (2)	—	—	1	—	2/1
PINNIPEDIA								
Zalophus californianus	Californian Sealion	7	—	—	—	—	1	1/5
Halichoerus grypus	Grey Seal	2	—	—	—	—	—	1/1
		1	**2**	**3**	**4**	**5**	**6**	**7**

Brush-tailed Possums; mother and baby, Clore Pavilion for Small Mammals, London Zoo

Serval Cats; kitten 10 weeks old The New Lion Terraces, London Zoo

Leopard Ground Geckos, approximately 7 months old
Reptile House, London Zoo

Caracal Lynxes, 10 weeks old
The New Lion Terraces, London Zoo

King Penguins; chick 11 weeks old
Whipsnade Park

Brolgas (Australian Cranes)
Whipsnade Park

Tarictic Hornbill, about 7 weeks old
Bird House, London Zoo

Jackson's Hornbill being fed by Keeper
after death of male parent
Bird House, London Zoo

Presentation by the Secretary of the Ashby Prize
to Keeper J. Ffinch, Whipsnade Park

The Silver Jubilee Garden
London Zoo

Photographs: The Zoological Society of London

		1	2	3	4	5	6	7
PROBOSCIDEA								
Elephas maximus	Indian Elephant	2	—	—	—	—	—	0/2
Loxodonta africana	African Elephant	2	—	—	—	—	—	0/2
HYRACOIDEA								
Procavia capensis	Rock Hyrax	1	—	—	—	—	—	1/0
PERISSODACTYLA								
Equus przewalskii	Przewalski's Horse	2	—	1	—	1	—	1/1
Asinus hemionus	Onager (Turkmen form)	4	—	—	—	1	—	2/1
Hippotigris burchelli	Common Zebra	5	—	2	—	—	—	1/5/1
Tapirus indicus	Malayan Tapir	2	—	—	—	1	—	0/1
Diceros bicornis	Black Rhinoceros	2	1 (1)	—	—	—	1	1/1
Ceratotherium simum	White Rhinoceros	2	—	—	—	—	—	1/1
ARTIODACTYLA								
Sus scrofa	Wild Boar	10	—	5	2	1	7 (3)	3/2
Phacochoerus aethiopicus	Wart Hog	2	—	—	—	1	—	1/0
Tayassu tajacu	Collared Peccary	2	4 (4)	—	—	1	1	1/3
Lama glama	Llama	5	1 (1)	—	—	—	—	3/3
Lama guanicoe	Guanaco	2	—	—	—	—	—	1/1
Camelus bactrianus	Bactrian Camel	9	—	—	—	1	1 (1)	2/5
Camelus dromedarius	Arabian Camel	1	—	—	—	—	—	0/1
Muntiacus muntjak	Indian Muntjac	—	4	—	—	—	—	2/2
Muntiacus reevesi	Reeves's Muntjac	2	—	2	—	—	—	3/1
Cervus timorensis	Timor Deer	6	—	—	—	—	—	2/4
Elaphurus davidianus	Pere David's Deer	1	—	—	—	—	—	1/0
Pudu pudu	Pudu	3	—	—	—	1	—	2/0
Rangifer tarandus	Reindeer	3	—	2	1	—	—	1/3
Giraffa camelopardalis	Giraffe	8	—	1	—	—	2 (1)	3/4
Tragelaphus angasi	Nyala	1	—	—	—	—	1	—
Tragelaphus strepsiceros	Greater Kudu	5	—	2	1	—	—	2/3/1
Anoa depressicornis	Anoa	1	—	—	—	—	—	1/0
Bos grunniens	Yak	5	2 (2)	2	—	2	1 (1)	1/3/2
Bison bison	American Bison	9	—	1	—	1	2	3/2/2
Cephalophus maxwelli	Maxwell's Duiker	3	—	—	—	2	1	—
Kobus ellipsiprymnus	Common Waterbuck	1	1	—	—	—	—	1/1
Kobus defassa	Defassa Waterbuck	1	—	—	—	—	—	0/1
Oryx gazella	Gemsbok	2	—	—	—	—	—	1/1
Oryx tao	Scimitar-horned Oryx	6	—	3	2	—	—	2/4/1
Addax nasomaculatus	Addax	2	—	—	—	—	2	—
Connochaetes taurinus	Brindled Gnu	3	—	—	—	—	—	2/1
Antilope cervicapra	Blackbuck	25	—	28	10	3	8 (6)	5/21/6
Capra falconeri	Markhor	12	—	9	6	2	2	4/7
Ammotragus lervia	Barbary Sheep	29	—	16	11	—	3	10/21
Ovis musimon	Mouflon	19	—	8	—	2	6	5/14
Ovis canadensis	Bighorn Sheep	3	—	—	—	—	—	2/1
Ovis dalli	Dall's Sheep	—	2	—	—	—	—	1/1
DOMESTIC								
	Pigs–Gloucester Old Spot	2	2	—	—	—	1	1/2
	Vietnamese Pot-bellied	—	2 (2)	—	—	—	—	1/1
	Cattle	4	—	2	—	1	—	2/3
	Goats (excl. Golden Guernseys)	13	—	18	2	—	22	0/7
	Golden Guernsey	—	3	4	—	1	—	4/2
	Dorset Down Sheep	11	—	12	1	1	15 (4)	1/5
	Rabbits*	16	—	9	—	3	10	0/0/12
	Guinea Pigs*	39	—	43	—	3	50	0/0/29
	Donkeys	5	2	—	—	1	—	3/3
	Ponies	4	—	—	—	—	—	0/4
Total–Mammals		1037	118 (24)	917	107	311	606 (19)	1048

* These species were not included in the 1976 Annual Report.

1 2 3 4 5 6 7

		1	2	3	4	5	6	7
Syrmaticus reevesi	Reeves's Pheasant	4	—	1	—	1	1	1/2
Phasianus colchicus	Common Pheasant	2	—	7	1	2	4	1/1
Chrysolophus pictus	Golden Pheasant	3	—	—	—	2	—	0/1
Chrysolophus amherstiae	Lady Amherst's Pheasant	3	—	—	—	—	—	2/1
Polyplectron emphanum	Palawan Peacock Pheasant	4	—	—	—	1	—	1/2
Argusianus argus	Argus Pheasant	2	—	—	—	—	—	1/1
Pavo cristatus	Common Peafowl	3	1 (1)	1	—	1	—	2/2
Pavo muticus	Burmese Peafowl	2	—	—	—	—	—	2/0
Numida meleagris	Helmeted Guineafowl	4	—	—	—	—	—	2/2
GRUIFORMES								
Grus monacha	Hooded Crane	1	—	—	—	—	—	0/0/1
Grus antigone	Sarus Crane	5	—	—	—	—	1 (1)	2/2
Grus rubicunda	Brolga	1	—	—	—	—	—	0/1
Anthropoides virgo	Demoiselle Crane	4	—	—	—	—	—	0/0/4
Anthropoides paradisea	Stanley Crane	4	—	—	—	1	—	1/1/1
Balearica pavonina	Dark Crowned Crane	4	—	—	—	—	—	1/1/2
Balearica regulorum	Grey Crowned Crane	2	—	—	—	—	—	1/1
Rallus philippensis	Banded Rail	2	—	—	—	—	—	0/0/2
Rallus torquatus torquatus	Philippine Rail	1	—	—	—	—	—	0/0/1
Aramides axillaris	Venezuelan Wood Rail	1	—	—	—	—	—	0/0/1
	Hybrid Cayenne Wood Rail × Venezuelan Wood Rail	2	—	—	—	1	—	0/0/1
Porphyrula alleni	Allen's Gallinule	1	—	—	—	—	—	0/0/1
Porphyrio poliocephalus poliocephalus	Grey-headed Gallinule	4	—	—	—	—	—	1/1/2
Eurypyga helias	Sun Bittern	1	—	—	—	1	—	—
Cariama cristata	Crested Cariama	2	—	—	—	1	—	0/1
Lissotis melanogaster melanogaster	Black-bellied Bustard	1	—	—	—	—	—	0/0/1
CHARADRIIFORMES								
Haematopus ostralegus	Oystercatcher	6	—	1	—	—	—	1/1/5
Himantopus himantopus	Black-winged Stilt	6	—	—	—	2	—	0/0/4
Recurvirostra avosetta	Avocet	2	—	—	—	—	—	0/0/2
Burhinus magnirostris	Southern Stone Curlew	2	—	—	—	1	—	0/0/1
Glareola pratincola	Collared Pratincole	3	—	—	—	1	—	0/0/2
Vanellus vanellus	Lapwing	2	2	—	—	1	—	0/0/3
Vanellus spinosus	Spur-winged Plover	2	—	—	—	—	—	0/1/1
Vanellus chilensis	Argentine Lapwing	1	—	—	—	1	—	—
Vanellus tricolor	Banded Plover	3	—	—	—	—	—	0/1/2
Pluvialis apricaria	Golden Plover	—	2	—	—	—	—	0/0/2
Charadrius hiaticula	Ringed Plover	1	4	—	—	1	—	0/0/4
Numenius arquata	Curlew	—	2	—	—	1	—	0/0/1
Tringa totanus	Redshank	3	2	—	—	1	—	1/1/2
Philomachus pugnax	Ruff	11	—	3	—	3	—	4/4/3
Catharacta skua antarctica	Antarctic Skua	3	—	—	—	—	—	1/1/1
Larus cirrocephalus poiocephalus	Grey-headed Gull	11	—	6	—	—	6	4/4/3
Larus novaehollandiae	Silver Gull	6	—	1	—	2	1	1/1/2
Sterna bergii	Crested Tern	1	—	—	—	—	—	0/0/1
Larosterna inca	Inca Tern	3	3 (3)	—	—	—	—	1/1/4
Alca torda	Razorbill	1	1	—	—	1	—	0/0/1
Uria aalge	Guillemot	2	—	—	—	—	—	0/0/2
COLUMBIFORMES								
Columba guinea	Speckled Pigeon	16	—	17	—	2	—	10/10/11
Columba elphinstonii	Nilgiri Wood Pigeon	1	—	—	—	—	—	0/0/1
Columba picazura	Picazuro Pigeon	5	—	—	—	—	—	1/1/3
Columba corensis	Naked-eyed Pigeon	1	—	—	—	—	—	0/0/1
Streptopelia turtur	Turtle Dove	3	—	—	—	—	—	0/0/3
Streptopelia decaocto roseogrisea	Pink-headed Dove	2	—	—	—	—	—	0/0/2
Streptopelia capicola	Ring-necked Dove	2	—	—	—	—	—	0/0/2
Streptopelia chinensis chinensis	Chinese Necklace Dove	15	—	—	—	1	—	5/5/4
Macropygia ruficeps	Little Cuckoo Dove	1	—	—	—	—	—	0/0/1
Chalcophaps indica	Green-winged Dove	1	—	—	—	—	—	0/0/1
Phaps elegans	Brush Bronze-winged Pigeon	8	—	—	—	—	2	1/1/4
Ocyphaps lophotes	Crested Pigeon	5	—	—	—	1	—	1/1/2
Geopelia cuneata	Diamond Dove	2	—	—	—	1	—	0/0/1
Geopelia striata striata	Zebra Dove	2	—	—	—	1	—	0/0/1
Geopelia humeralis	Barred-shouldered Dove	1	—	—	—	—	—	0/0/1
Zenaida auriculata	Violet-eared Dove (Auriculated Dove)	6	—	—	—	—	—	1/1/4
Leptotila jamaicensis jamaicensis	White-bellied Dove	1	—	—	—	—	—	0/0/1
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Geotrygon versicolor	Mountain Witch Dove	6	—	7	—	1	4	1/1/6
Goura cristata	Blue Crowned Pigeon	2	—	—	—	—	—	0/0/2
Ducula carola carola	Grey-breasted Fruit Pigeon	1	—	—	—	—	—	0/0/1
Ducula aenea	Green Imperial Pigeon	1	—	—	—	—	—	0/0/1
Ducula badia cuprea	Jerdon's Imperial Pigeon	4	—	1	—	1	—	1/1/2
Ducula bicolor	Pied Imperial Pigeon	1	—	—	—	—	—	0/0/1
PSITTACIFORMES								
Chalcopsitta sintillata sintillata	Yellow-streaked Lory	1	—	—	—	—	—	0/0/1
Eos cyanogenia	Black-winged Lory	1	—	—	—	—	—	0/0/1
Pseudeos fuscata fuscata	Dusky Lory	1	—	—	—	—	—	0/1
Trichoglossus ornatus	Ornate Lorikeet	1	—	—	—	—	—	0/0/1
Trichoglossus euteles	Perfect Lorikeet	1	—	—	—	—	—	0/0/1
Lorius lory erythrothorax	Red-breasted Lory	1	—	—	—	—	—	0/0/1
Lorius domicellus	Purple-capped Lory	1	—	—	—	—	—	0/1
Lorius garrulus	Scarlet Lory	1	—	—	—	—	—	1/0
Lorius garrulus × Lorius domicellus	Scarlet Lory × Purple-capped Lory	1	—	—	—	—	—	0/0/1
Probosciger aterrimus intermedius	Aru Islands Palm Cockatoo	1	—	—	—	—	—	0/1
Calyptorhynchus funereus	Funereal Cockatoo	1	—	—	—	—	—	0/0/1
Calyptorhynchus magnificus magnificus	Banksian Cockatoo	1	—	—	—	—	—	0/1
Callocephalon fimbriatum	Gang Gang Cockatoo	1	—	—	—	—	—	1/0
Elophus roseicapillus	Roseate Cockatoo	2	—	—	—	2	—	—
Cacatua leadbeateri	Leadbeater's Cockatoo	3	—	—	—	—	—	1/1/1
Cacatua sulphurea	Lesser Sulphur-crested Cockatoo	2	1	—	—	—	—	1/1/1
Cacatua sulphurea parvula	Dwarf Sulphur-crested Cockatoo	1	—	—	—	—	—	0/0/1
Cacatua galerita galerita	Greater Sulphur-crested Cockatoo	4	—	—	—	1	—	2/1
Cacatua moluccensis	Rose-crested Cockatoo	2	—	—	—	—	—	1/1
Cacatua alba	White-crested Cockatoo	2	—	—	—	—	—	1/1
Cacatua sanguinea	Bare-eyed Cockatoo	3	—	—	—	—	—	1/1/1
Cacatua tenuirostris pastinator	Western Slender-billed Cockatoo	5	—	—	—	—	—	0/0/5
Nymphicus hollandicus	Cockatiel	16	—	1	1	3	—	6/5/2
Nestor notabilis	Kea	2	—	—	—	—	—	1/1
Eclectus roratus	Eclectus Parrot	2	—	—	—	—	—	1/1
Polytelis alexandrae	Queen Alexandra's Parrakeet	1	—	—	—	—	—	0/1
Platycercus eximius eximius	Eastern Rosella Parrakeet	1	—	—	—	—	—	1/0
Platycercus adscitus palliceps	Mealy Rosella Parrakeet	1	—	—	—	—	—	1/0
Psephotus haematonotus	Red-rumped Parrakeet	2	—	1	—	—	—	1/2
Coracopsis vasa	Vasa Parrot	1	—	—	—	—	—	0/1
Psittacus erithacus	Grey Parrot	5	—	—	—	—	—	1/1/3
Psittacus erithacus timneh	Sierra Leone Grey Parrot	1	—	—	—	—	—	0/0/1
Poicephalus gulielmi aubryanus	Aubry's Parrot	1	—	—	—	—	—	0/0/1
Poicephalus cryptoxanthus cryptoxanthus	Southern Brown-headed Parrot	2	—	—	—	—	—	0/0/2
Poicephalus senegalus	Yellow-vented Senegal Parrot	1	—	—	—	—	—	0/1
Poicephalus senegalus versteri	Orange-bellied Senegal Parrot	1	—	—	—	—	—	0/0/1
Poicephalus ruppellii	Ruppell's Parrot	3	—	—	—	—	—	1/1/1
Agapornis taranta	Abyssinian Lovebird	1	—	—	—	—	—	0/1
Agapornis roseicollis	Rosy-faced Lovebird	2	—	—	—	—	—	1/1
Agapornis fischeri	Fischer's Lovebird	22	—	—	—	8	—	5/5/4
Loriculis vernalis	Vernal Hanging Parrot	1	—	—	—	—	—	0/0/1
Psittacula eupatria nipalensis	Alexandrine Parrakeet	2	—	—	—	1	—	0/1
Psittacula krameri krameri	African Ring-necked Parrakeet	3	1	—	—	—	—	2/2
Psittacula cyanocephala	Plum-headed Parrakeet	1	1	—	—	—	—	1/1
Psittacula calthorpae	Layard's Parrakeet	1	—	—	—	1	—	—
Psittacula alexandri alexandri	Javan Parrakeet	1	—	—	—	—	—	0/0/1
Anodorhynchus hyacinthinus	Hyacinthine Macaw	3	—	—	—	—	—	1/1/1
Ara ararauna	Blue & Yellow Macaw	4	—	—	—	—	—	2/2
Ara macao	Scarlet Macaw	2	—	—	—	—	—	1/1
Ara chloroptera	Green-winged Macaw	3	—	—	—	—	—	2/1
Ara severa severa	Severe Macaw	2	—	—	—	—	—	1/1
Ara maracana	Illiger's Macaw	1	—	—	—	—	—	0/0/1
Ara nobilis nobilis	Hahn's Macaw	1	—	—	—	—	—	0/0/1
Aratinga erythrogenys	Red-masked Conure	2	—	—	—	—	—	0/0/2
Aratinga jandaya	Yellow-headed Conure	2	—	—	—	—	—	0/0/2
Aratinga canicularis	Petz's Conure	1	—	—	—	—	—	0/0/1
Nandayus nenday	Black-headed Conure	1	—	—	—	1	—	—
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Rhynchopsitta pachyrhyncha	Thick-billed Parrot	2	—	—	—	—	—	0/0/2
Myiopsitta monachus	Quaker Parrakeet	2	—	—	—	1	1	—
Brotogeris versicolorus chiriri	Canary-winged Parrakeet	4	6	—	—	—	—	3/3/4
Brotogeris pyrrhopterus	Orange-flanked Parrakeet	5	—	—	—	—	—	1/1/3
Pionites melanocephala	Black-headed Caique	1	—	—	—	—	—	0/0/1
Pionus menstruus	Red-vented Parrot	1	—	—	—	—	—	0/0/1
Amazona albifrons	White-browed Amazon Parrot	2	—	—	—	—	—	0/0/2
Amazona agilis	Active Amazon Parrot	1	—	—	—	—	—	0/1
Amazona autumnalis	Yellow-cheeked Amazon Parrot	1	—	—	—	—	—	0/0/1
Amazona festiva	Festive Amazon Parrot	2	—	—	—	—	—	0/0/2
Amazona aestiva	Blue-fronted Amazon Parrot	3	—	—	—	—	—	0/0/3
Amazona ochrocephala	Yellow-fronted Amazon Parrot	3	—	—	—	—	—	0/0/3
Amazona amazonica	Orange-winged Amazon Parrot	2	—	—	—	—	—	0/0/2
Amazona farinosa	Mealy Amazon Parrot	1	—	—	—	—	—	0/0/1
CUCULIFORMES								
Corythaixoides concolor	Grey Go-Away Bird	—	4	—	—	1	—	0/0/3
Corythaixoides leucogaster	White-bellied Go-Away Bird	1	—	—	—	—	—	0/0/1
Tauraco corythaix corythaix	Knysna Touraco	2	—	—	—	—	—	1/1
Tauraco corythaix persa	West African Touraco	1	1	—	—	—	—	0/0/2
Tauraco corythaix livingstonii	Livingstone's Touraco	2	—	—	—	—	1	0/1
Tauraco erythrolophus	Red-crested Touraco	2	—	—	—	—	—	0/0/2
Tauraco hartlaubi	Hartlaub's Touraco	2	—	—	—	—	—	0/0/2
Tauraco leucotis leucotis	White-cheeked Touraco	8	1	2	1	1	1	2/2/4
Eudynamys scolopacea chinensis	Chinese Koel	1	—	—	—	—	—	0/0/1
STRIGIFORMES								
Tyto alba alba	Barn Owl	2	1	—	—	1	2	—
Otus scops	Scops Owl	1	—	—	—	—	1	—
Otus leucotis	White-faced Scops Owl	2	—	—	—	—	—	0/0/2
Bubo bubo bubo	Great Eagle Owl	5	—	2	—	—	5	1/1
Bubo bubo omissus	Turkmenian Eagle Owl	2	—	—	—	—	—	0/0/2
Bubo bubo ascalaphus	Savigny's Eagle Owl	2	—	—	—	—	1	1/0
Bubo bubo bengalensis	Indian Eagle Owl	1	1	—	—	—	—	1/1
Bubo capensis mackinderi	Kenya Eagle Owl	2	—	—	—	—	—	1/1
Bubo africanus	Spotted Eagle Owl	2	—	—	—	1	—	1/0
Bubo africanus cinerascens	Abyssinian Spotted Eagle Owl	2	—	—	—	—	—	1/1
Bubo poensis	Fraser's Eagle Owl	2	—	—	—	—	—	0/0/2
Bubo vosseleri	Nduk Eagle Owl	3	—	—	—	—	—	0/0/3
Ketupa zeylonensis	Brown Fish Owl	1	—	—	—	—	—	0/0/1
Ketupa ketupu	Javan Fish Owl	4	—	—	—	—	—	1/1/2
Scotopelia bouvieri	Vermiculated Fishing Owl	2	—	—	—	—	—	0/0/2
Pulsatrix perspicillata	Spectacled Owl	2	—	—	—	—	—	1/0/1
Nyctea scandiaca	Snowy Owl	2	1	—	—	—	1	1/1
Glaucidium brodiei	Collared Pygmy Owl	1	—	—	—	—	1	—
Ninox novaeseelandiae	Boobook Owl	1	1	—	—	—	—	0/0/2
Athene noctua	Little Owl	1	1	—	—	—	—	0/0/2
Speotyto cunicularia	Burrowing Owl	2	—	1	—	—	—	1/1/1
Ciccaba woodfordii	African Wood Owl	1	2	—	—	—	1	1/1
Strix aluco sylvatica	Tawny Owl	—	2	—	—	—	—	1/1
Asio flammeus	Short-eared Owl	2	—	—	—	—	—	0/0/2
APODIFORMES								
Colibri coruscans	Sparkling Violet-eared Hummingbird	2	1	—	—	3	—	—
S *Amazilia amabilis* (Gould) (Nicaragua to Colombia and Ecuador)	Blue-chested Hummingbird	—	4	—	—	3	—	1/0
CORACIIFORMES								
Dacelo novaeguineae	Kookaburra	5	—	—	—	—	2	1/1/1
Momotus momota	Blue-crowned Motmot	3	—	—	—	1	—	0/0/2
Merops bullockoides	White-fronted Bee-eater	1	—	—	—	1	—	—
Coracias caudata	Lilac-breasted Roller	1	—	—	—	—	—	0/0/1
Coracias benghalensis	Indian Roller	3	—	—	—	2	—	0/0/1
Tockus birostris	Indian Grey Hornbill	2	—	—	—	—	—	0/0/2
Tockus alboterminatus	Crowned Hornbill	3	—	—	—	—	—	1/1/1
Tockus erythrorhynchus	Red-billed Hornbill	3	1	4	1	1	—	3/2/1
Tockus deckeni jacksoni	Jackson's Hornbill	7	—	1	—	1	1	2/4
Penelopides panini	Tarictic Hornbill	2	—	1	—	—	—	2/1
Aceros undulatus	Wreathed Hornbill	1	—	—	—	—	—	0/1
Anthracoceros malayanus	Black Hornbill	1	1	—	—	—	—	0/0/2
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Anthracoceros coronatus convexus	Southern Pied Hornbill	1	—	—	—	—	—	0/1
Bycanistes bucinator	Trumpeter Hornbill	2	1	—	—	1	—	1/1
Bycanistes subcylindricus	Black & White Casqued Hornbill	2	—	—	—	—	—	1/1
Ceratogyma atrata	Black Casqued Hornbill	1	—	—	—	—	—	0/1
Buceros bicornis	Great Indian Hornbill	2	—	—	—	—	—	1/1
Buceros hydrocorax	Rufous Hornbill	2	—	—	—	1	—	0/1
PICIFORMES								
Psilopogon pyrolophus	Fire-tufted Barbet	—	2	—	—	—	—	0/0/2
Megalaima mystacophanos	Gaudy Barbet	—	2	—	—	1	—	0/1
Megalaima oorti	Black-browed Barbet	—	2	—	—	1	—	0/0/1
Tricholaema lacrymosum	Spotted-flanked Barbet	5	—	—	—	1	—	2/2
Tricholaema diadematum	Red-fronted Barbet	2	—	—	—	—	—	0/0/2
Lybius guifsobalito	Black-billed Barbet	2	2	—	—	—	—	0/0/4
Lybius bidentatus	Double-toothed Barbet	2	—	2	—	1	—	1/1/1
Trachyphonus erythrocephalus	Red & Yellow Barbet	2	—	—	—	—	—	0/2
Trachyphonus darnaudii	D'Arnaud's Barbet	2	—	—	—	—	—	1/1
Andigena laminirostris	Laminated Hill Toucan	2	—	—	—	—	—	0/0/2
Ramphastos vitellinus ariel	Ariel Toucan	2	—	—	—	—	—	0/0/2
Ramphastos vitellinus culinatus	Yellow-ridged Toucan	1	—	—	—	—	—	0/0/1
Ramphastos toco	Toco Toucan	2	—	—	—	—	—	0/0/2
Ramphastos tucanus	Red-billed Toucan	1	—	—	—	—	—	0/0/1
Ramphastos tucanus cuvieri	Cuvier's Toucan	1	—	—	—	1	—	—
Ramphastos ambiguus swainsonii	Swainson's Toucan	2	—	—	—	1	—	1/0
Dinopium benghalense	Golden-backed Woodpecker	1	—	—	—	—	—	0/0/1
PASSERIFORMES								
Procnias nudicollis	Naked-throated Bellbird	1	—	—	—	—	—	1/0
Rupicola peruviana	Cock of the Rock	1	—	—	—	1	—	—
Chiroxiphia pareola	Blue-backed Manakin	2	—	—	—	—	—	1/1
Pitta guajana	Banded Pitta	1	—	—	—	—	—	0/1
Motacilla alba	Pied Wagtail	—	1	—	—	—	—	0/0/1
Anthus pratensis	Meadow Pipit	1	—	—	—	1	—	—
Anthus spinoletta	Rock Pipit	1	—	—	—	—	—	0/0/1
Pycnonotus leucogenys	White-eared Bulbul	1	—	—	—	—	—	0/0/1
Pycnonotus cafer bengalensis	Red-vented Bulbul	1	—	—	—	1	—	—
Hypsipetes flavala	Brown-eared Bulbul	2	—	—	—	—	—	0/0/2
Irena puella	Fairy Bluebird	4	—	—	—	1	—	2/1
Bombycilla cedrorum	Cedar Waxwing	2	—	—	—	—	—	0/0/2
Copsychus malabaricus	Shama	1	—	—	—	—	—	1/0
Turdus olivaceus	Olive Thrush	1	—	—	—	—	—	0/0/1
Turdus olivaceus pelios	African Thrush	2	—	—	—	—	—	0/0/2
Turdus merula	Blackbird	1	—	—	—	—	—	0/1
Turdoides striatus	Jungle Babbler	1	—	—	—	—	—	0/0/1
Garrulax leucolophus	White Crested Laughing Thrush	2	1	—	—	1	—	0/0/2
Garrulax pectoralis	Necklace Jay Thrush	1	—	—	—	—	—	0/0/1
Garrulax cineraceus	Grey-headed Babbler	1	—	—	—	—	—	0/0/1
Garrulax poecilorhynchus	Rufous Laughing Thrush	2	—	—	—	—	—	0/0/2
Leiothrix argentauris	Silver-eared Mesia	1	—	—	—	—	—	0/0/1
Leiothrix lutea	Pekin Robin	2	2	—	—	—	—	2/2
Malurus splendens	Splendid Fairy Wren	3	—	—	—	—	—	2/1
Niltava sundara	Rufous-bellied Niltava	1	—	—	—	1	—	—
Zosterops japonica	Japanese White-eye	4	—	—	—	—	—	1/1/2
Zosterops palpebrosa	Indian White-eye	1	—	—	—	—	—	0/0/1
Zosterops senegalensis	Yellow White-eye	1	—	—	—	—	—	0/0/1
Meliphaga penicillata	White-plumed Honeyeater	3	—	—	—	1	—	0/0/2
Emberiza bruniceps	Red-headed Bunting	2	—	—	—	1	—	0/0/1
Sporophila minuta	Ruddy-breasted Seedeater	2	—	—	—	—	—	1/1
Gubernatrix cristata	Green Cardinal	2	—	—	—	—	—	1/1
Paroaria coronata	Red-crested Cardinal	3	1	—	—	—	—	0/0/4
Paroaria dominicana	Pope Cardinal	1	—	—	—	1	—	—
Cardinalis cardinalis	Virginian Cardinal	1	—	—	—	—	—	0/0/1
Passerina caerulea	Blue Grosbeak	1	—	—	—	—	—	0/0/1
Passerina leclancherii	Rainbow Bunting	1	—	—	—	—	—	0/1
Tachyphonus rufus	Black Tanager	2	—	—	—	—	—	1/1
Ramphocelus nigrogularis	Masked Crimson Tanager	1	—	—	—	—	—	1/0
Ramphocelus flammigerus icteronotus	Lemon-rumped Tanager	2	—	—	—	—	—	1/1
Tangara icterocephala	Silver-throated Tanager	1	—	—	—	1	—	—
Cyanerpes cyaneus	Red-legged Honeycreeper	1	—	—	—	—	—	1/0
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Molothrus bonariensis	Shiny Cowbird	4	—	—	—	—	—	4/0
Fringilla coelebes	Chaffinch	1	—	—	—	—	—	1/0
Serinus leucopygius	Grey Singing Finch	2	—	—	—	1	—	0/0/1
Serinus atrogularis	Yellow-rumped Serin	1	—	—	—	—	—	0/0/1
Serinus mozambicus	Green Singing Finch	1	—	—	—	—	—	1/0
Carduelis chloris	Greenfinch	5	—	9	—	3	—	3/2/6
Carduelis carduelis	Goldfinch	1	—	—	—	1	—	—
Acanthis flammea	Redpoll	—	2	—	—	—	—	1/1
Pinicola subhimachalus	Red-headed Finch	1	—	—	—	—	—	0/0/1
Pyrrhula pyrrhula	Bullfinch	1	—	—	—	1	—	—
Mandingoa nitidula schlegeli	Schlegel's Twinspot	1	—	—	—	—	—	0/0/1
Spermophaga haematina	Western Bluebill	1	—	—	—	—	—	0/0/1
Estrilda caerulescens	Lavender Finch	1	—	—	—	—	—	0/0/1
Estrilda melpoda	Orange-cheeked Waxbill	2	—	—	—	—	—	0/0/2
Estrilda troglodytes	Common Waxbill	1	—	—	—	—	—	0/0/1
Amandava amandava	Avadavat	2	3	—	—	2	—	2/1
Amandava subflava	Golden-breasted Waxbill	1	—	—	—	—	—	1/0
Emblema guttata	Diamond Sparrow	1	—	—	—	1	—	—
Neochmia ruficauda	Starfinch	2	—	—	—	1	—	0/0/1
Poephila guttata castanoventris	Zebra Finch	27	8	2	—	13	17	3/3/1
Poephila acuticauda acuticauda	Long-tailed Grass Finch	2	—	—	—	1	—	0/1
Chloebia gouldiae	Gouldian Finch	—	2	—	—	—	—	1/1
Lonchura malabarica	Silverbill	—	2	—	—	—	—	0/0/2
Lonchura bicolor	Blue-billed Mannikin	1	—	—	—	—	—	0/0/1
Lonchura molucca atricapilla	Black-headed Mannikin	2	—	—	—	—	—	0/0/2
Lonchura punctulata	Nutmeg Finch	—	1	—	—	—	—	0/0/1
Lonchura malacca	Tri-coloured Mannikin	1	2	—	—	1	—	0/0/2
Lonchura maja	White-headed Mannikin	2	2	—	—	—	—	0/0/4
Lonchura sp. (domesticated)	Bengalese Finch	—	2	—	—	—	—	1/1
Padda oryzivora	Java Sparrow	3	—	—	—	1	—	0/0/2
Amadina fasciata	Cut-throat Finch	2	—	—	—	1	—	1/0
Petronia petronia	Rock Sparrow	2	—	—	—	—	—	1/1
Amblyospiza albifrons	Thick-billed Weaver Bird	2	—	—	—	2	—	—
Ploceus melanogaster stephanophorus	Black-billed Weaver	1	—	—	—	—	—	1/0
Ploceus velatus	Black-headed Weaver	1	—	—	—	—	—	1/0
Ploceus cucullatus	Rufous-necked Weaver	1	—	—	—	—	—	1/0
	Weaver, Sp. inc	1	—	—	—	—	—	0/0/1
Quelea erythrops	Red-headed Weaver	1	—	—	—	—	—	0/0/1
Quelea quelea	Red-beaked Weaver	4	—	—	—	—	—	2/2
Euplectes afer	Napoleon Weaver	2	—	—	—	2	—	—
Euplectes progne delamerei	Delamere's Giant Whydah	2	—	—	—	1	—	1/0
Vidua paradisaea	Paradise Whydah	2	—	—	—	—	—	1/1
Aplonis panayensis strigata	Malayan Glossy Starling	2	—	—	—	—	—	0/0/2
Onychognathus salvadorii	Bristle-crowned Starling	1	—	—	—	—	—	0/0/1
Lamprotornis purpureus	Purple Glossy Starling	3	—	—	—	3	—	—
Lamprotornis splendidus splendidus	Splendid Starling	2	—	—	—	1	—	0/0/1
Cinnyricinclus sharpii	Sharpe's Starling	3	—	—	—	—	—	0/0/3
Cinnyricinclus leucogaster	Amethyst Starling	1	—	—	—	—	—	1/0
Spreo superbus	Superb Glossy Starling	7	—	—	—	—	—	2/2/3
Sturnus malabaricus blythi	Blyth's Starling	1	—	—	—	1	—	—
Sturnus sericeus	Silky Starling	2	—	—	—	—	—	0/0/2
Sturnus cineraceus	Grey Starling	2	—	—	—	—	—	0/0/2
Sturnus sinensis	Chinese Starling	2	—	—	—	1	—	0/1
Leucopsar rothschildi	Rothschild's Grackle	4	—	—	—	—	—	2/2
Acridotheres cristatellus cristatellus	Chinese Crested Mynah	3	—	—	—	2	—	0/0/1
Gracula religiosa intermedia	Nepal Hill Mynah	5	—	—	—	—	—	0/0/5
Struthidea cinerea	Grey Struthidea	2	—	—	—	—	—	0/1/1
Garrulus glandarius	Jay	2	—	—	—	—	—	0/0/2
Cyanopica cyana	Azure-winged Magpie	4	—	—	—	—	—	1/1/2
Dendrocitta leucogastra	Southern Tree Pie	1	—	—	—	—	—	0/0/1
Pica pica pica	Magpie	2	—	—	—	—	—	0/0/2
Pyrrhocorax graculus	Alpine Chough	5	—	—	—	—	—	1/1/3
Corvus monedula spermologus	Jackdaw	2	—	—	—	—	—	0/0/2
Corvus frugilegus	Rook	1	—	—	—	—	—	0/0/1
Corvus corone corone	Carrion Crow	4	—	—	—	—	—	0/0/4
Corvus corone cornix	Hooded Crow	2	—	—	—	—	—	0/0/2
Corvus torquatus	Collared Crow	1	—	—	—	—	—	0/0/1
Corvus corax corax	Raven	3	—	—	—	—	—	0/0/3
Corvus albicollis	White-necked Raven	2	—	—	—	—	—	0/0/2
	Total–Birds	1139	140 (20)	106	11	184	69 (4)	1121
		1	**2**	**3**	**4**	**5**	**6**	**7**

Reptiles

		1	2	3	4	5	6	7
TESTUDINES								
Chelydra serpentina serpentina	Snapper	1	—	—	—	—	—	0/0/1
Macroclemys temminckii	Alligator-Snapper	2	—	—	—	—	—	0/0/2
Staurotypus triporcatus	Three-keeled Terrapin	1	—	—	—	—	—	1/0
Sternotherus odoratus	Musk Turtle	2	—	—	—	—	—	0/0/2
Kinosternon subrubrum	Pennsylvanian Mud Terrapin	1	—	—	—	—	—	0/0/1
Kinosternon scorpioides	Scorpion Mud Terrapin	2	—	—	—	—	—	1/0/1
Kachuga smithii	Smith's Terrapin	1	—	—	—	1	—	—
Chrysemys picta picta	Eastern Painted Terrapin	—	2	—	—	—	—	2/0
Chrysemys scripta scripta	Yellow-bellied Terrapin	5	—	—	—	—	—	0/0/5
Chrysemys scripta elegans	Red-eared Terrapin	16	7	—	—	6	4	0/0/13
Chrysemys floridana floridana	Florida Terrapin	3	—	—	—	—	—	0/0/3
Ocadia sinensis	Bennett's Terrapin	1	—	—	—	—	—	0/0/1
Graptemys kohnii	Mississippi Map Terrapin	—	1	—	—	—	—	0/0/1
Chinemys reevesii	Reeves's Terrapin	2	—	—	—	—	—	0/0/2
Siebenrockiella crassicollis	Thick-necked Terrapin	1	—	—	—	—	—	0/0/1
Mauremys caspica rivulata	Western Caspian Terrapin	1	—	—	—	—	—	0/0/1
Mauremys caspica leprosa	Spanish Terrapin	4	1	—	—	2	—	0/0/3
Clemmys insculpta	Wood Terrapin	—	3	—	—	1	—	1/1
Emys orbicularis	European Pond Tortoise	4	2	2	—	1	—	0/0/7
Terrapene carolina	Carolina Box Tortoise	2	—	—	—	1	—	1/0
Terrapene carolina triunguis	Three-toed Box Tortoise	1	—	—	—	—	—	0/0/1
Terrapene carolina major	Greater American Box Tortoise	1	—	—	—	—	—	0/0/1
Melanochelys trijuga trijuga	Ceylon Terrapin	2	1	—	—	—	—	0/0/3
Melanochelys trijuga thermalis	Terrapin	—	1	—	—	—	—	0/0/1
Geoemyda grandis	Burmese Terrapin	2	—	—	—	—	—	0/0/2
Cyclemys dentata	Oldham's Terrapin	2	—	—	—	1	—	0/0/1
Cuora trifasciata	Three-banded Terrapin	2	—	—	—	—	—	1/1
Cuora amboinensis	Amboina Box Tortoise	3	—	—	—	—	—	0/0/3
Testudo graeca	Mediterranean Spur-thighed Tortoise	4	3	—	—	4	—	0/0/3
Testudo hermanni	Hermann's Tortoise	3	3	—	—	1	—	4/1
Testudo kleinmanni	Leith's Tortoise	—	1	—	—	—	—	0/0/1
Testudo horsfieldii	Horsfield's Tortoise	2	—	—	—	1	1	—
Geochelone elegans	Starred Tortoise	2	4	—	—	—	—	0/0/6
Malacochersus tornieri	Pancake Tortoise	1	—	—	—	—	—	0/0/1
Geochelone sulcata	African Spurred Tortoise	2	—	—	—	—	—	1/1
Geochelone pardalis	Leopard Tortoise	2	—	—	—	1	—	0/1
Geochelone gigantea gigantea	Giant Tortoise	9	2 (2)	—	—	2	2 (2)	4/2/1
Geochelone elephantopus elephantopus	South Albemarle Tortoise	2	—	—	—	—	—	1/1
Geochelone elephantopus nigrita	Porter's Blackish Tortoise	2	—	—	—	—	—	1/1
Geochelone carbonaria	Red-legged Tortoise	2	—	—	—	1	—	1/0
Chelonia mydas	Green Turtle	1	—	—	—	—	—	0/0/1
Caretta caretta	Loggerhead Turtle	1	—	—	—	—	—	0/0/1
Pelusios niger	Black Terrapin	2	—	—	—	—	—	0/0/2
Pelusios sinuatus	Natal Terrapin	2	—	—	—	—	—	0/0/2
Pelusios subniger	Blackish Terrapin	7	—	—	—	—	—	0/0/7
Pelomedusa subrufa	Helmeted Terrapin	2	—	—	—	—	—	0/0/2
Podocnemis unifilis	Bearded Greaved Tortoise	3	—	—	—	—	—	0/0/3
Podocnemis expansa	Great Greaved Tortoise	1	—	—	—	—	—	0/0/1
Chelus fimbriatus	Matamata	2	—	—	—	1	—	1/0
Chelodina longicollis	Long-necked Terrapin	3	—	—	—	—	3	—
Phrynops hilarii	St Hilaire's Terrapin	1	—	—	—	1	—	—
Emydura macquarrii	Murray River Tortoise	1	—	—	—	—	—	0/0/1
Trionyx cartilagineus	Phayre's Soft-shelled Turtle	1	—	—	—	—	—	0/0/1
Trionyx triunguis	Nile Soft-shelled Turtle	1	—	—	—	—	—	0/0/1
Trionyx spiniferus spiniferus	Spiny Soft-shelled Turtle	1	—	—	—	—	—	0/0/1
CROCODYLIA								
Crocodylus siamensis	Siamese Crocodile	3	—	—	—	—	—	2/1
Crocodylus niloticus	Nile Crocodile	3	—	—	—	1	—	2/0
Crocodylus porosus	Estuarine Crocodile	2	—	—	—	1	—	1/0
Crocodylus palustris	Mugger	2	—	—	—	—	—	0/2
Crocodylus moreletii	Morelet's Crocodile	1	—	—	—	—	—	1/0
Osteolaemus tetraspis tetraspis	Broad-fronted Crocodile	—	1	—	—	—	—	0/0/1
Alligator mississippiensis	American Alligator	3	—	—	—	—	—	1/2
Caiman crocodilus yacare	Paraguayan Cayman	4	1	—	—	—	—	4/1
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
SAURIA								
Hemitheconyx caudicinctus	African Fat-tailed Gecko	1	—	—	—	—	—	0/0/1
Hemidactylus turcicus	Turkish Gecko	—	1	—	—	—	—	0/0/1
Gehyra mutilata	Peron's House Gecko	1	—	—	—	—	—	0/0/1
Gekko gecko	Tokay Gecko	3	1	—	—	2	—	0/0/2
Tarentola mauritanica	Moorish Gecko	1	—	—	—	1	—	—
Tarentola delalandii	Delalande's Gecko	2	—	—	—	—	—	0/0/2
Pachydactylus bibronii	Bibron's Gecko	1	—	—	—	1	—	—
Phelsuma abbotti abbotti	Abbott's Day Gecko	1	—	—	—	—	—	0/0/1
Phelsuma sp.	Jewel Gecko	1	1	—	—	1	—	0/0/1
Eublepharis macularius	Leopard Ground Gecko	6	—	2	—	1	—	0/0/7
Gekko sp.	Gecko	—	2	—	—	1	—	0/0/1
Anolis equestris	Greater Cuban Anolis	1	1	—	—	—	—	0/0/2
Anolis carolinensis	Carolina Anolis	—	6	—	—	2	—	0/0/4
Tropidurus torquatus hispidus	Taraguira Lizard	2	—	—	—	—	—	0/0/2
Metopoceros cornutus	Rhinoceros Iguana	1	—	—	—	—	—	0/1
Iguana iguana	Common Iguana	2	1	—	—	1	—	0/0/2
Dipsosaurus dorsalis	Desert Iguana	—	5	—	—	—	—	0/0/5
Sauromalus obesus	Chuckwalla	—	4	—	—	—	—	2/2
Sceloporus orcutti	Granite Spiny Lizard	1	2	—	—	3	—	—
Calotes versicolor	Harlequin Lizard or Bloodsucker	4	—	—	—	4	—	—
Calotes nigrilabris	Black-lipped Agama	4	—	—	—	—	3	0/0/1
Agama agama	Margouillat Lizard	1	—	—	—	1	—	—
Agama caucasica	Caucasian Agama	1	—	—	—	1	—	—
Physignathus cocincinus	Cochin China Water Dragon	6	—	—	—	1	—	1/4
Leiolepis belliana	Bell's Agama	3	4	—	—	3	—	0/0/4
Uromastyx acanthinurus	Bell's Dabb Lizard	3	—	—	—	1	—	1/1
Chamaeleo chamaeleon	Common Chameleon	1	—	—	—	1	—	—
Chamaeleo gracilis	Graceful Chameleon	—	3	—	—	3	—	—
Chamaeleo bitaeniatus ellioti	Montane Side-Striped Chameleon	1	—	—	—	1	—	—
Chamaeleo jacksonii	Jackson's Chameleon	—	1	—	—	1	—	—
Egernia cunninghami	Cunningham's Skink	1	—	—	—	—	—	0/0/1
Trachydosaurus rugosus	Shingle-back	2	—	—	—	—	—	0/0/2
Tiliqua gigas	New Guinea Skink	3	—	—	—	—	—	2/1
Tiliqua scincoides	Eastern Blue-tongued Skink	1	—	—	—	—	—	0/0/1
Mabuya quinquetaeniata	Five-lined Skink	3	1	—	—	2	—	1/1
Riopa sp.	Skink	4	—	—	—	4	—	—
Eumeces schneiderii	Schneider's Skink	—	4	—	—	—	4	—
Eumeces algeriensis	Algerian Skink	1	—	—	—	—	—	0/0/1
Chalcides ocellatus	Eyed Skink	2	—	—	—	—	—	0/0/2
Gerrhosaurus vallidus	Robust Plated-lizard	5	2	—	—	—	—	0/0/7
Gerrhosaurus major	Greater Plated-lizard	2	—	—	—	2	—	—
Lacerta sp.	Lizard	—	1	—	—	—	—	0/0/1
Lacerta viridis	Green Lizard	—	1	—	—	—	—	1/0
Lacerta trilineata	Balkan Green Lizard	—	6	—	—	1	—	0/0/5
Lacerta lepida	Eyed Lizard	7	10	—	—	5	1	0/0/11
Gallotia galloti	Gallot's Lizard	4	—	—	—	3	—	0/0/1
Lacerta laevis	Levant Lizard	—	6	—	—	—	6	—
Podarcis pityusensis	Ibiza Wall Lizard	2	—	—	—	2	—	—
Tupinambis nigropunctatus	Black-pointed Tegu	2	—	—	—	—	—	0/0/2
Cnemidophorus lemniscatus	Daudin's Whiptail Lizard	2	—	—	—	2	—	—
Varanus exanthematicus	Bosc's Monitor	1	—	—	—	—	—	1/0
Heloderma suspectum	Gila Monster	3	—	—	—	—	—	2/1
Heloderma horridum	Mexican Beaded Lizard	2	—	—	—	1	—	1/0
Gerrhonotus multicarinatus	Southern Alligator Lizard	—	2	—	—	1	—	0/0/1
Ophisaurus apodus	Scheltopusik	2	—	—	—	—	—	0/1/1
Anguis fragilis	Slowworm	1	—	—	—	—	—	0/0/1
Cordylus giganteus	Sungazer	4	—	—	—	1	—	0/0/3
Cordylus warreni breyeri	Breyer's Armoured Lizard	2	—	—	—	—	—	0/0/2
Cordylus vittifer	Transvaal Girdled Lizard	—	4	—	—	3	—	0/0/1
Platysaurus guttatus	Rhodesian Rock Lizard	2	2	—	—	—	—	2/2
SERPENTES								
Liasis amethistinus	Amethystine Python	3	—	—	—	2	—	0/1
Morelia spilotus variegata	Carpet Python	1	—	—	—	—	—	1/0
Aspidites melanocephalus	Black-headed Python	1	—	—	—	1	—	—
Python reticulatus	Reticulated Python	2	2	—	—	—	—	3/0/1
Python molurus	Indian Rock Python	3	1	—	—	1	—	1/2
Python regius	Royal Python	8	—	—	—	3	1	0/0/4
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Chondropython viridis	Papuan Tree Python	2	2	—	—	1	1	1/1
Eunectes murinus	Anaconda	2	—	—	—	1	—	0/1
Eunectes notaeus	Yellow Anaconda	1	—	—	—	—	—	1/0
Boa constrictor	Boa Constrictor	8	2	—	—	2	1	0/0/7
Eryx conicus	Russell's Sand-boa	3	—	—	—	—	—	0/0/3
Eryx jaculus	Javelin Sand-boa	1	3	—	—	—	3	0/0/1
Eryx johnii	John's Sand-boa	1	—	—	—	—	—	0/0/1
Natrix natrix	Grass Snake	1	—	—	—	1	—	—
Natrix tessellata	Diced Water Snake	—	2	—	—	2	—	—
Natrix maura	Viperine Snake	—	1	—	—	—	—	0/0/1
Boaedon fuliginosus	African House Snake	7	—	—	—	—	—	1/2/4
Pseudaspsis cana	Mole Snake	1	—	—	—	1	—	—
Ptyas mucosus	Rat Snake	—	2	—	—	2	—	—
Elaphe guttata	Corn Snake	2	1	—	—	1	—	1/1
Elaphe vulpina	Fox Snake	—	1	—	—	1	—	—
Elaphe vulpina gloydi	Eastern Fox Snake	1	—	—	—	—	—	1/0
Elaphe obsoleta	Rat Snake	1	—	—	—	1	—	—
Elaphe obsoleta quadrivittata	Yellow Rat Snake	—	1	—	—	1	—	—
Elaphe radiata	Eastern Copperhead Rat Snake	1	—	—	—	—	—	0/0/1
Coluber jugularis	Large Whip Snake	—	5	—	—	1	4	—
Coluber gemonensis	Balkan Whip Snake	1	—	—	—	—	—	0/0/1
Coluber najadum	Dahl's Whip Snake	—	1	—	—	—	—	0/0/1
Coluber ravergieri ravergieri	Ravergier's Racer	—	5	—	—	—	3	0/0/2
Hydrodynastes gigas	Boipevussu Snake	10	—	—	—	6	—	2/2
Rhinocheilus lecontei	Long-nosed Snake	—	1	—	—	—	—	0/0/1
Lampropeltis getulus holbrooki	Speckled King Snake	2	1	—	—	1	—	1/0/1
Lampropeltis getulus floridana	Florida King Snake	1	—	—	—	1	—	—
Lampropeltis getulus californiae	California King Snake	1	—	—	—	—	—	0/1
Malpolon monspessulana	Montpellier Snake	—	5	—	—	—	—	0/5
Rhamphiophis oxyrhynchus rostratus	Rufous Beaked-Snake	2	—	6	—	7	—	1/0
Psammophis sibilans	African Beauty Snake	2	—	—	—	2	—	—
Ahaetulla prasina	Emerald Whip Snake	1	—	—	—	1	—	—
Chrysopelea ornata	Ornate Tree Snake	2	—	—	—	1	—	0/0/1
Walterinnesia aegyptia	Innes' Snake	2	3	—	—	2	—	1/2
Naja haje	Egyptian Cobra	2	—	—	—	1	—	1/0
Naja nivea	Cape Cobra	1	—	—	—	—	—	1/0
Naja melanoleuca	Black and White Cobra	1	—	—	—	—	—	1/0
Naja nigricollis	Black-necked Cobra	1	1	—	—	1	—	0/1
Naja naja	Indian Cobra	1	2	—	—	1	—	1/1
Dendroaspis jamesoni jamesoni	Jameson's Green Mamba	2	—	—	—	2	—	—
Dendroaspis angusticeps	Common Green Mamba	2	—	—	—	1	—	0/1
Dendroaspis polylepsis	Black Mamba	1	—	—	—	—	—	1/0
Vipera berus	Adder	1	—	—	—	—	—	1/0
Vipera xanthina palaestinae	Palestine Viper	1	10	—	—	2	5	2/2
Vipera lebetina schweizeri	Daudin's Viper	3	—	—	—	2	—	1/0
Bitis arietans	Puff Adder	2	3	—	—	1	—	2/2
Bitis gabonica	Gaboon Viper	2	—	—	—	—	—	1/1
Cerastes vipera	Lesser Cerastes Viper	—	3	—	—	3	—	—
Echis carinatus	Carpet Viper	1	—	—	—	—	—	1/0
Echis coloratus	Burton's Carpet Viper	—	2	—	—	—	—	0/0/2
Agkistrodon piscivorus	Cottonmouth	3	1	—	—	—	—	3/1
Agkistrodon contortrix mokasen	Northern Copperhead	3	—	—	—	—	—	1/0/2
Agkistrodon contortrix contortrix	Southern Copperhead	1	—	—	—	1	—	—
Agkistrodon hypnale	Merrem's Hump-nosed Viper	1	—	—	—	—	—	0/1
Agkistrodon rhodostoma	Malayan Pit Viper	1	—	—	—	—	—	1/0
Trimeresurus purpureomaculatus	Shore Pit Viper	1	—	—	—	1	—	—
Trimeresurus popeorum	Pope's Pit Viper	2	1	—	—	2	—	1/0
Bothrops lanceolatus	Martinique Fer-de-lance	1	—	—	—	—	—	1/0
Sistrurus miliarius	Pygmy Rattlesnake	1	1	—	—	—	—	2/0
Sistrurus miliarius barbouri	Dusky Pygmy Rattlesnake	—	1	—	—	1	—	—
Sistrurus catenatus tergeminus	Western Massasauga	1	—	—	—	1	—	—
Crotalus atrox	Western Diamond-back Rattlesnake	4	—	—	—	2	—	1/1
Crotalus viridis viridis	Prairie Rattlesnake	1	—	—	—	—	—	0/0/1
Crotalus viridis lutosus	Great Basin Rattlesnake	2	—	—	—	2	—	—
	Total–Reptiles	363	168 (2)	10	—	151	42 (2)	348
	Total–Amphibians	233	58	40	—	142	—	189
		1	**2**	**3**	**4**	**5**	**6**	**7**

WHIPSNADE PARK		1	2	3	4	5	6	7
Mammals								
MARSUPIALIA								
Macropus rufogriseus	Red-necked Wallaby	182	—	97	—	32	68	13/10/156
PRIMATES								
Galago crassicaudatus	Thick-tailed Bushbaby	2	—	—	—	1	—	1/0
Erythrocebus patas	Patas Monkey	2	—	—	—	1	—	1/0
Pan troglodytes	Chimpanzee	6	1	—	—	1	—	1/5
RODENTIA								
Cynomys ludovicianus	Prairie Marmot	60	—	—	—	—	22 (8)	0/0/38
Tamias sibiricus	Siberian Chipmunk	1	—	—	—	—	—	0/1
Dolichotis patagonum	Mara	19	3 (3)	7	3	7	—	4/1/14
Dasyprocta punctata	Central American Agouti	3	7	6	2	2	4	3/5
CETACEA								
Tursiops truncatus	Bottle-nosed Dolphin	2	2	—	—	—	—	1/3
CARNIVORA								
Canis lupus	Grey Wolf	15	—	8	—	1	—	3/2/17
Fennecus zerda	Fennec Fox	3	—	—	—	1	2 (2)	—
Lycaon pictus	Cape Hunting Dog	3	3	—	—	1	—	2/3
Tremarctos ornatus	Spectacled Bear	2	—	—	—	—	—	1/1
Ursus arctos	Brown Bear	5	—	—	—	—	2 (1)	1/2
Ursus arctos	Brown Bear (Kodiak form)	2	—	3	—	—	3	1/1
Thalarctos maritimus	Polar Bear	3	—	—	—	—	1	1/1
Ailurus fulgens	Red Panda	2	—	—	—	—	—	1/1
Nasua nasua	Ring-tailed Coati	8	—	2	—	—	—	2/6/2
Suricata suricatta	Suricate Meerkat	3	—	—	—	—	—	1/2
Felis lynx	Northern Lynx	4	—	—	—	—	—	1/3
Felis serval	Serval	4	—	1	—	2	1	1/1
Panthera leo	Lion	7	—	5	5	1	1 (1)	2/3
Panthera tigris	Tiger ('Sumatran' form)	5	—	4	—	—	5	1/3
Panthera onca	Jaguar	2	—	2	—	—	—	1/3
Acinonyx jubatus	Cheetah	12	2	7	—	3	5 (2)	4/9
PINNIPEDIA								
Otaria byronia	Southern Sealion	3	—	—	—	1	—	1/1
PROBOSCIDEA								
Elephas maximus	Indian Elephant	1	—	—	—	—	—	0/1
Loxodonta africanus	African Elephant	3	—	—	—	—	—	1/2
PERISSODACTYLA								
Equus przewalskii	Przewalski's Horse	12	—	3	—	—	—	3/12
Asinus hemionus	Onager (Persian form)	9	—	—	—	—	3	2/4
Hippotigris zebra	Mountain Zebra	6	2	—	—	1	2	1/4
Hippotigris burchelli	Common Zebra	8	—	1	—	1	—	2/6
Rhinoceros unicornis	Indian Rhinoceros	2	—	—	—	—	—	1/1
Diceros bicornis	Black Rhinoceros	2	—	—	—	—	1 (1)	0/1
Ceratotherium simum	White Rhinoceros	15	1	1	—	—	3	2/12
ARTIODACTYLA								
Sus scrofa	Wild Boar	2	3 (3)	—	—	—	2	2/1
Tayassu tajacu	Collared Peccary	17	—	3	1	1	4 (4)	5/9
Hippopotamus amphibius	Hippopotamus	5	—	—	—	—	—	2/3
Choeropsis liberiensis	Pygmy Hippopotamus	6	—	—	—	—	—	2/4
Lama glama	Llama	28	—	10	—	2	8 (1)	6/22
Lama guanicoe	Guanaco	23	—	10	1	—	13	4/15
Camelus bactrianus	Bactrian Camel	14	1 (1)	3	—	1	1	6/10
Camelus dromedarius	Arabian Camel	9	—	—	—	—	—	1/8
Muntiacus reevesi	Reeves' Muntjac	12	1	—	—	2	—	0/0/11
Dama dama	Fallow Deer	67	—	23	7	5	33	10/23/12
Axis axis	Axis Deer	25	—	13	6	1	6	3/8/14
Axis porcinus	Hog Deer	32	—	7	2	6	1	12/12/6
Cervus duvauceli	Barasingha	14	—	4	—	2	—	8/7/1
Cervus nippon	Sika Deer (Ryukyu × Japanese form)	13	—	3	2	—	4	3/5/2
Cervus nippon	Sika Deer (Formosan form)	39	—	16	6	9	10	4/12/14
Cervus elaphus	Red Deer	29	—	13	3	—	1	6/13/19
Elaphurus davidianus	Père David's Deer	37	—	9	—	—	1	14/25/6
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Alces alces	Moose	4	—	4	4	1	—	1/2
Rangifer tarandus	Reindeer	6	1	3	1	—	—	5/4
Hydropotes inermis	Chinese Water Deer	98	—	30	—	2	75	0/0/51
Giraffa camelopardalis	Giraffe	4	1 (1)	1	1	—	2	2/1
Tragelaphus spekei	Sitatunga	14	—	7	4	—	—	9/8
Boselaphus tragocamelus	Nilgai	11	—	5	1	4	—	4/7
Bos grunniens	Yak	12	3 (1)	1	—	3	2 (2)	7/4
Syncerus caffer	Cape Buffalo	5	—	1	—	2	—	2/2
Bison bonasus	European Bison	12	—	3	—	—	1	3/11
Bison bison	American Bison	12	—	1	—	3	—	3/6/1
Oryx tao	Scimitar-horned Oryx	2	4	—	—	—	—	6/0
Damaliscus dorcas	Blesbok	3	—	2	—	—	—	2/3
Connochaetes taurinus	Brindled Gnu	8	—	1	1	1	—	2/5
Antilope cervicapra	Blackbuck	1	6 (6)	—	—	—	—	7/0
Gazella thomsoni	Thomson's Gazelle	21	—	10	2	5	1	7/3/13
Ovibos moschatus	Musk Ox	4	—	2	—	—	2	1/3
Ovis musimon	Mouflon	28	—	16	5	5	12	5/7/10
DOMESTIC								
	Ponies	14	1	2	—	1	—	9/7
	Pygmy Donkey	2	—	—	—	—	—	1/1
	Vietnamese Pot-bellied Pig	5	—	—	—	—	2 (2)	1/2
	Windsor White Goat	12	—	9	2	2	—	7/10
	Dorset Down Sheep	—	4 (4)	—	—	4	—	—
	Total–Mammals	1068	46 (19)	359	59	118	304 (24)	992

Birds

STRUTHIONIFORMES								
Struthio camelus	Ostrich	4	—	—	—	1	—	2/1
RHEIFORMES								
Rhea americana	Common Rhea	17	—	—	—	—	9	6/2
CASUARIIFORMES								
Casuarius casuarius	Australian Cassowary	2	—	—	—	—	—	1/1
Dromaius novaehollandiae	Emu	13	—	6	3	1	1	2/4/8
SPHENISCIFORMES								
Aptenodytes patagonica	King Penguin	7	—	3	—	1	—	1/2/6
Eudyptes crestatus	Rockhopper Penguin	5	7	—	—	—	6 (6)	0/0/6
Spheniscus demersus	Black-footed Penguin	1	—	—	—	—	1 (1)	—
Spheniscus humboldti	Humboldt's Penguin	35	—	14	7	2	—	10/10/20
PELECANIFORMES								
Pelecanus occidentalis	Brown Pelican	—	4	—	—	—	4 (4)	—
Phalacrocorax carbo	Cormorant	—	2	—	—	—	2 (2)	—
CICONIIFORMES								
Ciconia nigra	Black Stork	1	—	—	—	1	—	—
Ciconia ciconia	White Stork	3	—	—	—	1	—	0/0/2
Threskiornis aethiopicus	Sacred Ibis	8	—	—	—	1	—	0/0/7
Eudocimus albus	White Ibis	—	3	—	—	—	3 (3)	—
Phoenicopterus ruber roseus	Greater Flamingo	11	—	—	—	—	—	0/0/11
Phoenicopterus ruber ruber	Rosy Flamingo	56	—	9	—	3	—	17/17/28
Phoenicopterus chilensis	Chilean Flamingo	40	—	10	2	—	—	10/10/28
ANSERIFORMES								
Dendrocygna eytoni	Eyton's Whistling Duck	2	—	—	—	—	—	1/1
Dendrocygna bicolor	Fulvous Whistling Duck	—	2	—	—	—	—	1/1
Cygnus atratus	Black Swan	15	—	—	—	1	—	4/4/6
Cygnus melanocoryphus	Black-necked Swan	1	2	—	—	—	—	2/1
Cygnus cygnus	Whooper Swan	2	1	—	—	1	—	1/1
Coscoroba coscoroba	Coscoroba Swan	1	1	—	—	—	—	1/1
Anser cygnoides	Chinese Goose	1	—	—	—	—	—	1/0
Anser anser	Greylag Goose	20	—	—	—	2	—	6/6/6
Anser indicus	Bar-headed Goose	25	—	—	—	1	1	2/2/19
Anser caerulescens caerulescens	Lesser Snow Goose	17	—	7	3	4	4	4/4/5
Anser caerulescens atlanticus	Greater Snow Goose	35	—	—	—	2	—	4/4/25
Anser canagicus	Emperor Goose	11	—	1	—	—	2	4/5/1
Branta sandvicensis	Hawaiian Goose	9	—	1	—	1	—	2/3/4
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Branta canadensis	Canada Goose	41	—	—	—	—	25	8/8
Branta leucopsis	Barnacle Goose	25	—	3	—	2	4	3/3/16
Branta ruficollis	Red-breasted Goose	50	—	5	—	—	—	30/24/1
Cereopsis novaehollandiae	Cape Barren Goose	10	—	1	—	—	3	4/4
Chloephaga picta	Upland Goose	1	—	—	—	—	1	—
Alopochen aegyptiacus	Egyptian Goose	7	—	—	—	1	—	1/1/4
Tadorna cana	South African Shelduck	13	—	—	—	1	6	5/1
Tadorna variegata	New Zealand Shelduck	4	—	—	—	—	1	1/2
Tadorna tadorna	Shelduck	5	—	—	—	—	—	2/3
Plectropterus gambensis	Spur-winged Goose	1	—	—	—	—	—	1/0
Aix sponsa	Carolina Duck	18	—	3	—	4	3	8/2/4
Aix galericulata	Mandarin Duck	14	—	3	—	2	3	6/2/4
Chenonetta jubata	Maned Goose	2	2	—	—	—	—	2/2
Anas penelope	Wigeon	7	—	—	—	—	—	1/2/4
Anas sibilatrix	Chiloe Wigeon	14	—	—	—	—	1	3/3/7
Anas falcata	Falcated Teal	7	—	—	—	—	—	3/4
Anas streptera	Gadwall	4	—	—	—	1	—	1/2
Anas formosa	Baikal Teal	6	—	—	—	—	—	1/1/4
Anas crecca	Teal	5	—	—	—	—	3	1/1
Anas superciliosa	New Zealand Grey Duck	3	—	—	—	—	—	3/0
Anas specularioides	Crested Duck	16	—	10	—	—	—	5/6/15
Anas acuta	Pintail	4	—	—	—	—	—	2/2
Anas bahamensis	Bahama Pintail	2	—	—	—	—	—	1/1
Anas querquedula	Garganey	3	—	—	—	—	—	1/2
Anas clypeata	Shoveler	3	—	—	—	—	—	2/1
Netta rufina	Red-crested Pochard	5	—	—	—	—	—	2/2/1
Aythya ferina	Pochard	7	—	—	—	—	—	3/4
Aythya fuligula	Tufted Duck	4	—	—	—	—	1	2/1
Aythya marila	Scaup	1	2	—	—	—	—	0/3
Somateria mollissima	Eider Duck	4	2	—	—	—	—	2/4
Bucephala islandica	Barrow's Goldeneye	2	2	—	—	—	—	2/2
FALCONIFORMES								
Gyps africanus	African White-backed Vulture	1	—	—	—	—	—	1/0
Gyps rueppellii	Ruppell's Griffon Vulture	2	—	—	—	—	—	0/0/1
Gyps fulvus	Griffon Vulture	—	2	—	—	—	—	0/0/2
Torgos tracheliotus	Lappet-faced Vulture	1	2	—	—	—	—	0/0/3
Sagittarius serpentarius	Secretary Bird	2	4	—	—	—	—	2/0/4
GALLIFORMES								
Penelope purpurascens	Purple Guan	3	—	—	—	—	—	0/0/3
Meleagris gallopavo	North American Turkey	25	—	20	—	1	6	0/0/38
Francolinus erckelii	Erckel's Francolin	1	—	—	—	—	—	1/0
Lophophorus impeyanus	Impeyan Pheasant	7	—	—	—	2	—	3/2
Gallus gallus	Jungle Fowl	38	—	—	—	1	35	1/1
Gallus sonneratii	Sonnerat's Jungle Fowl	—	2 (2)	—	—	—	—	1/1
Lophura nycthemera	Silver Pheasant	25	1 (1)	—	—	1	13	3/4/5
Crossoptilon mantchuricum	Brown Eared Pheasant	4	—	—	—	—	—	2/2
Catreus wallichi	Cheer Pheasant	8	—	—	—	2	2	1/1/2
Syrmaticus ellioti	Elliot's Pheasant	3	—	—	—	3	—	—
Syrmaticus mikado	Mikado Pheasant	1	—	—	—	—	—	0/1
Syrmaticus soemmerringi scintillans	Scintillating Copper Pheasant	—	1	—	—	—	—	1/0
Syrmaticus reevesi	Reeves's Pheasant	5	—	—	—	—	—	1/1/3
Phasianus colchicus	Common Pheasant	6	—	—	—	—	4	1/1
Chrysolophus pictus	Golden Pheasant	12	—	—	—	—	7	5/0
Chrysolophus amherstiae	Lady Amherst's Pheasant	5	—	—	—	1	—	2/2
Pavo cristatus	Common Peafowl	63	—	—	—	5	2 (1)	0/0/56
Numida meleagris	Helmeted Guineafowl	37	—	—	—	3	9	0/0/25
GRUIFORMES								
Grus grus	Common Crane	3	—	—	—	—	—	0/0/3
Grus monacha	Hooded Crane	3	—	—	—	2	—	1/0
Grus canadensis	Sandhill Crane	2	—	—	—	—	—	1/1
Grus japonensis	Manchurian Crane	3	—	—	—	—	—	1/1/1
Grus vipio	White-naped Crane	2	2	—	—	1	—	1/2
Grus antigone	Sarus Crane	3	1 (1)	—	—	—	—	2/2
Grus rubicunda	Brolga	—	2	—	—	—	—	1/1
Bugeranus carunculatus	Wattled Crane	4	—	—	—	—	—	2/2
Anthropoides virgo	Demoiselle Crane	13	—	—	—	4	—	1/1/7
Anthropoides paradisea	Stanley Crane	1	—	—	—	—	—	1/0
Balearica pavonina pavonina	West African Crowned Crane	12	—	—	—	1	—	0/0/11
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Balearica regulorum regulorum	South African Crowned Crane	18	—	—	—	—	1	1/1/15
Choriotis kori	Kori Bustard	6	—	—	—	—	—	1/5
CHARADRIIFORMES								
Larosterna inca	Inca Tern	—	3	—	—	—	3 (3)	—
COLUMBIFORMES								
Streptopelia 'risoria'	Java Dove (White var.)	6	—	—	—	—	—	0/0/6
Geopelia cuneata	Diamond Dove	1	—	—	—	1	—	—
Goura cristata	Blue Crowned Pigeon	1	—	—	—	—	—	0/0/1
Goura victoria	Victoria Crowned Pigeon	2	2	—	—	1	—	1/1/1
PSITTACIFORMES								
Trichoglossus haematodus	Swainson's Lorikeet	5	—	—	—	1	—	0/0/4
Eolophus roseicapillus	Roseate Cockatoo	3	1	—	—	—	—	0/0/4
Cacatua leadbeateri	Leadbeater's Cockatoo	1	1	—	—	—	—	0/0/2
Cacatua sulphurea	Lesser Sulphur-crested Cockatoo	3	—	—	—	—	—	0/2/1
Cacatua galerita	Great Sulphur-crested Cockatoo	4	—	—	—	—	1	0/0/3
Cacatua moluccensis	Moluccan Cockatoo	2	—	—	—	—	—	1/1
Cacatua sanguinea	Bare-eyed Cockatoo	2	—	1	—	—	—	1/1/1
Nymphicus hollandicus	Cockatiel	16	—	3	—	1	6	3/3/6
Platycercus eximius cecilae	Golden-mantled Rosella	4	—	—	—	—	—	0/0/4
Platycercus eximius	Eastern Rosella Parrakeet	1	—	—	—	—	—	0/0/1
Psephotus haematonotus	Red-rumped Parrakeet	10	—	—	—	3	—	3/1/3
Melopsittacus undulatus	Budgerigar	16	—	—	—	2	14	—
Psittacus erithacus	Grey Parrot	3	—	—	—	—	—	0/0/3
Psittacula eupatria nipalensis	Alexandrine Parrakeet	1	—	—	—	—	—	1/0
Psittacula krameri manillensis	Indian Ring-necked Parrakeet	6	—	2	—	—	—	2/1/5
Psittacula cyanocephala rosa	Blossom-headed Parrakeet	1	—	—	—	—	—	0/0/1
Ara ararauna	Blue and Yellow Macaw	3	—	—	—	1	—	1/0/1
Ara macao	Scarlet Macaw	3	—	—	—	—	—	2/1
Ara chloroptera	Green-winged Macaw	5	—	—	—	—	—	2/2/1
Brotogeris versicolurus chiriri	Canary-winged Parrakeet	1	—	—	—	—	—	1/0
Amazona aestiva	Blue-fronted Amazon Parrot	2	—	—	—	—	—	0/0/2
Amazona ochrocephala	Yellow-fronted Amazon Parrot	1	—	—	—	—	—	0/0/1
Amazona amazonica	Orange-winged Amazon Parrot	2	—	—	—	—	—	0/0/2
STRIGIFORMES								
Tyto alba	Barn Owl	1	—	—	—	—	—	0/1
Bubo capensis mackinderi	Kenya Eagle Owl	2	—	—	—	—	—	1/1
Nyctea scandiaca	Snowy Owl	4	—	—	—	2	—	2/0
Strix aluco sylvatica	Tawny Owl	3	—	—	—	1	—	1/1
CORACIIFORMES								
Dacelo novaeguineae	Kookaburra	2	—	—	—	—	—	1/0/1
PASSERIFORMES								
Serinus mozambicus	Green Singing Finch	2	—	—	—	1	—	1/0
Uraeginthus bengalus	Cordon Bleu	3	—	—	—	1	—	0/0/2
Estrilda caerulescens	Lavender Finch	2	—	—	—	2	—	—
Estrilda melpoda	Orange-cheeked Waxbill	4	—	—	—	3	—	0/0/1
Estrilda troglodytes	Common Waxbill	1	3	—	—	1	—	0/0/3
Estrilda astrild	St Helena Waxbill	3	—	—	—	2	—	1/0
Amandava subflava	Golden-breasted Waxbill	1	4	—	—	1	—	2/2
Gracula religiosa	Hill Mynah	1	—	—	—	—	—	0/0/1
Urocissa erythrorhyncha occipitalis	Red-billed Blue Pie	1	—	—	—	—	—	0/0/1
	Total–Birds	1084	61 (4)	102	15	86	187 (20)	959

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

		1	2	3	4	5	6	7
Reptiles								
TESTUDINATA								
Chrysemys scripta elegans	Red-eared Terrapin	5	—	—	—	—	—	0/0/5
Geochelone gigantea gigantea	Giant Tortoise	—	2 (2)	—	—	—	2 (2)	—
SAURIA								
Trachydosaurus rugosus	Shingle-back	1	—	—	—	—	—	0/0/1
Tiliqua gerradii	Pink-tongued Skink	1	—	—	—	—	—	0/0/1
SERPENTES								
Python regius	Royal Python	5	—	—	—	—	—	0/0/5
	Total–Reptiles	12	2 (2)	—	—	—	2 (2)	12
Summary								
Regent's Park	Mammals	1037	118 (24)	917	107	311	606 (19)	1048
	Birds	1139	140 (20)	106	11	184	69 (4)	1121
	Reptiles	363	168 (2)	10	—	151	42 (2)	348
	Amphibians	233	58	40	—	142	—	189
	Total	2772	484 (46)	1073	118	788	717 (25)	2706
	Estimated number of fishes and invertebrates in the collection at 31 December 1977:							
	Fishes			3567				
	Invertebrates (excluding locusts, ants and bees)			2912				
Whipsnade Park	Mammals	1068	46 (19)	359	59	118	304 (24)	992
	Birds	1084	61 (4)	102	15	86	187 (20)	959
	Reptiles	12	2 (2)	—	—	—	2 (2)	12
	Total	2164	109 (25)	461	74	204	493 (46)	1963
	Grand Total–Zoological Society of London	4936	593(71)	1534	192	992	1210(71)	4669

1 2 3 4 5 6 7

List of Donors of Animals to the Society

REGENT'S PARK

Six Red Kangaroos were presented by the Melbourne Zoo to honour the occasion of the Royal Jubilee visit.

Adderley, Mrs Broughton, 1 Scarab Beetle

Baker, Mr & Mrs D., 1 Lesser Sulphur-crested Cockatoo
Baker, Mr P., 2 Filament Barb
Basford, Mr S. P., 2 Puff Adder, 1 Pygmy Rattlesnake
Bennett, Mr M., 4 Oscars, 1 *Plecostomus*, 1 Cichlid
Berman, Mrs E., 1 Green Lizard
Bilham, Mr C., 2 Pekin Robin
Bimson, Miss M., 2 Redpoll
Bishop, Mrs M., 25 Assam Silk Moth larvae
Blondell, Mr K., 1 Clawed Frog
Bowles, Mr W. R., 2 Red-eared Terrapin, 1 Mississippi Map Terrapin, 1 *Melanochelys trijuga thermalis*
Britton, Mr & Mrs R. C., 1 European Pond Tortoise
Brooker, Mr P., 2 *Leptobarbus hoevenii*

Carroll, Miss C., 2 Donkey
Chester, North of England Zoological Society, 1 Pope's Pit Viper, 1 Black-necked Cobra
City Road Police Station, 1 Diced Water Snake
Clarke, Dr K. U., 30 larvae and 15 eggs of *Heliconius melpomene*
Crowcroft, Dr G. K., 6 White-toothed Shrew
Czechoslovakian Airlines & British Airways, 2 Hermann's Tortoise, 1 Mediterranean Spur-thighed Tortoise, 1 European Pond Tortoise, 1 Marsh Frog, 6 Balkan Green Lizard

Darey, Mr G., 1 *Gekko* sp.
Deakin, Mr J., 1 Stag Beetle
Dean, Mr, 1 Stag Beetle
Doncaster, Mr C. C., 1 Lapwing
Duce, Mr E., 2 Cattle Egret
Dyke, Mr E., 1 Puff Adder

Eastern Carpet Stores, 1 Stag Beetle

Falconry Centre, The, 1 Tawny Owl, 1 Little Owl
Ferguson, Mr A. R., 1 Hawksbill Turtle
Fisheries Laboratory, Lowestoft, 1 Plaice, 1 Butterfish, 4 Pogge, 1 Masked Crab, 10 Hermit Crabs, 4 Norway Lobsters, 4 Swimming Crabs, 2 Common Starfish, 2 Cushion Starfish, 1 Sun Starfish, 20 Plumose Anemone, 10 Dahlia Anemone, 1 Edible Sea-urchin, 4 Green Sea-urchin, Whelk Eggs, Lumpsucker eggs, Dogfish eggs
Flack, Mr & Mrs R. W., 1 Giant Gouramy
Fowler, Miss G., 2 Starred Tortoise
Frankling, Mr M., 1 Spanish Terrapin
French, Mr H. J., 1 Arawana
French, Mr I. J., 1 African Knife Fish, 1 *Scleropages formosus*

Gait, Miss J., 1 Muller's Clawed Frog, 2 Clawed Frog
Gladman, Miss J., 3 Red-eared Terrapin
Goldberg, Mrs C., 1 Avadavat, 4 Zebra Finch, 2 Silverbill, 1 Nutmeg Finch, 2 White-headed Mannakin, 2 Bengal Finch

Hanson, Mr A. A., 1 *Lacerta* sp.
Harris, Mrs E., 1 Mediterranean Spur-thighed Tortoise
Hawk Trust, The, 1 Barn Owl
Hazel, Miss J., 2 American Bull Frog
Heath, Mr G., 9 Praying Mantis
Higgitt, Miss M., 1 Fire-tufted Barbet
Highgate Aquarist, 9 Triangle Cichlid
Hill, Mr P., 1 Wood Terrapin
Hobbs, P.C. 335L, Kennington Road Police Station, 1 Long-nosed Snake
Hornsby, Mr R., 1 Razorbill

Iwanow, Mrs E., 1 Red-crested Cardinal

Jersey Wildlife Preservation Trust, 2 African Wood Owl

Kentish Town Police Station, 1 Diced Water-snake
Kilburn Police Station, 1 Four-lined Rat Snake
Kimmer, Mr M., 1 Desert Scorpion
Krafft, Mr R., 1 *Scleropages formosus*
Kritzinger, Mr. M., 1 Indian Python

Lawrey Zoological Supplies, 1 Graceful Chameleon, 1 Jackson's Chameleon, 1 Cottonmouth

MacTullock, Mrs, 1 Land Hermit Crab
Marsh, Mrs H. W., 1 Stag Beetle
Martin, Mr S., 1 Viperine Snake
McKenzie, Miss S., 1 Turkish Gecko
McMurdo, Mr K., Elephant Hawk Moth larva
Metcalf, Mrs J., 1 Crab

Narraway, Mrs G., 3 pairs Canary-winged Parrakeet
Nene College, Northampton, 1 Boa Constrictor, 1 Tokay Gecko
Newmark, J. & G. Messrs & James, Mr A., 18 Elegant Grasshoppers, 3 Shorthorn Grasshoppers, 1 Locust, 1 Bush Cricket, 1 Stag Beetle, 6 Chafer Beetle, 23 Millipedes, 3 Praying Mantis, 1 Spined Spider, 9 Orb-web Spider, 1 Assassin Bug, 8 Web Spider
Norfolk Wildlife Park, 3 Coypu

Paine, Mr E. F., 1 Stag Beetle
Peltz, Mr S., 20 Millipedes
Perman, Miss E., 1 Green Lizard
Potter, Mr N., 1 Desert Iguana
Pusey, Mr T. W., 1 Paraguay Cayman
Py, Miss C., 1 Black Shark, 2 Tinsel Barb, 1 Catfish, 2 *Leptobarbus* sp.

Rago, Mr W. E. A., 2 Platy, 24 Guppy
Reed, Lady, 4 Zebra Finch
Rodway, Mr P., 1 Giant Toad
Romer, Mr J. D., 6 Common Malayan Tree Frog
Rose, Mr D., 2 Gouldian Finch
Royal Parks, The, 2 Shelduck, 4 Wigeon
RSPCA, 1 Red-eared Terrapin, 1 Reticulated Python, 1 Boa Constrictor, 1 Broad-fronted Crocodile, 1 Palmate Newt, 1 Loggerhead Turtle, 3 Marsh Frog, 1 Gecko, 2 European Spotted Salamander, 1 Starred Tortoise, 40 Frog

Savidge, Mrs Y., 9 East African Hedgehog
Schwartz, Mr P., 1 Elephant Hawk Moth
Shelley, Mr D. J., 1 Pumpkinseed Sunfish
Shentall, Miss S., 3 Pleurodele Newt
Slowman, Mrs B., 1 Stag Beetle
Smith, Mr F., 1 Tawny Owl
Smith, Miss J. C., 1 White-crested Jay Thrush

Taylor, Mr J., 1 Lime Hawk Moth
Tether, Mrs T. R., 2 Robust Plated Lizard, 1 Common Iguana, 1 Hermann's Tortoise
Thompson, Mr J. M., 1 Agama Lizard
Tyrrell, Mr, 1 Stag Beetle

Vel, Mr J., 1 Ceylon Terrapin

Walker, Mr S., 1 Marbled Cichlid
Ward, Mr D., 1 *Colossoma* sp., 1 Piranha
Webster, Mr G., 10 Eyed Lizard
Whalley, Mr T., 1 Sooty Mangabey
Whetstone Police Station, 1 Reticulated Python
Wilkinson, Mr, 1 Reticulated Python
Woolgar, Mr W. C., 1 Koi Carp, 1 Veil-tailed Shubunkin
Wood, Mr R., 1 Mediterranean Spur-thighed Tortoise

Young, Mr & Mrs D., 1 Pied Wagtail

WHIPSNADE PARK

Two Brolga were presented by the Melbourne Zoo to honour the occasion of the Royal Jubilee visit.

Curator, Whipsnade Park, 4 Golden-breasted Waxbill
Lowe, Mr L., 1 Reeves' Muntjac
Reindeer Company Limited, 1 Reindeer
Sell, Mr J., 1 Roseate Cockatoo
Tallentire, Mrs, 2 Gerbil

APPENDIX 6

Donations to The Zoological Record Fund

	£
American Museum of Natural History	289.58
American Ornithologists' Union	28.88
American Society of Ichthyologists and Herpetologists	721.83
British Museum of Natural History	1,450.00
Conchological Society of Great Britain and Ireland	2.00
Malacological Society of London	2.10
Michigan, University of	28.80
Royal Entomological Society	12.50
Society for the Study of Amphibians and Reptiles	53.59
Society of Systematic Zoology	161.26
	£2,750.54

Meetings during 1978

Scientific Meetings at 5.00 pm

Tuesday, 14th February
Tuesday, 14th March
Tuesday, 11th April
Tuesday, 9th May
Tuesday, 13th June
Tuesday, 10th October
Tuesday, 14th November
Tuesday, 12th December

Symposia

Thursday and Friday, 6th and 7th April: 'Fish phenology: anabolic adaptiveness in teleosts'.
Friday and Saturday, 24th and 25th November: 'Olfaction in mammals' (organized in conjunction with the Mammal Society).

Scientific Activities–INCOME AND EXPENDITURE FOR THE YEAR ENDED 31st DECEMBER 1977

	INSTITUTE OF ZOOLOGY											
	Department of Veterinary Science £	Wellcome Laboratories £	Nuffield Laboratories £	Total £	Education Scheme and Young Zoologists' Club £	Library £	Journal, Transactions and Symposia £	International Zoo Yearbook £	Zoological Record and Nomenclator £	Other Expenditure £	Total (incl. Institute of Zoology) £	Total 1976 £
EXPENDITURE												
Salaries	50,944	66,015	193,633	310,592	33,906	21,977	10,380	11,113	144,978	11,515	544,461	536,018
Paper and printing	—	—	—	—	2,981	—	24,813	11,100	32,171	—	71,065	75,678
Other direct materials and services	9,871	15,837	55,379	81,087	—	21,372	—	2,419	76,476	2,987	184,341	133,229
Equipment	1,704	14,189	1,341	17,234	—	—	—	—	—	—	17,234	37,681
Fuel, light and other overheads	—	13,390	29,018	42,408	6,489	—	1,520	—	8,742	—	59,159	63,023
	62,519	109,431	279,371	451,321	43,376	43,349	36,713	24,632	262,367	14,502	876,260	845,629
INCOME												
Fees received	2,818	—	—	2,818	—	—	—	—	—	—	2,818	386
Scientific Fund: Investment Income	—	24,532	—	24,532	—	—	—	—	—	—	24,532	20,995
Grants: specific research projects	—	33,700	147,165	180,865	—	—	—	—	—	—	180,865	182,946
Wolfson Foundation Grant	—	—	39,000	39,000	—	—	—	—	—	—	39,000	39,000
Donations	—	—	1,808	1,808	—	—	—	—	—	—	1,808	28,774
Education visits and club fees	—	—	—	—	32,684	—	—	—	—	—	32,684	26,413
Sale of publications	—	—	—	—	—	—	50,363	24,068	295,580	—	370,011	332,814
	2,818	58,232	187,973	249,023	32,684	—	50,363	24,068	295,580	—	651,718	631,328
	—	—	—	—	—	—	(13,650)*	—	(33,213)†	—	(46,863)	(14,229)
EXPENDITURE MET BY SOCIETY	59,701	51,199	91,398	202,298	10,692	43,349	—	564	—	14,502	271,405	228,530
	62,519	109,431	279,371	451,321	43,376	43,349	36,713	24,632	262,367	14,502	876,260	845,629

Notes:

* Surplus arising from the Society's equal division of income and of production expenditure in the joint publishing operation with Academic Press Inc.

† Surplus transferred to Publications Funds

Financial Accounts

BALANCE SHEET AT 31ST DECEMBER 1977

1976				
£	£		£	£
	174,957	Sundry creditors and receipts in advance		225,313
	143,775	Bank overdraft		—
	91	Heer Bequest		91
	6,020	Fantham Bequest (note 1)		6,632
	15,262	Nuffield Laboratories Equipment Fund (note 2)		13,714
	292,853	Scientific Fund (note 3)		317,781
	—	Publications Funds (note 4)		29,388
	18,845	Composition Fund		19,669
	1,189	Staff Benevolent Fund (note 5)		1,556
		Reserves		
150,816		General Reserve (note 6)	264,670	
177,034		Major Repairs and Renewals Fund (note 7)	242,604	
100,000		Pensions Contributions Reserve	100,000	
42,000		Depreciation of Investments Reserve	42,000	
123,524		General Purposes Account	123,524	
	593,374			772,798
	£1,246,366			£1,386,942

For the notes which form part of these accounts see page 48.

Report of the Auditors

ON THE ACCOUNTS OF THE ZOOLOGICAL SOCIETY OF LONDON

In accordance with the provisions of Byelaw 33 we report that we have examined the Books and Accounts of the Society for the year ended 31st December 1977, and have found them to be in order. Having received all the information and explanations we have required, we are of the opinion that the attached Balance Sheet, the accompanying Income and Expenditure Account and Notes show a true and fair view of the position as shown by the books of the Society. We have verified the Investments and the Cash Balances.

NORTON KEEN & CO *Chartered Accountants*
Knightway House, 20 Soho Square, London, W1V 6QJ
21st February, 1978

1976				
£	£		£	£
	123,524	Freehold Property at cost		123,524
		Stocks (note 8)		
1,000		Scientific publications (nominal valuation)	1,000	
16,613		Guides, books, etc.	23,917	
25,285		Catering Departments – provisions, etc.	50,766	
	42,898			75,683
	157,510	Sundry debtors and payments in advance		179,726
	697,146	Investments and deposits at cost (market value £957,951)		808,691
	—	Cash at Bank		45,739
	13,096	Cash in hand		8,300
	183,531	Rebuilding Account (note 9)		145,279
	3,825	Publications Funds (note 4)		—
	24,836	Income and Expenditure Account deficit		—
	£1,246,366			£1,386,942

AUBREY BUXTON
Treasurer

Income and Expenditure Account for the year ended 31st December 1977

1976					
£	£	INCOME	£	£	
43,766		Members' subscriptions and entrance fees	49,046		
7,885		*Less* transferred to publications	8,533		
	35,881			40,513	
		Interest and dividends			
23,644		General (after allocation to Funds)	28,133		
7,306		Net income from De Arroyave Fund (note 10)	8,735		
57		Income from Davis Fund (note 11)	57		
	31,007			36,925	
		Scientific (see page 43 for detailed income)			
270,034		Institute of Zoology – total income	249,023		
26,413		Education scheme and Young Zoologists' Club	32,684		
39,925		Journal, Transactions and Symposia	50,363		
23,140		International Zoo Yearbook	24,068		
271,816		Zoological Record and Nomenclator	295,580		
	631,328			651,718	
		Regent's Park			
1,493,208		Admission of visitors to Gardens	1,721,758		
67,812		Admission of visitors to Aquarium	74,991		
31,396		Admission of visitors to Children's Zoo	—		
134,821		Catering and retail services – net receipts (note 12)	158,375		
1,908		Animals	3,142		
21,627		All other receipts	26,070		
	1,750,772			1,984,336	
		Whipsnade			
385,308		Admission of visitors to Park	348,376		
46,746		Admission of cars to Park	44,352		
14,310		Car parks – parking fees	11,956		
19,778		Catering and retail services – net receipts (note 12)	13,145		
13,843		Animals	16,840		
7,448		All other receipts	6,525		
	487,433			441,194	
	£2,936,421			£3,154,686	

1976		EXPENDITURE			
£	£		£	£	£
	164,075	General administration			184,779
	52,000	Allotment to Major Repairs and Renewals Fund (note 7)			70,000
	21,001	Interest on overdraft			12,527
		Pensions			
6,870		Payments to pensioners		6,301	
71,277		Contributions to Trustees of Pension Fund		77,868	
———	78,147			———	84,169
		Scientific (see page 43 for detailed expenditure)			
435,299		Institute of Zoology – total expenditure		451,321	
39,450		Education scheme and Young Zoologists' Club		43,376	
31,238		Library		43,349	
30,492		Journal, Transactions and Symposia		36,713	
26,383		International Zoo Yearbook		24,632	
267,020		Zoological Record and Nomenclator		262,367	
15,747		Other expenditure		14,502	
———	845,629			———	876,260
	4,796	Publications Funds – transfer of excess of receipts over expenditure to the Fund			33,213
		Regent's Park			
		Zoological Gardens			
17,527		Rates and insurance	15,613		
533,115		Salaries	558,229		
114,419		Provisions	142,762		
154,795		Fuel, light, water, transport	199,601		
47,296		Miscellaneous	50,168		
			———	966,373	
177,655		Works		190,612	
39,360		Gardening		43,038	
37,593		Advertising		22,448	
6,534		Purchase of animals		8,889	
———	1,128,294			———	1,231,360
		Whipsnade Park			
		Zoological Park			
9,615		Rates and insurance	11,842		
216,130		Salaries	228,784		
82,935		Provisions	93,387		
33,618		Fuel, light, water, transport	44,408		
21,092		Miscellaneous	24,953		
			———	403,374	
61,880		Works		72,499	
17,654		Farm, gardens and forestry		20,725	
16,348		Advertising		23,827	
3,727		Purchase of animals		4,229	
———	462,999			———	524,654
		Appropriations to meet future liabilities and contingencies			
11,000		Transfer to General Reserve (note 6)		27,888	
42,000		Transfer to Depreciation of Investments Reserve		—	
—		Transfer to Major Repairs and Renewals Fund (note 7)		25,000	
—		Transfer to Rebuilding Account deficit		60,000	
———	53,000			———	112,888
		Balance			
	126,480	Surplus for the year applied against deficit carried forward from previous years			24,836
	£2,936,421				£3,154,686

Notes on the Accounts

31st December 1977

1. FANTHAM BEQUEST

	£	£
Balance at 1st January		6,020
Investment income		612
Balance at 31st December		£6,632

2. NUFFIELD LABORATORIES EQUIPMENT FUND

Balance at 1st January		15,262
Allocation of investment income		763
		16,025
Expenditure		2,311
Balance at 31st December		£13,714

3. SCIENTIFIC FUND

Balance at 1st January		292,853
Surplus on sale of investments		25,449
Equipment:		
Allocation of investment income		1,600
Less Expenditure		(2,121)
Balance at 31st December		£317,781

4. PUBLICATIONS FUNDS:
ZOOLOGICAL RECORD AND NEAVE LLOYD

Balances at 1st January:		
Zoological Record Fund	1,193 *Dr*	
Neave Lloyd Fund	2,632 *Dr*	
		3,825 *Dr*
Sales and donations		295,580
		291,755
Less: Publication and distribution costs		262,367
Balances at 31st December:		
Zoological Record Fund	36,472	
Neave Lloyd Fund	7,084 *Dr*	
		£29,388

No allowance has been made for future costs estimated at £97,000 chargeable to advance sales received.

5. STAFF BENEVOLENT FUND

Balance at 1st January	825	
G. J. Ashby Memorial Fund	364	
		1,189
Allocation of investment income		87
Loan repayments		322
		1,598
Less: Grants		42
Balance at 31st December	1,188	
G. J. Ashby Memorial Fund	368	
		£1,556

6. GENERAL RESERVE

	£	£
Balance at 1st January		150,816
Fees of Deceased Compounders		488
Profit on sale of investments		85,478
From Income and Expenditure Account		27,888
Balance at 31st December		£264,670

7. MAJOR REPAIRS AND RENEWALS FUND —FORMERLY "BUILDINGS REPLACEMENT"

Balance at 1st January	177,034
Allocation of investment income	8,852
Donations	4,010
From Income and Expenditure Account	95,000
Less: Expenditure	(42,292)
Balance at 31st December	£242,604

8. STOCKS
No values are included for animals; plant, vehicles, fittings and furniture; library; farm, and garden stocks.

9. REBUILDING ACCOUNT

Balance at 1st January		183,531 *Dr*
New Works		66,046
		249,577 *Dr*
Less:		
Donations and Grants	44,298	
From Income and Expenditure Account	60,000	
		104,298
Balance at 31st December		£145,279 *Dr*

10. DE ARROYAVE FUND
The Capital of the Fund is held by the Official Custodian for Charities. The Income from the Fund was £8,752

11. DAVIS FUND
The Capital of the Fund is held in trust by the Society but is not included in the Balance Sheet.

12. CATERING AND RETAIL SERVICES
The figures of net income include Concession Fees and Covenanted Profits from Zoo Restaurants Limited and its subsidiary company, Zoo Enterprises Limited, as follows:

	Zoo Restaurants	Zoo Enterprises	
	£	£	£
Regent's Park	30,629	72,188	102,817
Whipsnade Park	1,869	10,992	12,861
	£32,498	£83,180	£115,678

THE ZOOLOGICAL SOCIETY OF LONDON

Annual Report 1978

Cover illustrations
Left to right

Quagga *(Equus Quagga)* (now extinct)
Sumatran Rhinoceros *(Didermocerus sumatrensis)*
Foraminifera
Scenes in the Zoo 1897
Tasmanian Wolf *(Thylacinus cynocephalus)*