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)*

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 152 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 150th Annual Report to the Annual General Meeting of the Society to be held on 9th May 1979 at 4.00 pm in the Society's Meeting Room at Regent's Park.

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PATRON: HER MAJESTY THE QUEEN

COUNCIL 1978–1979

President: Professor Lord Zuckerman, OM, KCB, MD, DSc, FRS
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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
1978 Professor W. E. Ankel, 6301 Leihgestern-Mühlberg, Finkenweg 22, West Germany
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
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, Professor Lord Zuckerman, presided at the Annual General Meeting which was held on 17th May. The following members of Council retired: Professor J. M. Dodd, FRS, Professor R. J. Harrison, FRS, and Professor R. V. Short, FRS, (Scientific Fellows); Lord Glenkinglas, Viscount Head and Mr Christopher Marler (Ordinary Fellows).

The Fellows elected to fill these vacancies were: Professor J. M. Dodd, FRS, Sir Michael Perrin, Professor K. Simkiss and Dr C. E. Gordon Smith (Scientific Fellows); Sir Denis Barnes and the Duke of Wellington (Ordinary Fellows).

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 D. W. T. Crompton*, Molteno Institute of Biology & Parasitology, University of Cambridge, for his work on Acanthocephala and on other parasitic worms in relation to the ecology and physiology of the host environment; to *Professor R. L. Gardner*, Department of Zoology, University of Oxford, for his work on experimental mammalian embryology; and to *Dr P. A. Lawrence*, MRC Laboratory of Molecular Biology, Cambridge, for his work on developmental pathways in insect development.

THE THOMAS HENRY HUXLEY AWARD (for original work submitted as a doctoral thesis) to *Dr A. Knox*, University of Aberdeen, for his thesis 'Feather keratins, morphology and ecology in the taxonomy of crossbills and redpolls'. The award was a sculpture by Tapio Wirkkala.

THE STAMFORD RAFFLES AWARD (awarded to an amateur zoologist for distinguished contributions to zoology) to *Mr Stanley Cramp*, for contributions to ornithology.

THE PRINCE PHILIP PRIZE (awarded for an account of practical work involving some aspect of living animals, by a pupil under 19 years of age, in a school in the United Kingdom) to *Paul J. Azzopardi*, Stonyhurst College, Blackburn, for his essay 'Observations on the ecology of *Paracentrotus lividus* (Lam.) and *Arbacia lixula* (L.) on the coast of Malta'.

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 *Dr Sidnie M. Manton*, FRS.

While this report was being prepared we heard, with deep regret, of Dr Manton's death on 2nd January 1979.

Amendments to Byelaws and Regulations

A resolution recommending amendments to the Byelaws, to become effective in January 1979, was submitted in March to a postal ballot of Fellows living in the United Kingdom. 1,178 Fellows voted in favour and 55 against the resolution. The amendments were then submitted to the Privy Council and approved on 12th July.

The consequential amendments to the Regulations, which were passed by the Council, are given in Appendix 6.

Finance

During the year ordinary expenditure rose by 13 per cent. In addition, the first phase of the replacement of the heating system was completed at a cost of £134,000; with the inclusion of this expenditure, operational costs increased by 17 per cent. The second phase, which will involve the replacement of all the boilers, is now being planned and it is hoped to complete this work in 1979.

The salary and wage awards granted during the year were within the Government's current pay policy, and the total salaries and wages bill, £1,835,000, represented 54 per cent of expenditure. Animal foodstuffs and maintenance continued to be major items of expenditure. Admission prices had, inevitably, to be increased to keep pace with rising costs, but the concessionary prices for senior citizens, students and parties were kept as low as possible, and the age to which children are admitted free was raised from two to four years.

The number of visitors to the London Zoo and Whipsnade was 3·5 per cent lower than in 1977. While it is difficult to determine the extent to which fluctuations in attendances can be attributed to any one particular factor, weather conditions are undoubtedly important, and the rainfall in the spring and summer was exceptionally high. Of the total attendances at the London Zoo, it is estimated that nearly 40 per cent were visitors from abroad.

Grants, Donations and Gifts

Following the report of the Visiting Group appointed in 1977 by the Advisory Board to the Government's Research Councils, the Board decided that the Institute of Zoology should receive financial support of £100,000 per annum, initially for a period of three years. The Society is grateful for this generous support, and for the recognition of the value of the research the Society's facilities make possible.

The Council also gratefully acknowledges other grants totalling £183,229 in support of specific research projects at the Institute. Other donations received included a generous gift of $50,000 from Mrs Vincent Astor, New York, in support of the Research Programme; an anonymous contribution of £5,000 to the Scientific Fund; £500 from Mrs Dorothy L. Rand; £100 from Mr D. R. Findlay; $1,000 from Mr K. W. Stott of San Diego, and $1,300 from Mr Philip Jones of San Francisco (now deceased). Mr Jones asked that two seats in the Gardens should be endowed and, at his request, a group of senior citizens and under-privileged children from Camden Town visited the London Zoo. The BBC gave the Society £2,626, being part of the sum received from viewers in response to Nationwide's S.O.S. appeal for the conservation of endangered species. A legacy of £12,736 from Mr D. H. L. Golan was received and will be used to develop a crane-breeding project at Whipsnade; and £1,250, being part of the legacy from Miss E. E. P. Agabeg.

We also received gifts of valuable equipment and the Council welcomes this opportunity of recording its gratitude to Mr W. L. Whitehouse who, in recent years, has presented many pieces of apparatus for use in the Hospital. This year he contributed £1,000; £600 towards the cost of an automatic ventilator for attachment to the anaesthetic machine, and £400 towards the cost of a scialytic operating lamp which will be obtained in 1979, with his further generous help.

The London Zoo

Membership

The Society's Gold Medal was presented to HRH Prince Philip, at a dinner on 16th February, in recognition and in deep appreciation of his leadership of the Society during his Presidency from 1960 to 1977. The Gold Medal is the highest honour the Society can confer and has been awarded on only seven occasions in the Society's history.

Professor W. E. Ankel, Professor Emeritus, Zoology and Comparative Anatomy, University of Giessen, West Germany, was elected an Honorary Fellow.

At the end of the year there were 2,668 Fellows and 4,498 Associates.

Obituary

The Council records with deep regret the deaths of Sir Robert Menzies, who became an Honorary Fellow of the Society in 1939; Mr George Mottershead, Director/Secretary, the North of England Zoological Society; The Earl of Cranbrook and Dr Francis Fraser, FRS, both of whom had been Vice-Presidents of the Society and had served, for many years, on Council and Committees. Lord Cranbrook was an acknowledged authority on all aspects of natural history and conservation, and had exercised a significant influence on the development of legislation for the protection of wild fauna. As Founder-Chairman of the Federation of Zoological Gardens of Great Britain and Ireland, he played a leading role in setting the standards which member zoos strive to maintain.

Visitors during the year: 1,607,000
Visitors to the Aquarium: 468,000

General

Among the many official visitors to Regent's Park were the Chairman and Chief Executive of the English Tourist Board, which in June held a meeting in the Zoo for its overseas managers; two groups of Chinese officials from Peking; a party of Russian scientists under the auspices of the Anglo-Soviet Environmental Protection Agreement; the Director of the Institute for Scientific Research in Mozambique; the Sudanese Minister of Construction; the Secretary-General of the Indonesian Zoo Association; and Board or Council members, Directors and other staff of many zoos both in Britain and overseas. We were particularly pleased to welcome Mr Walter van den Bergh, for 32 years Director of the Royal Zoological Society of Antwerp and international doyen of zoo directors, who paid a farewell visit, and also Mr L. Spizin, Director of the Moscow Zoo, who was visiting Britain for the first time.

At the Society's request, London Transport arranged a special bus service between Baker Street Station and the Zoo, in addition to the normal service. The Society undertook to guarantee any loss that might be incurred. The service ran for three weeks over the Easter and school holiday period, and from mid-June to early September. Mr Johnny Morris travelled with the first school party to launch the service, which received considerable local publicity. Although the income did not cover the total cost of the operation, the extra service offered to visitors travelling by public transport undoubtedly helped to make their visit more enjoyable.

On 1st January 1978, the security organization, Group 4 Total Security Ltd, took over the task of collecting money in the Zoo, thus relieving the staff of this duty.

Buildings, Services and Grounds

There were no building developments of a major kind, the available resources being allocated to the basic, but essential, task of modernizing the Zoo's area heating system. As the first phase of a 3/4 year programme, the main underground heating lines throughout the Zoo were replaced and more accessible ducts and man-holes were incorporated. The work was undertaken in the summer when the main heating plant was not in use. Although there was some inconvenience to visitors and to traffic in the zoo, it was never serious. Early in November the new system was brought into service without complications. Following an inspection, at the invitation of the Society, by officials of the Public Analyst's Department, the asbestos insulation of some older boilers and heating pipes was replaced by plastic insulation in accordance with the requirements of recent legislation.

Inspections by staff Safety Representatives, appointed under the Health and Safety at Work Act, took place throughout the Zoo during the last quarter of the year, and their reports and recommendations are being examined. Possible hazards both to the staff and the public are always being searched for and corrected, and security measures are constantly checked.

It has proved difficult to recruit enough painters to carry out normal maintenance work but a start was, nevertheless,

made on the painting of the Michael Sobell Pavilions for Apes and Monkeys with its complicated network of exhibition dens, reserve cages and outside enclosures. In an attempt to achieve a more naturalistic impression, two of the exhibition dens were decorated in new colours and furnished, and additional lighting installed.

The brickwork of the East Bridge over the Canal has been renovated and the painting of the cast-iron structure will be carried out in 1979.

The East Tunnel, running under the Outer Circle, is a listed structure on the Greater London Council historic buildings list and the pediment and balustrade of its south entrance were repaired with the aid of a grant from the GLC.

The roofs of the Bird House and the Old Sanatorium or TV building, now used as offices for conservation organizations, were repaired, and the 'cattle' paddocks of the Cotton Terraces resurfaced. The surface of part of the Works Yard was replaced with reinforced concrete to withstand the wear and tear caused by the heavier transport vehicles and rubbish disposal skips which are necessary for the operation of a modern zoo.

New intruder alarms were installed in the various units of the Institute of Zoology, and plans were drawn up for the modernization of the alarm system in the Regent Building.

During the gales of January some trees along the north boundary of the Zoo were uprooted, damaging two pheasantry cages both of which have since been re-built. Seventeen diseased elm trees were felled and more are marked for removal in 1979. A number of new trees, including two Wellingtonia, two Cedars and two Red Oaks, were planted. Some were the gift of Kew Gardens, for whose constant help the Society is deeply grateful. Many of the 4,000 plants produced annually by the Gardening Department are used to give animal exhibits a more natural setting.

To mark special occasions it is customary to plant a special carpet flower-bed in front of the Birds of Prey Aviaries. This year the theme was the 60th Anniversary of the Royal Air Force, and the RAF Benevolent Fund co-operated in the preparation and publicity.

A new type of 'illustrated label' to help visitors identify different species that are kept in the same cages or enclosures, has been successfully tested during the year both at Regent's Park and Whipsnade. Colour photographs are used, and deterioration due to weather and water seepage has been greatly reduced by mounting the prints on a plastic material and encapsulating them in PVC. The process is cheaper and the labels more quickly produced than the hand-painted type which have previously been used.

The Collection

Mammal Section

The Gorilla 'Guy' died of heart failure on 8th June as he was coming out of an anaesthetic which had been administered in order to permit a thorough examination of his infected teeth. He was 32 years of age and had been at Regent's Park since 1947, having come from the wild via the Paris Zoo as an infant. For many years he was the best known and most popular animal in the Zoo – both nationally and internationally. Many thousands of photographs as well as films, portraits, and sculptures portrayed his physical magnificence.

He never sired any young and it was found at post-mortem that he was infertile. The conditions in the old Monkey House, where he spent most of his life, were not entirely satisfactory and it was only when the prospect of better accommodation became available, with the re-development of the Zoo in the early sixties, that it was considered wise to acquire a female as a mate. The female, 'Lomie', then sub-adult, was acquired in 1969. By 1975, it seemed clear that there would be no progeny, and it was decided to send 'Lomie' to Bristol to be mated with a proven breeding male. She gave birth to 'Salome' in 1976. 'Salome' had to be hand-reared and then spent most of 1977 in Jersey Zoo, in the company of other young Gorillas. One of these, a male, 'Kumba', was chosen as her permanent companion and returned with her to London in March.

In the meantime 'Lomie' returned to Bristol at the end of 1977 to be mated with the sire of her first baby. She returned to London in July, and on 15th October gave birth to a male baby, which was probably a month premature. Despite this complication, 'Lomie' has shown considerably more competence in caring for her second infant, but she has to be watched constantly.

In 1967 the Hong Kong Government presented to the Society a group of Orang-utans. Our debt of gratitude was partly repaid during the year when two young Orang-utans, born at Regent's Park, were sent to the Hong Kong Zoological Gardens. Another young Orang-utan, the offspring of parents of the Bornean and Sumatran races of this species, and the only hybrid at Regent's Park, was sent to Jersey Zoo as a companion for their hybrid animal.

Two more Orang-utans were born to the Hong Kong group of animals, bringing the number they have produced at Regent's Park, since 1970, to thirteen, seven of which have been reared, and one, born in December, is thriving. The Orang-utan, born in 1978 to the excellent mother 'Kate', was the third she has successfully reared, which is a notable performance for a captive Orang-utan.

The Chimpanzee 'Brenda' gave birth to her fourth baby, which she has reared successfully, as she did the other three. However, the group of Chimpanzees at Regent's Park was reduced during the year when it was necessary to move four animals, the breeding male and three females, to the London School of Hygiene and Tropical Medicine for treatment when they were found to be active carriers of hepatitis B virus. It was not possible to carry out the special investigations and treatment necessary while they remained in the Collection at Regent's Park. It is hoped that they will return in due course.

Other primates were bred in the Michael Sobell Pavilions for Apes and Monkeys and in the Charles Clore Pavilion for Small Mammals. A Lar Gibbon, the sixth offspring in the last twelve years of the resident pair of animals, was born. Two Vervet Monkeys were born in the family group which has been built up slowly and regularly, nine young having been born over the last eight years. A Mandrill, the fifth since the Sobell Pavilions were opened in 1972, and two Brown Capuchins, were also born.

In the Charles Clore Pavilion, Common and Silvery Marmosets, and Red-mantled and Cotton-headed Tamarins, reared young successfully. The addition of four Cotton-headed Tamarins is particularly noteworthy since this species

is now regarded as seriously threatened in its wild habitat in Colombia. The birth of Ruffed Lemur twins was interesting as one of the animals was completely hairless. Subsequently, it developed more slowly than its twin, and is now being kept separately to enable the genetic implications of the condition to be studied. One of three Ruffed Lemurs born the previous year to the same parents was also hairless, but died soon after birth. Three Margays were born, two of which survived, as well as eight more Indian Fruit Bats in the thriving colony in the Charles Clore Pavilion's 'Moonlight World'. Other births included Coatis, Tree Shrews, two Slow Loris and a Brown Lemur.

In 1977, two European Otters disappeared without trace from the Otter Enclosure. Early in 1978, two more were generously presented by the Rotterdam Zoo as replacements, but unfortunately both died while still in quarantine. In October another pair, this time of the Asiatic Small-clawed species, arrived from the Norfolk Wildlife Park, where they had been bred. They quickly settled down and have proved to be active creatures, making good use of the pool and of the naturally landscaped enclosure.

The preliminary stage of a second attempt at artificial insemination of the African Elephant 'Toto' was started early in 1978, but was stopped when she accidentally injured Senior Keeper D. Milton. The incident followed one of the routine tests which 'Toto' had accepted quite normally over two years. Senior Keeper Milton has completely recovered from his injuries.

As they were just over five years old at the beginning of the year, 1978 was the earliest time that a mating between the Giant Pandas 'Chia-Chia' and 'Ching-Ching', could be expected. Although hormonal tests indicated that both animals were sexually mature, no mating took place. The next possible time will be in the spring and early summer of 1979.

After only two years, the New Lion Terraces are thoroughly established. More efficient pumps for the water circulation in the Lion and Tiger enclosures have been installed, and other teething troubles resolved. The lion moat was emptied and cleared for the first time. Lion cubs and Serval kittens were born during the year.

Other mammal births of note at Regent's Park were two Indian Muntjacs from the group received in 1977 from the West Berlin Zoo. The Reeves's Muntjacs also bred and both species can be seen, with their young, in adjoining paddocks. Other births included a Californian Sealion; five Red Kangaroos from those presented by the Melbourne Zoo in 1977; a Black Rhinoceros, the fourth (but the first male) since the parent animals arrived as juveniles in 1966; two Giraffe; two Timor Deer; three Scimitar-horned Oryx and a Gemsbok, the first in the Collection since the nineteenth century. Unfortunately the mother died later in the year as the result of her leg being broken by her mate.

Several mammals were exchanged with other Zoos. The single Giant Armadillo presented in 1976 by the President of Brazil, was sent to Rotterdam Zoo to make up the only pair in captivity outside the United States. In return, Rotterdam sent to London a zoo-born female Pudu to replace the animal which died in 1977. Antwerp sent the original Pudus to Regent's Park and co-operation between our Society and the Rotterdam and Antwerp Zoos has become very close and important, culminating in the declared intention of these two zoos to send to London in 1979 a pair of their captive-born Okapis.

The female Malayan Tapir, whose mate died in 1977, was sent to Chester Zoo where there was a single male. Groups of Sable Antelope and African Buffalo (of the small Forest sub-species) imported for Marwell Zoological Park were quarantined, and then transferred to the Cotton Terraces to complete the statutory 'urban confinement' of one year.

During the year negotiations continued with the Soviet Government, under the auspices of the Anglo-Soviet Environmental Protection Agreement, for the import of a group of Argali, an Asiatic wild sheep, or its large subspecies, the Marco Polo Sheep. Special quarantine arrangements in Eastern Europe are needed prior to their importation into Britain and discussions have centred on solving this problem.

Dr M. R. Brambell resigned as Curator of Mammals at the end of October, on his appointment as Director of Chester Zoo. The Society is deeply grateful to Dr Brambell for his dedication to his task as Curator of Mammals and we wish him every success in the future. During his eleven years as Curator, the Charles Clore Pavilion for Small Mammals, the Michael Sobell Pavilions for Apes and Monkeys and the New Lion Terraces came into operation.

When he took up his appointment in 1968 about 60 per cent of the mammals added to the Collection each year were born in the Zoo; by 1978 the comparable figure was over 80 per cent. Similarly the number of mammal species breeding increased from 18 to 35 per cent. One hundred and fifty species were bred over that period, including twenty-two species which were rare or endangered. Perhaps even more important is the fact that the number of mammals acquired from the wild for the Collection each year fell from 40 per cent to four per cent.

Bird Section

Compared with last year, there has been an increase in the number of species and in the number of birds bred. Such failures as occurred in hatching and in the survival of the young were probably due to the long period of adverse weather in the spring and summer, and to disturbance caused by the installation of new heating pipes throughout the Zoo. The increase in numbers of fertile eggs shows, however, that the Collection now contains a higher proportion of compatible and fertile pairs.

The incubation and rearing unit has been most successful and, apart from producing numbers of pheasants and ducks, has hand-reared, for the first time in Regent's Park, Sacred Ibis and Grey-headed Gallinules. The unit was also responsible for the rearing of two of the rare Imperial Pheasant, the progeny of a pair on loan from Antwerp Zoo. Of the seven Imperial Pheasants now in the Collection, two have been sent to Whipsnade.

Four species of owl bred, including three British species: Tawny, Barn and Little Owl. The owl collection is now almost entirely made up of potential breeding pairs, and it should soon be possible to repeat the excellent breeding results achieved before the loss of many small owls through Dieldrin poisoning in 1976.

The pair of Great Condors which, because of mutual aggression, are only allowed to be together for mating, had two clutches, each of one egg. The first egg was removed for

Whipsnade Park

artificial incubation, but failed to hatch because of a hairline crack in the shell. The second egg was incubated by the female for 70 days but, sadly, the young died after seven days, probably because the female trod on it. Next year all eggs will be taken away for artificial incubation.

Other noteworthy breedings include Hartlaub's and White-cheeked Turacos, White Ibis, African Ring-necked Parrakeet, Chilean Flamingo, Night Heron and Red-billed Hornbill.

Ten Abdim's Storks, bred originally in Tel-Aviv University Wildlife Centre, were moved from the Eastern Aviary to the Ostrich House, where nesting platforms have been erected against the wall of one of the paddocks. Nests were built almost immediately, and eggs laid, and it is hoped that a breeding colony has been established.

Individual birds sent away on breeding loan to other collections were Cariama, Go-away Bird, Kookaburra, Burmese Peafowl and Abyssinian Eagle Owl. A White-faced Scops Owl, two Barn Owls and a Brown Pelican were received on breeding loan.

AQUARIUM

Five new tanks in the Sea-water Hall have been stocked with a varied selection of fishes and marine invertebrates, some of which have been obtained from other public aquaria.

In the Tropical Freshwater Hall notable acquisitions included Piranha, Arawana and Arapaima, the latter being a gift from Rotterdam Zoo.

INSECT HOUSE

Interesting additions during the year included Heliconid and Milkweed Butterflies.

Among the numerous invertebrates that have been bred the following are of special note: Leaf Hoppers from Sri Lanka, Queensland Titan Stick Insect, Goliath Stick Insect from Malaya, Praying Mantis and Sri Lanka Bush Cricket, Black Widow Spider, Bird-eating Spider and Jockey Spider.

REPTILE HOUSE

Several reptiles have laid eggs or given birth during the year. These included Black Mamba, African House Snake, Pope's Pit Viper, Long-nosed Viper, Red-sided Garter Snake, Leopard Gecko and Spanish Terrapin.

The number of Crocodilians in the Reptile House collection has been reduced in order to concentrate on the management of certain species, in the hope of improving breeding prospects. The surplus animals have been sent to other zoos, including Chester, Chessington and Paignton.

Visitors during the year 403,000
Cars brought into the park 47,000

General

There were many official visitors during the year and the Federation of Zoological Gardens of Great Britain and Ireland held its Annual General Meeting at Whipsnade in May.

The only major building work undertaken during the year was the reconstruction of the Asian Animals building, which was severely damaged by fire in December 1977. This work, the cost of which was covered by insurance, involved replacing most of the roof of the building and the whole of the hay shed. This temporary loss emphasized the need for more hay storage capacity at Whipsnade.

The need has grown over the last few years, partly as the result of the decision to grow grass, instead of cereals, in the areas which originally made up the farm, and partly because large quantities of hay have to be bought when favourable market prices make it opportune to do so. Accordingly, it was decided to increase the available storage by building a new hay barn near the existing barn in the Old Farm area. Over 200 tons, at least half of Whipsnade's annual consumption of hay, can now be stored there.

During the year the water chlorination system for the Water Mammals Exhibit was carefully reviewed. Chlorine gas has been used since the opening of the Exhibit but this is no longer available from the suppliers for safety reasons. An alternative method is the use of sodium hypochlorite in solution and this was tried during the year, on an experimental basis, as there were some doubts about its efficacy in achieving chlorination of the water in the correct proportions. It proved to be successful and arrangements are now being made to use this method permanently.

Plans were prepared for the building of special accommodation for the breeding of cranes. Whipsnade has one of the best collections in the world of this family of birds, the Gruidae, and has already achieved notable breeding successes, particularly with one species, the Manchurian Crane. The plans will provide new breeding enclosures outside the main animal paddocks and it is hoped to build the enclosures in 1979.

Long-needed improvements to staff houses were carried out, including the modernization of kitchens in the two Gatehouses in the Park, and other houses were connected to the new district sewerage system.

Winter gales again caused damage at Whipsnade and 27 trees were blown down during January. The Countryside Commission has agreed to provide funds for the planting of some new trees in the Park.

The Collection

It is a measure of the success in breeding endangered species at Whipsnade that this section of the Report starts, again, with a further reference to the breeding of Cheetahs, one of Whipsnade's recent and outstanding achievements.

Two litters of Cheetahs were born during the year which brought the number born at Whipsnade, since 1967, to 52 of which 28 were to captive-born parents. The second litter of five cubs were third generation zoo-born.

One result of this achievement and another indication of the conservation value of captive breeding is that, during the last ten years, 22 Cheetahs have been sent in exchange or on deposit to 13 other zoos, both in the United Kingdom and elsewhere in the world, thus saving an equivalent number of animals being caught in the wild for exhibition in zoos.

Seven Przewalski Horses were born during the year, including one that was stillborn; two others died in the first few days. Nevertheless this was the highest number of births in one year of this species which, according to some authorities, may now be extinct in the wild. The build-up of this herd made it possible to send four animals to the new Minnesota Zoo, which opened in May and is the first major zoo to be established in the United States for many years.

Among other rare or endangered mammal species which prospered at Whipsnade during 1978 were the White Rhinoceros with two births, continuing the regular breeding pattern since the herd was established in 1970. Four Barasingha; 11 Formosan Sika Deer; 15 Père David's Deer and two Musk Oxen were also born.

Among birds in the same category of rarity, the outstanding success was undoubtedly the three Manchurian Cranes which were hatched. The parent birds laid three clutches, each of two eggs. The first was taken away and put under a broody hen and one chick was hatched. The second clutch was stolen in daytime two weeks before hatching, but the third clutch survived the thieves. The eggs were incubated and two chicks successfully reared by the parents.

The regular successes, over many years, in breeding animals of rare or endangered species at Whipsnade are now accepted as such normal, indeed commonplace, events that the extent of the achievement in comparative terms may be overlooked.

Over the last ten years some forty species listed as rare or endangered in the *International Zoo Yearbook* have been bred in the Society's Collections, the majority on a regular basis. Eighty-eight per cent of the endangered species of mammals, and 60 per cent of endangered species of birds kept at Whipsnade, have bred. However, it is equally important to breed species not yet vulnerable in conservation terms, but which may one day be so, and most other mammal species are also bred regularly at Whipsnade. Of the Mammal Collection at Whipsnade only eleven species, or 15 per cent, have not yet bred.

There were also many successes in the Bird Collection. Apart from the Manchurian Cranes, the penguins and flamingos did well. In particular the Humboldt Penguin flock produced nineteen chicks, to follow the fourteen hatched in 1977 and, again, there were two distinct hatching periods, in May/June and in November/December. Two King Penguins were hatched, one of which was hand-reared, which brought the number of zoo-bred birds at Whipsnade to six, or more than half of the total flock, which is a notable achievement.

Two Australian Cassowary chicks were born in August; the male parent being on loan from Marwell Zoological Park. One of the young birds developed lameness and eventually died, but the survivor represents the first successful breeding of a Cassowary in the Society's Collections.

It was another excellent year for flamingos with seven Rosy and ten Chilean Flamingos being hatched. These two species are now well established at Whipsnade, and the main problem is that of finding the space needed to keep the larger flocks.

The Clacton Dolphinarium was badly damaged in the January gales and the Society agreed to provide temporary shelter, at Whipsnade, for some of the animals while repairs were being carried out. Three young Common Seals were a great attraction in the moat of the former Gibbon Island and two Californian Sealions were also kept for a short time.

The two Bottle-nosed Dolphins (male and female) which had also been sent from Clacton in the autumn of 1977 to spend the winter at Whipsnade were returned in the spring. As anticipated, the presence of these two animals was beneficial for the two resident female dolphins and confirmed the need to have a male permanently in the Whipsnade group. An application for a male dolphin from the United States had been submitted as early as 1976 through the lengthy process required under the US Marine Mammals Act, and the animal finally reached Whipsnade in September. In December, another female was also acquired from the United States, as one of our two resident animals is thought to be quite old and has a poor health record.

Whipsnade sent several animals to other zoos. As already mentioned, Przewalski Horses were sent to the new Minnesota Zoo. The two Hippopotamus, born at the end of 1976, were sent to Jakarta Zoo at the request and expense of the Government of the United Arab Emirates, in return for animals which had been sent from Indonesia to one of their zoos. Cheetah were sent to Jersey Zoological Park; Taronga Zoological Park, Sydney; and to Prague Zoo. One hundred and five Bennett's Wallabies were sold during the year. This captive, but free-ranging, population at Whipsnade is flourishing as never before and specimens are always in demand for the zoos of the world, although no other major breeding group is known to have been established elsewhere.

The Tama Park Zoo in Japan offered a zoo-born Indian Rhino as a mate for the young female, born at Delhi Zoo, which has been at Whipsnade since early 1976. However, since the Amsterdam Zoo had already sent their young male to Whipsnade on a temporary mating loan, it was agreed by all parties that it would be advisable to send the animal from Japan to Amsterdam, leaving the Amsterdam animal at Whipsnade. The Society agreed to be responsible for the transport between Tokyo and Amsterdam and this was arranged in December.

A Polar Bear was born, slightly earlier than is usual, on 15th November to the breeding pair 'Amos' and 'Mosa', their third cub to be successfully reared. A Spectacled Bear cub, abandoned by the mother, which has had cubs before but has always lost them within a day or two of birth, was cared for by the Keeper staff and lived for six days. Apart from the animals which breed regularly, such as Père David's Deer, Thomson's Gazelle, Barasingha, Sitatunga, Hog Deer, Reindeer, other births or hatchings of note included a Hippopotamus, two Moose, a Jaguar, a Blesbok, two Brindled Gnu, an African Buffalo, and Cape Barren and Bar-headed Geese. A Green-winged Macaw, Maned Geese and Eider Duck were bred for the first time at Whipsnade.

Scientific and Educational Activities

Scientific Meetings

Many of the papers given at the eight scientific meetings held during the year were based on work published in the *Journal of Zoology*. Other contributions included papers by Miss M. Stavy, Dr D. Gilbert and Dr R. D. Martin on 'Sex determination of monomorphic bird species through measurement of faecal steroid hormone levels', and by Professor L. E. Mount on 'Animal heat', given in the second of the series of meetings on 'The scientific basis of wild animal husbandry' introduced by Dr M. Peaker. Later in the year Mrs C. H. Lockyer introduced a film study of a sociable Bottlenose Dolphin (*Tursiops truncatus*), 'The way of a dolphin'. Mr C. G. C. Rawlins reviewed breeding achievements in the Collections at London Zoo and Whipsnade. At the November meeting, Mr T. S. McCann spoke on 'Recent research on Elephant Seals at South Georgia', and Dr M. M. Bryden on 'Cetacea of North East Australia'.

Symposia

The following Symposia were held:
6th–7th April 'Fish phenology: anabolic adaptiveness in teleosts', organized by Dr P. J. Miller.
24th–25th November 'Olfaction in mammals', held in conjunction with The Mammal Society and organized by Dr D. M. Stoddart.

Publications

Journal of Zoology Volumes 184, 185 and 186 were published and together contain 116 papers. The Council greatly appreciates the help generously given by the referees who assess the many manuscripts which are submitted for publication.

Transactions Three parts were published: Volume 34, part 2, 'The larger arthrodiran fishes from the area of the Burrinjuck Dam, N.S.W.' by Errol I. White; Volume 34, part 3, 'The phylogeny of the Charadriiformes (Aves): a new estimate using the method of character compatibility analysis' by Joseph G. Strauch, Jr; and Volume 34, part 4, 'The characteristics and affinities of the Amphisbaenia' by Carl Gans.

Symposia Two volumes were published: No 42 'Arachnology' edited by Dr P. Merrett, and No. 43 'Artificial breeding of non-domestic animals' edited by Dr P. F. Watson.

Zoological Record
Volume 109 (1972 literature): the volume was completed during the year.

Volume 110 (1973 literature): publication is complete except for Section 20 (List of New Genera and Subgenera).

Volume 111 (1974 literature): eighteen sections have been published, and the remainder are being finally checked. Because the last of the Insecta sub-sections is not expected to be published until the late summer of 1979, it has been decided to provide earlier access to the literature by publishing the lists of papers indexed—the Author Indexes—in advance of the Subject and Systematic Indexes. The advance Author Indexes are being issued on an experimental basis, and if found to be useful, may be provided for other Sections of the *Record*.

Volume 112 (1975 literature): nine sections have been published. The initial computer processing stage (keying) of another nine sections has been completed, and the editorial check is in progress.

Volume 113 (1976 literature): about two-thirds of the literature for this volume has been indexed and the initial processing of one group of sections has been started.

Dr Marcia Edwards was appointed Editor of the *Zoological Record* in October, and succeeds Dr H. Gwynne Vevers, Editor since 1964.

Work has continued, in co-operation with the staff of *Biosciences Information Service of Biological Abstracts*, Philadelphia, on the development of common practices in the treatment of biological nomenclature, which would greatly aid the retrieval of information from data banks and secondary services. Various organizations have shown interest in this work but further time cannot be spared for this project at present, as all available resources are being concentrated on improving the publication schedule of the *Record*.

The possibility of resource sharing with other secondary information services has been discussed and a long-term plan to exchange data in machine-readable form, in order to reduce the duplication of processing, is also being considered.

Details of the journals which are searched in order to compile the *Record*, have been provided for a new multidisciplinary listing of serial publications, the *International Serials Catalogue*. The Catalogue, which is published by the International Council of Scientific Unions Abstracting Board, lists all the serial publications scanned by the world's major information services.

B. D. S. Smith, D. R. Duggleby, and other members of staff, continued to assist the Curator of Birds in the compilation of the *Birds of the Western Palaearctic*.

Miss M. A. Macdonald provided information to assist the Curator of Mammals in the compilation of the *Mammal Data Sheets*.

The Council is grateful to the British Museum (Natural History) for accommodation and professional advice; 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 Society Information Service (part of Chemical Information Services, 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 7) whose donations help to defray the very heavy expenses involved.

International Zoo Yearbook

Section 1 of Volume 19 of the *International Zoo Yearbook* is on the subject of 'Reptiles'. The growing interest in this class, in which whole genera are threatened with extinction, is reflected in the enthusiastic response of the contributors to this volume, which is due for publication in the spring of 1979. There are 29 articles, covering tortoises and turtles, the crocodilians, tuatara, snakes and lizards. It is indicative of the *Yearbook's* growing reputation outside the zoo world that a number of contributions are from research workers

and conservationists, working both in the field and in the laboratory. As well as pertinent comments on conservation projects, these authors give useful information on the regular large-scale breeding of tortoises, crocodiles and lizards. The section includes many contributions from zoos with successful breeding programmes, and also papers on the use of anaesthetics, reptilian amoebiasis, marking and identification, and control of the reptile trade. The introduction by Dr Carl Gans, a world famous name in herpetology, gives an individual view of the role of zoos in reptile conservation.

The 40 articles in section 2 are arranged under the subheadings Breeding, Husbandry, Hand-rearing, Buildings and exhibits, and Studbooks. Along with reports on the breeding of a number of rare species are papers on some more commonly bred, but little studied, species. Three genetic studies on the Przewalski Horse are a particularly important development in the management of studbook species, while a preliminary report on the Giant Pandas, at the National Zoological Park, Washington, D.C. provides valuable data for future management and breeding programmes.

The reference section lists the numbers and species of vertebrates bred, the census of rare animals in captivity in 1978, and the list of studbooks for rare or endangered species in captivity.

Library

The Library continued to provide a service to members of the Society and to the staff, including the research staff. Information on bibliographical and general zoological subjects was supplied to members of the public, and books and journals were loaned to the British Library and to university, government and specialist libraries.

The compilation of a new catalogue of books in the Library was almost completed, and an agreement for its publication was made with Johnson Reprint Corporation. The staff are checking the catalogue in preparation for publication, including the revision of the serial holdings of the Library, which comprise some 3,500 titles, of which 1,500 are current.

The making of a contact print of every item in the archive collection of glass plates, films, slides and prints was completed by Mr T. B. Dennett and Mrs Lisette Allard of the Photographic Unit, the Wellcome Laboratories. The collection, consisting of some 20,000 photographs of zoological subjects and life and activity in the Zoo from before 1872, includes three large collections of photographs by former members of staff. F. W. Bond who was in the Accounts Department from 1903 to 1942 and a photographic chronicler of zoo life for nearly 40 years; David Seth-Smith, Curator of Birds and Mammals, who was associated with the Society from 1908 to 1939, and F. Martin Duncan, Librarian from 1919 to 1939, a leading photomicrographer, biological photographer and a pioneer in the application of ciné film to scientific research. Much of the work has been supported by a grant from the Pilgrim Trust, but Mrs Allard continued working, on a voluntary basis, to clean and renovate the storage boxes long after the grant had ended.

Many important volumes on zoological topics have been published in the last two years and the Council is particularly grateful to members who have helped to maintain the comprehensiveness of the Library collection by donating books. Among the gifts received was a collection of books from Professor G. E. H. Foxon, and one of books and papers from Lt-Col W. P. C. Tenison. Mr A. W. Baker again donated many volumes, and Dr R. I. C. Spearman presented five volumes of the work 'The Physiology and Pathophysiology of the skin'. Among other donors were Dr M. R. Brambell, Mr C. Campbell, Mr H. Cryer, Miss T. Frankel, Mr F. Lane, Mr J. Rivers, Mr M. Tomkies, Mr L. G. Trevains, Mr N. Weaver and Mr G. Wood.

Education Department

PROGRAMME FOR SCHOOLS

The total number of pupils taking part in lecture/demonstrations during the year was:

Regent's Park:	Spring Term (Secondary Schools)	20,009
	Summer Term (Primary Schools)	17,058
	Autumn Term (Secondary Schools)	18,553
Whipsnade Park:	Summer Term (Secondary Schools)	3,781
		59,401

This is the highest total achieved for four years. Special lecture/demonstrations were arranged for groups of physically handicapped children.

There was continued co-operation with the staff of the Inner London Education Authority's Centre for Life Studies, and members of the staff assisted in conducting an 'enrichment course' for I.L.E.A. sixth-form biology pupils.

Sixth Form Symposia

In 1970 the first Symposium for sixth-form pupils was held. The aim is to give pupils the opportunity of hearing experts speak on their own subjects, and thus introduce young students to the world of science beyond their text books. The Council is most grateful to the distinguished zoologists who, over the years, have organized and taken part in the Symposia. The list of topics covered has been:

	Chairman and Organizer
The natural history of hormones	Professor E. J. W. Barrington, FRS
The natural history of parasites	Professor Don. R. Arthur
The natural history of populations of British vertebrates	Professor V. C. Wynne-Edwards, FRS
The natural history of pollution	Professor K. Mellanby
The natural history of dinosaurs	Mr John Attridge
The natural history of variation	Professor R. J. Berry
The natural history of primates	Dr R. D. Martin (this topic was repeated)
The natural history of birds	Dr J. Flegg
The natural history of hot and cold deserts	Professor J. L. Cloudesley-Thompson

The Symposia are widely appreciated, the only difficulty being that the demand for tickets always exceeds the supply, usually by a considerable margin.

Research

Other Courses and Events

A short course for university students was organized during the Easter vacation. The Council is very grateful to Dr P. H. Greenwood of the British Museum (Natural History) and Dr Garth Underwood of the City of London Polytechnic who, together with Mr J. P. W. Rivers and Dr A. F. Dixson, both of the Institute of Zoology, conducted this course.

Lectures and demonstrations were organized for adult students from Acton Technical College; Avery Hill College; Aylesbury College of Further Education and Agriculture; Berkshire College of Agriculture; Bridgewater College; Bristol University School of Education; Bromley College of Technology; Bulmershe College of Higher Education; Chelmer Institute of Higher Education; Chelsea College of Chiropody; City University; Corby College; East Ham College of Technology; Farnborough College of Technology; Goldsmiths' College; Harrow College of Technology and Art; King's College University of London Biophysics Department; Kingston Polytechnic; London Foot Hospital; Middleton St George College of Education; Newland Park College of Higher Education; North-East Surrey Technical College; Paddington Technical College; Solihull College of Technology and the Southend College of Technology.

Visitors from other zoos who came to observe the facilities and methods of the Education Department included representatives of Chester Zoo; Drusilla's Zoo; Edinburgh Zoo; Zurich Zoo; the Bronx Zoo, New York; Lincoln Park Zoo, Chicago; Cincinnati Zoo; Minnesota Zoo; Wildlife Prairie Park, Peoria, Illinois; The National Zoo, Washington, D.C.; Taronga Zoological Park, Sydney.

Christmas Lectures

During the Christmas holiday period three meetings were organized for the children and young friends of members of the Society. Mr David Stanbury gave a talk entitled *The Voyage of Charles Darwin*, and Mr Michael Boorer spoke on *Lions and Tigers*. The Canadian Film Board's *Atonement* was also shown. All three meetings were well attended.

Young Zoologists' Club

Also known as the 'XYZ Club', the Club is open to young people between 9 and 18 years of age. Meetings were held both at Regent's Park and Whipsnade, and visits were organized to Marwell Zoological Park, Twycross Zoo, and the Norfolk Wildlife Park at Great Witchingham. Three issues of the Club's *Zoo Magazine* were published during the year.

INSTITUTE OF ZOOLOGY

As recorded earlier, the scientific work of the Society was reviewed in 1977 by a Visiting Group appointed by the Advisory Board to the Research Councils. This Group made a favourable report and the Board decided to contribute £100,000 annually, for an initial period of three years, towards the cost of the Institute. This generous grant has enabled the Society to stabilize its nucleus of permanent research staff and to fill the post of Head of the Pathology Department, Nuffield Laboratories of Comparative Medicine, which, for reasons of economy, has remained vacant since the retirement of Mr R. N. Fiennes in 1974. Dr Rachel A. Fisher, of the MRC Human Genetics Unit, University College London, has been appointed to the post and will begin work early in 1979. Two post-doctoral Research Fellowships have also been awarded, to Mr D. B. Whitehouse of Nottingham University and Mr J. G. Matthews of the Equine Research Station, Newmarket. They will work with Dr Fisher on problems in genetics and form an active new group in the Institute.

In recognition of their long and valued services to the Society, the Council appointed Professor A. J. E. Cave and Dr A. Voller Honorary Research Associates.

Department of Veterinary Science

Regent's Park

During the course of the year, 419 animals from the Collection at Regent's Park were examined clinically, either in their quarters or after admission to the Hospital. A further 173 were referred from veterinary practices, principally in the London area. Seven hundred and fifty-one post-mortem examinations were carried out, including 14 for the Royal Parks and 115 from other external sources.

The Collection remains in good health. Regular screening of faecal samples, particularly from aviary birds, the Reptile House and mammals in the Charles Clore Pavilion for Small Mammals and the Michael Sobell Pavilions for Apes and Monkeys, which are the main sources of potentially pathogenic parasites and bacteria, has enabled a close watch to be maintained on any focus of infection that might arise.

A comprehensive evaluation of three new anthelmintic drugs began in the Reptile House in an effort to improve control of helminth parasites in these animals. Guy the Gorilla died of heart failure while under sedation for dental treatment and was found to have severe disease of his coronary arteries. Attempts to treat hepatitis B infections in the Chimpanzee colony, were not successful in the Hospital and the affected animals have been transferred to the London School of Hygiene for therapy. Research continues into the evaluation of laparoscopy for clinical diagnosis and examination of the reproductive tract. A considerable amount of co-operative work with the Wellcome Laboratories was carried out, particularly on primate and carnivore reproduction.

The Department continues to take referred cases involving non-domestic animals from veterinary practices all over the country. These are in the main part carcases for post-mortem examination and tissue, blood and faecal samples to assist with diagnosis. Clinical cases involve mainly parrots and

snakes. The Department arranges bench space and access to the Hospital records, including stored pathological material and current clinical and pathological cases, for veterinary surgeons and other scientists on short visits. The demand for student places is so heavy that each applicant is limited to two weeks training and bookings extend to the middle of 1980.

Whipsnade Park

During the year 373 post-mortem examinations were carried out. The general health of the Collection remains good, although occasional unexplained sporadic deaths occur in several species. In order to investigate these and to monitor the viruses present in the animals at Whipsnade, virological examination of samples from clinical cases and post-mortem specimens are being carried out with the help of outside institutions.

Trials with immobilizing drugs continue in some of the species which do not respond well to the traditional combinations.

An extensive trial with a promising new anthelmintic has been started and will be completed in 1979.

Nuffield Laboratories of Comparative Medicine

Haematology

Dr Christine Hawkey continues to provide a haematology service for the Collections and the Laboratories. She has found that plasma fibrinogen levels may be more useful than other measurements in detecting blood abnormalities due to infections or organic disease. She has also made a study of the effects of sedation and anaesthesia on blood counts of captive wild animals.

Mr P. D. Butcher has investigated the physical properties of haemoglobin of the Hog Deer, a species in which the red blood cells sickle.

Genetic Studies

Collaboration with Dr Rachel Fisher (MRC Human Genetics Unit, University College London) and Dr M. Scott (Equine Research Station, Newmarket) continued, and 49 Przewalski's Horses of the breeding groups in the Society's Collections and at Marwell Zoological Park have been examined. They are individually distinguishable by blood examination, and show considerable genetic variation, suggesting that inbreeding is not yet a serious problem. Studies have begun on the Great Apes and on some species of cats; these studies will be extended in 1979 when Dr Fisher joins the Society's staff.

Nutrition

Dr M. A. Crawford and the staff of the Biochemistry Department continued their studies of the important part played by lipids in nutrition, growth and development.

The transfer of essential fats from the mother's milk to the tissues of the infant is being studied in Tree Shrews, which conveniently feed their young at two day intervals.

Further studies have been made by Mr J. P. W. Rivers and Miss Theresa Frankel on the requirements of carnivores for long-chain fatty acids, and Dr A. Hassam has investigated the relationship between dietary lipid and the synthesis of prostaglandins.

Infectious Diseases

Dr G. R. Smith's studies on botulism included a survey of the distribution of the causative organism *Clostridium botulinum* in some British soils. A heavy residual contamination with four types of the organism was found on the site of the old Caledonian cattle market in London, although it is now 40 years since it was demolished.

Work on contagious bovine pleuropneumonia has been concentrated on the cross-protection afforded by various strains of *Mycoplasma*, in an attempt to develop more effective vaccines.

Dr Vija Dent has now isolated streptococci from the teeth of 22 species of animals in the Collection and has overcome problems associated with their identification. The basic dental plaque, in which other bacterial species later become established, almost invariably contains streptococci and species of *Actinomyces*.

Dr A. Voller and his colleagues, in collaboration with the World Health Organization, have continued to devise practical methods for the serodiagnosis of infectious diseases. In addition to tropical infections, such as malaria, trypanosomiasis and schistosomiasis, progress has been made, in conjunction with the ARC Institute for Animal Diseases, Compton, on the diagnosis of *Babesia* (redwater) infections in cattle.

About 200 visiting scientists have been trained during the year in serological techniques, and courses have been conducted in several countries overseas.

Mr C. D. V. Black has shown that the use of liposomes as carriers of chemotherapeutic drugs greatly enhances their activity against *Leishmania* infections.

Radiology

Professor G. H. du Boulay and his colleagues from the National Hospital, Queen Square and the MRC Clinical Pharmacology Unit, Oxford, have separated a second spasmogenic factor from the cerebrospinal fluid of patients with subarachnoid haemorrhage. This substance is responsible for prolonged arterial spasm and antagonists to its action, of potential therapeutic value, are being sought.

Workshop

Mr P. R. E. Wallace and Mr W. G. Ray have designed and constructed a perspex container to assist in breeding amphibians in the Reptile House. Inside the chamber it is possible to raise or lower barometric pressure and air and water temperatures, simulate rainfall, and control light intensity.

Wellcome Laboratories of Comparative Physiology

Hormone Assays

A laboratory has been completely equipped for radioimmunoassay of steroid and protein hormones. These facilities have been used in a variety of projects involving animals in the breeding colonies and the Society's Collection. Endocrine changes during the ovarian cycle, pregnancy and puberty have been measured in the Great Apes (Dr R. D. Martin and Miss Susan Kingsley), Sooty Mangabey (Dr H. D. Moore), Owl monkey (Dr Rosemary C. Bonney and Dr A. F. Dixson), Marmoset and Tamarin species (Mrs Heather Brand), Giant Panda (Dr R. D. Martin and Dr Maya Stavy) and Puma

(Dr Rosemary C. Bonney). The Society's pair of Giant Pandas have recently reached sexual maturity and it is known that the female has a brief, well defined oestrus in the Spring. Studies of the ovarian cycle in Owl Monkeys, Marmosets and Tamarins indicate that New World primates have higher levels of circulating and urinary steroids and exhibit shorter cycles than Old World monkeys or apes.

A service for sexing monomorphic birds on the basis of faecal steroids was operated for a trial period of six months.

Breeding Colonies

Dr A. Dixson's colony of Owl Monkeys now numbers 88, including 25 born in the laboratory. Quantitive behavioural studies of social structure in family groups of Owl Monkeys are in progress. Mrs Jackie Hunter is studying the role played by chemical communication in aggressive and social interactions.

Common Marmosets, Cotton-headed Tamarins and Red-mantled Tamarins are all breeding successfully, and Mrs Heather Brand continued her study of their reproductive physiology and behaviour.

Eight breeding pairs of Tree Shrews of three species were established in 1977. Their offspring have been used in a joint project with Dr M. A. Crawford and Mr G. Williams (Nuffield Laboratories) to investigate the transference and utilization of polyunsaturated fatty acids in maternal milk.

Mr B. Rudder is currently completing his research on the inter-relationships between various reproductive measurements in primates. This work has clarified differences which exist between strepsirhines (Lemurs and Lorises) and haplorhines (Tarsiers, Monkeys, Apes and Man) as regards developmental biology, physiology and reproduction.

Field Studies

Dr S. K. Bearder has continued to analyse the extensive results of a two-year radio-tracking study of Lesser Bushbabies, which he conducted with Dr R. D. Martin in Northern Transvaal. The main topics dealt with include: seasonal variations in activity patterns and feeding ecology, social structure, migratory behaviour in maturing males and the role of small carnivores as predators of Bushbabies.

Fertility and Artificial Breeding

Dr H. D. Moore has begun a project on the structure and function of the mammalian epididymis with particular emphasis on the role played by epididymal secretions in the capacitation of spermatozoa. Dr Moore has also collaborated with Dr P. Watson (Royal Veterinary College) in a study of artificial insemination in the Yak, and with Mr G. F. Nevill in similar work on the Sooty Mangabey.

Dr Rosemary C. Bonney and Mr G. F. Nevill have studied the oestrus cycle of the Puma and have induced ovulation by a sequential administration of Pregnant Mare's Serum Gonadotrophin and Human Chorionic Gonadotrophin. The success of this procedure was verified by Mr D. M. Jones by laparoscopic examination. Semen collections have been made by electro ejaculation from the Puma, Lion, Chinese Leopard and Cheetah, in order to obtain information on sperm concentration and motility in these species.

Mr W. V. Holt has continued his investigations of sperm membrane structure and has carried out experiments to identify sialic acid on the sperm surface and locate its site of production in the epididymis. Studies of acrosomal substructure are also in progress.

Staff

Mrs Wendy Doyle joined the Nuffield Laboratories to carry out a survey in the East End of London into nutrition during pregnancy. Dr Jane Hooker left at the completion of her contract and Mr J. P. W. Rivers resigned to take up a permanent appointment as a Lecturer in the Nutrition Department at the London School of Hygiene and Tropical Medicine. Dr L. G. Goodwin was awarded the Pharmaceutical Society's Harrison Memorial Medal.

In the Wellcome Laboratories, Mr D. Fleming gained his MIBiol qualification and was promoted from laboratory technician to Research Assistant. Dr R. D. Martin resigned his position as Senior Research Fellow to take up a Readership in Physical Anthropology at University College London.

Visitors who worked at the Institute of Zoology during the year included:

Department of Veterinary Science: Dr Jessica Porter (Los Angeles Zoo, USA), Miss Barbara Bowe (University of Minnesota, USA), Mr P. W. Armitage (UK), Drs A. G. A. Ahmed, A. F. M. A. Fadil and A. T. A. Karim (Giza Zoological Gardens, Cairo).

Nuffield Laboratories of Comparative Medicine: Dr A. C. F. Colchester (RAF Institute of Aviation Medicine, Farnborough), Miss Lynne Walters (Jersey Wildlife Preservation Trust), Prof. P. Shah and Dr K. Shah (Grant Medical College, Bombay), Prof. P. Budowski (The Hebrew University of Jerusalem), Miss Jayne Hile (student, Surrey University), Miss Emma Mitford (student, Royal Free Hospital School of Medicine).

Wellcome Laboratories of Comparative Physiology: Miss Maya Stavy (Tel Aviv University) and Dr Gillian Crowcroft (Jersey Wildlife Preservation Trust).

Advisory and Consultant Services

Special Investigations

The Society receives many thousands of requests for help, information and advice each year. The enquiries may vary from comparatively minor – but often desperate – questions from children who wish to know how best to look after their pets, requests from teachers and the public for detailed information on a variety of animal management, zoological and veterinary questions, to requests for technical advice on matters of considerable importance. Such assistance is given to Government Departments, Local Authorities, Industry and Commerce, Universities, Veterinary Surgeons, Police and many other zoos and societies. In addition, a large number of clinical samples from living and dead animals is supplied for research purposes and for museum exhibitions.

The following list of specialist advice given during the year is far from complete, but indicates the range and variety of services members of the Society's staff provide:

Animal Management and Conservation

Nature Conservancy Council: preparation of data sheets on some wild mammal species in the British Isles.

Architecture and Planning

Sudan Government: further consultation on the new national zoological park designed by the Architect;
Municipality of Tripoli: advice to the consultants on a new zoo in Tripoli, including a visit to inspect the site.

Catering

Royal Society: advice on staffing and purchasing policies in their Catering Department.

Comparative Medicine

Action Research on Multiple Sclerosis: advice and collaborative studies on dietary management in multiple sclerosis;
Agricultural Research Council – Institute for Animal Diseases: collaborative studies on the serodiagnosis of *Babesia* infections in cattle;
British Council: advice on dietary fats in pregnancy and lactation in India;
British Museum (Natural History): radiological examination of fish skeletons;
CIBA-Geigy, Switzerland: collaboration on development of adjuvants;
Institute of Aviation Medicine: cerebrovascular responses to increased gravity;
Laboratory of the Government Chemist: collaborative analytical studies on lipids;
Metropolitan Police (Forensic Department): supply of animal bloods for diagnosis;
Ministry of Agriculture, Fisheries and Food: collaboration on the analysis of dietary lipids;
Ministry of Agriculture and Fisheries, New Zealand: study on lipids of feral and farmed deer;
Ministry of Overseas Development: advice on trypanosomiasis research in Kenya; visit to Colombia and Brazil to establish assays for protozoal serology;
Roche Products Ltd: collaborative studies on essential fatty acids and prostaglandins;
Royal Free Hospital Medical School: collaborative studies on thyroid and β-adrenergic blocking agents;
State Serum Institute, Copenhagen: advice on serology;
Unilever Vlaadingen, Holland: collaboration on lipid analysis;
University College Hospital: skeletal survey of rats for nutritional bone disease;
US Department of Commerce: studies on dolphin lipids;
Wellcome Foundation Ltd: radiological examination of rachitic ferrets;
Wellcome Trust: assessment of progress and scientific programme of the Wellcome Parasitology Unit, Belem, Brazil;
World Health Organization: The Nuffield Laboratories of Comparative Medicine are recognized as collaborating centres for malaria reference and research, comparative medicine and pathology of undomesticated vertebrates, and the fatty acid composition of human milk.
Visits to advise on serology in Iran, Italy, People's Republic of China, Russia, Switzerland and USA; advice on serological techniques in Yugoslavia; advice on breast milk analysis;
Zoos: radioimmune assays for monitoring hormonal status and pregnancy.

Education and Information

BBC (Schools Radio): assistance with the making of a programme on primate evolution, and a radio-vision programme on drawing animals;
Royal College of Physicians: production of a new edition of a film on William Harvey;
World Wildlife Fund and Fauna Preservation Society: advice on the organization of 'Save our Species' programme, BBC 'Nationwide'.

Training

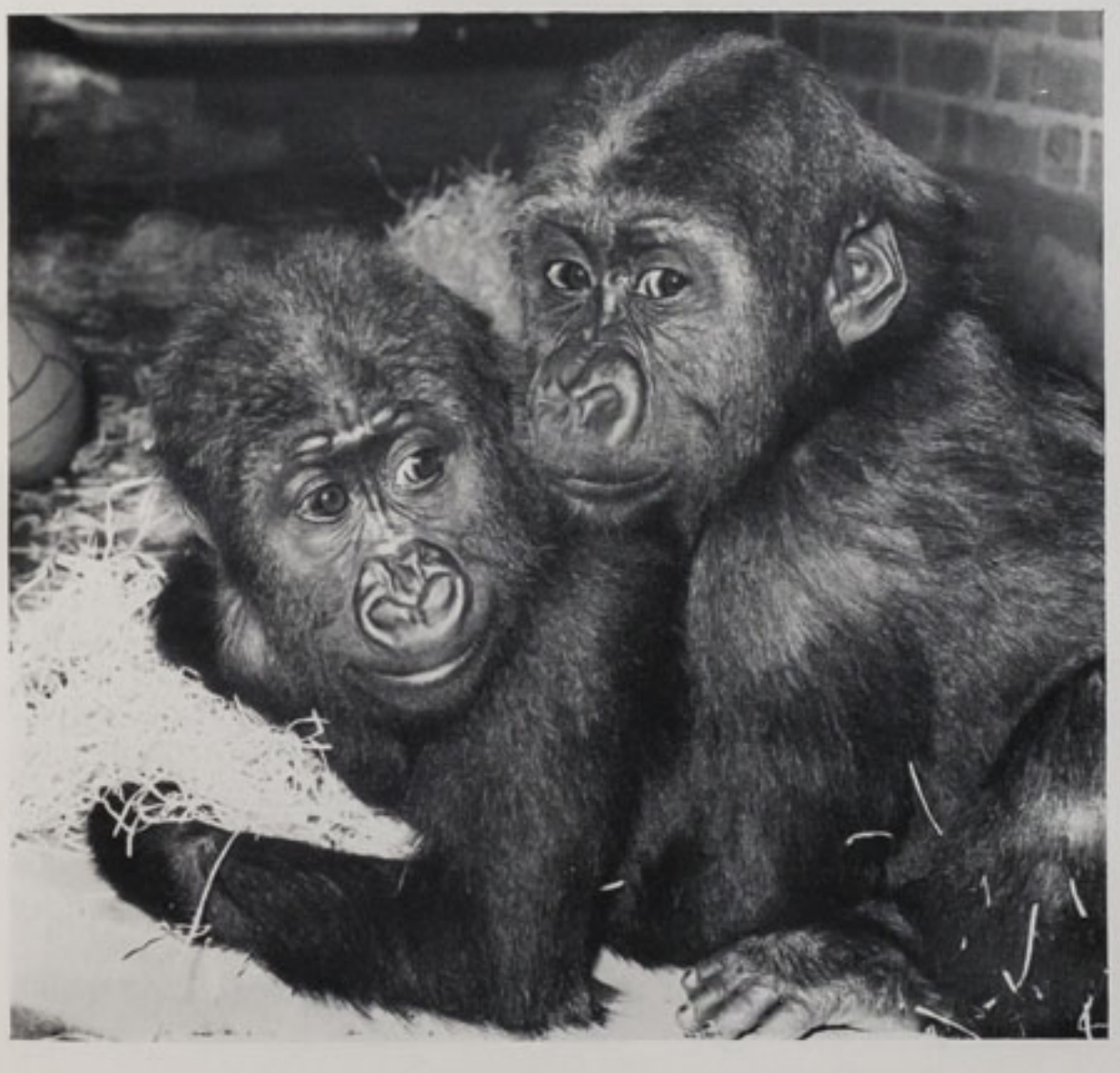
Catering Industry Training Board: lectures to students from Catering and Technical Colleges on various aspects of catering;
Egyptian Government: training, in the Hospital and in the Zoo, of three Egyptian veterinary surgeons;
Nigerian Government: training of three keepers from Kano, Jos and Nekede zoos;
World Health Organization: training of 102 scientists in immunodiagnostic techniques;
Veterinary Colleges: training of veterinary students.

Veterinary Consultancy Services

Mefit Babtie (on behalf of Commissioner for the Jonglei Area of Southern Sudan); advice on a development project for livestock and wildlife in Southern Sudan;
The Brooke Hospital for Animals, Cairo: advice on veterinary aspects of running the hospital and clinics in Cairo, Alexandria and Luxor; advice on the establishment of humane slaughter and development of a carcase trade for horses in Greece.

Consultant veterinary advice to: Bedford College, London; Central Public Health Laboratory, London (Virus Reference Laboratory); Imperial Chemical Industries: advice on diseases and husbandry of marmosets; London School of Hygiene and Tropical Medicine (Microbiology Department); National Institute for Medical Research, London; University College, London (Anatomy Department); veterinary practices on a world-wide basis, and zoological collections in Britain, in particular, Marwell, Twycross, Jersey and Chester zoos.

Gorilla, 'Lomie' with baby one month old
London Zoo



Young Gorillas,'Salome' and 'Kumba',
London Zoo

Manchurian Cranes. Chicks 2 weeks' old.
Whipsnade Park

Sacred Ibis in incubator unit.
4 weeks' old. London Zoo

Collaboration with Scientific Societies, Zoological, Conservation and Research Organizations

Members of the Society's staff, in an individual capacity or as a representative of the Council, play an active part in many organizations concerned with the publication of specialist journals, animal management and husbandry, conservation and other organizations with specialized research interests.

Animal Haematology Group: Dr C. M. Hawkey (Vice-Chairman)

Animal Health Trust: Dr L. G. Goodwin (Scientific Advisory Committee)

Association of British Wild Animal Keepers: Dr M. R. Brambell (Vice-President)

Biological Council: Mr P. J. Olney (Council)

British Institute of Radiology: Professor G. H. du Boulay (Past President; Council and Appeal Co-ordinator)

British Library: Mr R. A. Fish (Working Party on 'Access to Serials')

British Ornithologists' Union: Mr P. J. Olney (Secretary); Mr B. D. S. Smith (Assistant Editor, Ibis)

British Veterinary Zoological Society: Mr V. J. A. Manton (President); Mr D. M. Jones (Secretary); Mr D. G. Ashton (Assistant Secretary)

Council for Nature: Mr M. K. Boorer (Youth Committee)

Department of the Environment: The Scientific Authority for Animals: Dr M. R. Brambell (Chairman); Royal Parks Bird Sanctuaries Committee; Mr P. J. Olney

Department of Health and Social Security: Professor G. H. du Boulay (Advisory Committees on Computerized Tomography)

European Association of Radiology: Professor G. H. du Boulay (British delegate to the Statutes Commission and Member of Computer Applications Committee)

European Association for Aquatic Mammals: Mr V. J. A. Manton (Secretary)

Fauna Preservation Society: Dr M. R. Brambell (Council, retired 1978); Mr D. M. Jones (Council)

Federation of Zoological Gardens of Great Britain and Ireland: Mr C. G. C. Rawlins (Acting Secretary; Council; and Executive Committee); Mr J. A. Dale (Honorary Public Relations Officer); Mr V. J. A. Manton (Conservation and Breeding Committee); Mr P. J. Olney (Zoo Standards Committee)

Horniman Museum, ILEA: Mr M. K. Boorer (Advisory Committee)

International Committee on Thrombosis and Haemostasis: Dr C. M. Hawkey (Sub-Committee on Animal Models)

International Council for Bird Preservation: Mr P. J. Olney (Committee of British Section)

International Council of Scientific Unions—Abstracting Board: Mr M. N. Dadd (Executive Committee, Chairman of Publications and Annual Meeting Sub-committees)

International Ornithological Committee (*Committee of* 100)*:* Mr P. J. Olney

International Union of Directors of Zoological Gardens: Mr C. G. C. Rawlins (President)

Jersey Wildlife Preservation Trust: Dr R. D. Martin; Dr M. R. Brambell (Scientific Advisory Council)

Journal of Comparative Pathology: Dr G. R. Smith (Editorial Board)

Journal of Microbiology: Dr G. R. Smith (Editor)

Linnean Society of London: Dr Marcia Edwards (Council and Editorial Committee)

Mammal Society: Mr M. N. Dadd (Joint Editor, Mammal Review)

Mason Medical Research Foundation: Dr L. G. Goodwin (Research Advisory Committee)

Medical Research Council: Dr L. G. Goodwin (Chairman, Simian Virus Committee; C.E.C. Working Party on non-human primates)

Nature Conservancy Council: Mr C. G. C. Rawlins (United Kingdom Committee for International Nature Conservation; Working Group on Introductions)

Neuroradiology: Professor G. H. du Boulay (Managing Editor)

Nutrition Society: Dr M. A. Crawford (Council and Programmes Committee)

Parasitology: Dr L. G. Goodwin (Editorial Board)

Parliamentary and Scientific Committee: Dr M. A. Crawford

Primate Society of Great Britain: Dr R. D. Martin (Honorary Secretary; Working Party on Primate Conservation)

Rare Breeds Survival Trust: Dr M. R. Brambell (Council)

Royal College of Physicians: Dr L. G. Goodwin (Library Committee)

Royal Society: Dr L. G. Goodwin (Expeditions, Leverhulme Studentships and Soiree Committees)

Royal Society of Medicine: Dr G. R. Smith (Meetings Secretary, Section of Comparative Medicine)

Royal Society for the Protection of Birds: Mr P. J. Olney (Research Advisory Committee)

Royal Society of Tropical Medicine and Hygiene: Dr L. G. Goodwin (Council and President-Elect); Dr A. Voller (Council)

Technical Education Council: Mr P. R. E. Wallace (Sub-committee on teaching syllabus in Laboratory Management)

Royal Society for the Prevention of Cruelty to Animals: Mr V. J. A. Manton (Wild Animals Advisory Committee)

University of London: Professor G. H. du Boulay (Professor of Neuroradiology and Head of the Lysholm Radiological Department); Dr R. D. Martin (Boards of Studies in Human Anatomy and Zoology);

University of Nottingham, School of Agriculture: Dr M. A. Crawford (Honorary Lecturer)

University of Reading, Centre for Agricultural Strategy: Dr M. A. Crawford (Fats Panel)

Wellcome Trust: Dr L. G. Goodwin (Tropical Medicine Panel)

World Health Organization: Dr M. A. Crawford (Rapporteur for WHO/FAO Expert Committee on the role of dietary fats and oils in human nutrition); Dr L. G. Goodwin (Chairman of Steering Committee on Filariasis, WHO Special Programme; Scientific and Technical Advisory Committee, Onchocerciasis Research Programme); Dr A. Voller (Rapid Virus Diagnosis Group and Parasitic Diseases Serology Group)

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

General Matters

Catering Department and Zoo Restaurants Ltd

The Catering Department again had a busy and successful year. The number of functions which were catered for by Zoo Restaurants Ltd increased from 113 in 1977 to 121, and the average attendance at each function was also higher.

At Regent's Park the Gardens were open for Members and their guests on five evenings, and were very well attended in spite of the very wet weather on each occasion. The evening buffet for Members at Whipsnade was also well attended.

Zoo Enterprises Ltd

The company again had satisfactory trading results, and, although there were fewer visitors, the volume of sales increased.

Staff

At the end of the year there were 498 full-time members of staff.

	London	Whipsnade
Animal Management	95	45
Construction, maintenance, gardening, general and public services	101	40
Catering and Retail Departments	63	13
Institute of Zoology	60	3
Education and other scientific departments, including publications and Zoological Record (of whom 27 work at the Zoological Record Offices, Boston Spa, Yorkshire)	49	
Administrative departments	22	7

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

General

During the year the staff received pay increases in accord with the general wage movements of outside groups, mainly in the public sector.

Further improvements in the Society's pension provisions were introduced, including the payment of a lump sum retirement benefit for service after 1958; and arrangements were made to enable members of staff to make voluntary contributions to secure improved death-in-service and retirement benefits. The Society was admitted a member of the Universities Superannuation Scheme on behalf of some of its senior staff and Research Fellows.

Preliminary discussions were held with representatives of the Manpower Services Commission to consider the possibility of introducing schemes under the Special Temporary Employment Programme.

Following consultation with the recognized unions, Safety Representatives were appointed, a Safety Committee formed and a planned programme of inspections was undertaken. Mr P. R. E. Wallace, Laboratory Superintendent of the Nuffield Laboratories, was appointed Safety Adviser.

Long Service Awards

Senior Keeper D. Wood (Aquatic Birds and Birds of Prey, Regent's Park) and Keeper R. McMullen (Bird House, Regent's Park) each received a gold watch on completion of 25 years' continuous service.

Appointments and Promotions

Miss A. Boal, *Executive Assistant, Establishment Department*
Dr M. A. Edwards, *Editor, Zoological Record*
A. M. Jones, *Finance Officer*
D. Wood, *Head Keeper, Aquatic Birds and Birds of Prey, Regent's Park*

Resignations and Retirements

Mr R. R. G. Abbotts resigned to take up an appointment in the publishing field; Dr M. R. Brambell, Curator of Mammals since 1967, resigned on his appointment as Director of the North of England Zoological Society (Chester Zoo); Dr R. D. Martin, Senior Research Fellow, Wellcome Laboratories of Comparative Physiology, took up a Readership in Physical Anthropology at University College, London; Head Keeper Ernest Scrivener (Aquatic Birds and Birds of Prey) retired at the end of October after more than 43 years of service; Mrs Mabel Kinniburgh and Mrs Lily McGuinness, both waitresses in the Restaurant at Regent's Park retired after 18 and 13 years' of service respectively, but continue to work on a part-time basis.

Obituary

We regret to record the deaths of Mr T. Guntley, Members' Gatekeeper, Regent's Park; Mrs B. O'Brien, Waitress, Regent's Park; and of five pensioners: Mr W. Blake; Mr S. Croucher; Mr S. Hexter; Mr H. Morton and Mr A. Paine.

Acknowledgements

The Council again records its gratitude to the Fellows and others who serve on advisory committees; their specialist advice is of immeasurable help in carrying through the work of the Society.

The Council also gratefully acknowledges the assistance received from many scientists, veterinarians, departments, organizations and firms. 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, Mr J. E. Hill who continue to advise on the identification of animals; Dr John Hearn, MRC Unit of Reproductive Biology, Edinburgh; Dr Devra Kleiman of the National Zoological Park, Washington D.C.; Dr J. Dolan, San Diego Wild Animal Park; and the staff of Jersey Zoo who have helped with the preparation of material for mammal data sheets; Miss Caroline Boydell of Queen Mary College, who again assisted with the recording

of data for the International Species Inventory System, and with the compilation of data on diets used in the Collections.

We are also grateful to the staff of the RSPCA London Airport, for the care of animals in transit; to Kew Gardens for their gifts and ready help; to the staff of the Middlesex Hospital for their assistance with emergency snake-bite treatment; Mrs M. Ryan and her colleagues of Paddington College for their co-operation in organizing the keepers' training courses; the Commanding Officer, Training Battalion, RAOC for providing facilities for the 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 Dr W. H. Allan; Dr E. C. Appleby; Professor N. Ashton; Dr D. Baxby; Dr W. P. Beresford-Jones; Dr J. P. Blackburn; BP Nutrition Ltd; Mr C. A. Browne; Dr R. Clampitt; Mr D. Clayton-Jones; Dr M. E. Coates; Mr C. M. Colles; Mr J. E. Cooper; Crown Chemical Ltd; Dr G. A. Cullen; Dr N. F. Cunningham; Professor M. de Burgh Daly; Dr J. Delhanty; Mr K. E. Elgar; Dr R. Finlayson; Dr R. Fisher; Dr D. G. Fleck; Dr T. H. Flewett; Dr A. L. Furniss; Dr D. A. Gardner; Dr E. P. J. Gibbs; Glaxo Laboratories Ltd; Dr E. J. G. Glencross; Mr R. E. Gough; Dr J. Grant; Hoechst UK Ltd; Dr H. Hoogstraal; I.C.I. 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; May and Baker Ltd; Merck Sharp and Dohme Ltd; Miss B. Noddle; Mr T. Northwood; Mr P. Ott; Dr A. C. Palmer; Parke Davis & Co.; Dr M. Peaker; Dr P. Philpott; Dr M. Preece; Mr D. Prentice; Reckitt and Colman; Richard Wolf Ltd; Dr J. Riley; Dr J. Robinson; Roche Products Ltd; Dr B. Rowe; Mr P. G. Sargeaunt; Mr A. M. Scott; Mr G. Smith; Mr K. G. V. Smith; Smith Kline & French Laboratories Ltd; Mr S. Sparrow; Dr L. R. Thomsett; Dr L. H. Turner; Mr P. F. Wadsworth; Dr A. Walker; Dr B. Weaver; Wellcome Foundation Ltd; Dr G. B. White; Mr W. L. Whitehouse; 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 project grants provided by the Ford Foundation; the Gatsby Charitable Foundation; the Medical Research Council; the Ministry of Agriculture, Fisheries and Food; the Ministry of Overseas Development; the Science Research Council; the Wellcome Trust; the World Health Organization; Action for Research into Multiple Sclerosis (ARMS); Bio-Oil Research Ltd; British Cod Liver Oils Ltd; Cadbury Schweppes Ltd; The Council for Scientific and Industrial Research (South Africa); the Drapers' Company; the International Olive Oil Council (Madrid); Merck Sharp and Dohme; Pedigree Petfoods Ltd; the Pilgrim Trust; Roche Products Ltd; Unilever NV (Vlaadingen); and the Wildlife Preservation Trust International. Donations and other financial support have also been provided by the Boise Fund; the Central Research Fund (University of London); the Caribbean Welfare Foundation (through Mrs Dorothy Rand); the Fauna Preservation Society; Imperial Chemical Industries; Mr Reuben Rausing (Tetrapak Ltd); and the Royal Society. Many colleagues and friends have provided research material and assistance.

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 Evergreen Oak for other animals; British Airways; British Caledonian Airways; British Rail; R. L. Dobbs Transport; KLM Royal Dutch Airlines; Industrial Freight Ltd; Lufthansa German Airways; Pan American World Airways; Qantas Airways; and the Union-Castle Mail Steamship Company.

WHIPSNADE PARK by the British Red Cross Society, who help to staff the first aid post; British Rail; United Counties Omnibus Co. Ltd; Dr C. P. Royall; Mr R. Bloom, Clacton Dolphinarium; Mr P. O. J. Scott of the Kensworth Saw Mills; Mr V. Sherriff; Mr J. A. Lyons; 'D' Division of the Bedfordshire Police Force; Mr M. Marriott, Divisional Veterinary Officer, MAFF, Bedford; Mr T. Mann, British Waterways Board; Lufthansa Cargo Office and the sailors from HMS Daedalus, Gosport, Hampshire.

The Council also wishes to thank the press representatives and photographers for their co-operation and interest in the Society's work.

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 1978-1979

Gardens and Park Committee

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

Lady Casson, RIBA, FSIA
Sir Dudley Forwood, Bt
A. M. J. Galsworthy
Professor Richard J. Harrison, MA, MD, DSc, FRS
A. M. Hassell, MA
W. Lane-Petter, MA, MB, BChir, FIBiol
Christopher Marler
Geoffrey Schomberg, FLS
Nigel Sitwell
Lady Anne Tree
The Duke of Wellington, MVO, OBE, MC, *Chairman*
Sir Gordon Wolstenholme, OBE, FRCP, FIBiol
C. A. Wright, DSc, PhD, FIBiol
Secretary: C. G. C. Rawlins, OBE, DFC

Finance Committee

Terms of Reference: To approve the annual estimates and 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.

E. Michael Behrens
Lord 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
The Hon. Sir Ronald Waterhouse, JP, MA, LLB
Sir Richard Way, KCB, CBE
The Duke of Wellington, MVO, OBE, MC
Secretary: A. M. Jones, FCIS, FAAI, MBIM, TFA

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 I. M. Glynn, PhD, MD, FRS
Sir William Henderson, FRS
J. S. Perry, PhD, DSc,
Sir Eric Smith, CBE, ScD, FRS
C. E. Gordon Smith, CB, MD, FRCP, FRCPath, *Chairman*
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, 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
Miss Marie Coates, PhD
Malcolm J. Coe, BSc, PhD
David L. Donne
Mrs Rachel Fisher, MB, BS, PhD
A. R. Jennings, DVSc, MA, MRCVS
J. M. Knowles
Professor J. A. Laing, BSc, PhD, MRCVS
Miss Gwyneth Lewis, BSc
A. J. Stevens, MA, BVSc, MRCVS, DipBact, *Chairman*
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
O. R. Impey, MD, DPhil
T. G. Onions, BSc, PhD, FIBiol
C. H. Selby, HMI
J. F. Spice, MA, DPhil
D. J. Stanbury, BSc, ARCS
C. J. M. Trewhella, BSc
Secretary: M. K. Boorer, BSc, DipEd

Publications Committee

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

Professor E. H. Ashton, PhD, DSc, *Chairman*
Professor A. d'A. Bellairs, DSc, MRCS,
Professor A. J. E. Cave, MD, DSc, FRCS,
Miss Vera Fretter, DSc
Professor J. Green, DSc, PhD
P. H. Greenwood, DSc, PLS
J. P. Harding, PhD, FLS
Professor J. D. Pye, BSc, PhD
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
Robert Cross, MA
The late 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: Marcia A. Edwards, Phd, FLS

International Zoo Yearbook: Editorial Board

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

Lord Craigton, PC, CBE
The Countess of Cranbrook
S. F. Everiss, MBE, MA, MSc, FIBiol
Professor P. A. Jewell, MA, PhD, *Chairman*
Miss Janet Kear, PhD
J. M. Knowles
Christopher Marler
M. Peaker, PhD
Walter van den Bergh
Secretary: P. J. S. Olney, BSc, DipEd, FLS

Awards Committee

Terms of Reference: The Council presents 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*
Professor J. M. Dodd, DSc, FIBiol, FRS, FRSE
Miss Vera Fretter, DSc
Miss Barbara M. Gilchrist, PhD
H. N. Southern, MA, DSc
Professor J. E. Webb, MA, DSc, PhD
C. A. Wright, DSc, PhD, FIBiol
Secretary: H. Gwynne Vevers, MBE, DPhil, FLS, FIBiol

Promotion Committee

Terms of Reference: Advise Council on 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
Lord Buxton, MC, DL, *Chairman*
Lord Donaldson, OBE
The Hon. Ivor Montagu
Sir Michael Perrin, CBE, FRIC
Sir Richard Way, KCB, CBE
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
Deputy Architect: J. C. Wears, DipArch (Dunelm)
Assistant Director of Science, Curator of Aquarium, Acting Curator of Reptiles: H. Gwynne Vevers, MBE, DPhil, FLS, FIBiol*
Catering Manager (London and Whipsnade): C. P. C. Garland
Curator of Birds: P. J. S. Olney, BSc, DipEd, FLS*
Curator of Mammals: vacant (M. R. Brambell until Oct. 31)
Honorary Research Associate: Professor A. J. E. Cave, MD, DSc, FRCS, FLS*
Curator, Whipsnade Park: V. J. A. Manton, MRCVS*
Education Department:
Education Officer: M. K. Boorer, BSc, DipEd
Assistant Education Officers: W. J. Griffiths, BSc, FETC, S. T. Pollock, MSc, Gillian E. Standring, MA, CertEd
Establishment Officer: M. E. McInerney
Finance Officer: A. M. Jones, FCIS, FAAI, MBIM, TFA
Librarian: R. A. Fish, FLA
Public Relations Officer: J. A. Dale, MIPR
Retail Manager (London and Whipsnade): J. F. Brown

INSTITUTE OF ZOOLOGY:
Director: L. G. Goodwin, CMG, FRCP, FRS

Department of Veterinary Science:
Senior Veterinary Officer: D. M. Jones, BSc, BVetMed, MRVCS
Veterinary Officer (Whipsnade): D. G. Ashton, MA, 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
Research Assistants: Ann Bartlett, PhD, D. E. Bidwell, PhD
Radiology: G. H. du Boulay, MB, BS, FRCP, DMRD, FRCR
Haematology: Christine Hawkey, PhD
Research Assistant: P. D. Butcher, MIBiol
Laboratory Superintendent: P. R. E. Wallace, FIST
Administrative Assistant: Patricia E. Wright
Honorary Research Associate: A. Voller, PhD, DSc
Research Fellows: C. D. V. Black, SRN, BSc, Vija E Dent, PhD, Wendy Doyle, Dip. Dietetics, A. G. Hassam, PhD, J. P. W. Rivers, MIBiol, BSc

Wellcome Laboratories of Comparative Physiology:
Senior Research Fellow: vacant (R. D. Martin until Sept. 30)
Research Fellows: S. K. Bearder, PhD, Rosemary C. Bonney, PhD, A. F. Dixson, PhD, H. D. M. Moore, PhD
Research Assistant: D. Fleming, MIBiol
Visiting Research Fellow: Maya Stavy, BSc
Chief Technician: G. F. Nevill, HNC
Histologist: W. V. Holt, AIMLS, HNC, MIBiol

PUBLICATIONS:
International Zoo Yearbook:
Editor: P. J. S. Olney, BSc, DipEd, FLS*
Assistant Editors: Ruth Biegler, Pat Ellis
Journal of Zoology. Symposia, Transactions of the Zoological Society of London. Nomenclator Zoologicus:
Editor: H. Gwynne Vevers, MBE, DPhil, FLS, FIBiol*
Assistant Editor: Marcia A. Edwards, PhD, FLS
Editorial Assistant: L. S. Ellis
Administrative Assistant: Unity M. M. McDonnell, MA
Zoological Record
Editor: Marcia A. Edwards, PhD, FLS
Managing Recorder: Michael N. Dadd, BSc, FLS, AIInfSci
Systems Analyst: Stuart J. Rammell, BSc, AIInfSci
Senior Recorder: Judith M. Howcroft, BSc

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: D. N. Wood
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. Kichenside

Whipsnade Park
Park Manager: O. C. Chamberlain
Veterinary Officer: D. G. Ashton, MA, VetMB, MRCVS*
Office Manager: M. L. Taverner
Assistant Catering Manager: Bridget Heley
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, KCVO, 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
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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

Publications by Society's Staff and Research Workers

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Animals in the Collections

column 1	Number of animals in the Collection at 1st January 1978.
column 2	Number of animals received in 1978 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 1978.
column 4	Number of animals which died in 1978 within 30 days of birth or hatching. The figures in brackets indicate animals born or hatched during December 1977 and which died during January 1978. Stillbirths are not included.
column 5	Number of animals which died from natural causes during 1978 apart from those included in Column 4.
column 6	Number of animals disposed of in 1978 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 1978, 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								
Didelphis marsupialis	Virginian Opossum	—	4	—	—	—	—	2/2
Petaurus breviceps	Sugar Glider	16	—	3	—	—	3	8/5/3
Dactylopsila trivirgata	Striped Possum	2	—	—	—	—	—	1/1
Trichosurus vulpecula	Brush-tailed Possum	5	—	—	—	—	2	2/1
Vombatus ursinus	Common Wombat	1	—	—	—	—	—	1/0
Potorous tridactylus	Long-nosed Potoroo	5	—	3	1	1	—	2/3/1
Macropus parma	White-throated Wallaby	3	—	—	—	1	—	2/0
Macropus bicolor × *M. agilis*	Swamp × Agile Wallaby	1	—	—	—	1	—	—
Macropus rufogriseus	Red-necked Wallaby	2	—	—	—	—	—	1/1
Macropus fuliginosus	Western Grey Kangaroo	4	—	1	—	3	—	1/1
Megaleia rufa	Red Kangaroo	6	1(1)	5	1	2	3(3)	2/3/1
INSECTIVORA								
Setifer setosus	Spiny Tenrec	1	—	—	—	1	—	—
Erinaceus albiventris	East African Hedgehog	5	—	—	—	5	—	—
Crocidura russula	Lesser White-toothed Shrew	6	2	5	1	2	2	2/2/4
CHIROPTERA								
Pteropus giganteus	Indian Fruit Bat	19	1	8	—	—	8	2/4/14
Desmodus rotundus	Vampire Bat	1	—	—	—	—	—	0/0/1
MENOTYPHLA								
Tupaia belangeri	Common Tree Shrew	15	5	9	5	5	4	4/4/7
Tupaia minor	Gunther's Tree Shrew	2	—	—	—	1	—	0/1
Lyonogale tana	Large Tree Shrew	4	2	—	—	—	2	2/2
PRIMATES								
Lemur fulvus	Brown Lemur	7	—	2	1	—	—	2/4/2
Lemur catta	Ring-tailed Lemur	7	—	—	—	—	—	3/4
Lemur variegatus	Ruffed Lemur	6	—	2	—	1	—	2/1/4
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	4	—	2	1	1	—	3/1
Nycticebus coucang	Slow Loris	8	—	3	1	—	—	3/4/3
Arctocebus calabarensis	Angwantibo	2	—	—	—	2	—	—
Galago crassicaudatus	Thick-tailed Bushbaby	4	—	—	—	—	—	2/2
Galago senegalensis	Senegal Bushbaby	4	—	—	—	—	—	2/1/1
Aotus trivirgatus	Douroucouli	7	—	2	—	—	—	3/2/4
Pithecia pithecia	White-faced Saki Monkey	3	—	—	—	—	—	1/1/1
Cebus apella	Brown Capuchin	7	—	2	—	1	1	5/2
Saimiri sciureus	Squirrel Monkey	4	—	—	—	—	—	2/2
Ateles belzebuth	Long-haired Spider Monkey	2	—	—	—	—	—	1/1
Callithrix jacchus	Common Marmoset	6	1	2	—	1	2	1/1/4
Callithrix argentata	Silvery Marmoset	6	—	7	—	6	—	2/2/3
Saguinus oedipus	Cotton-headed Tamarin	4	—	8	4	—	—	2/2/4
Saguinus illigeri	Red-mantled Tamarin	11	—	4	—	—	6	2/2/5
Macaca nemestrina	Pig-tailed Macaque	16	—	3	1	—	1	7/6/4
Cercocebus atys	Sooty Mangabey	5	—	—	—	1	—	1/3
Mandrillus sphinx	Mandrill	5	—	1	—	—	—	3/3
Theropithecus gelada	Gelada Baboon	8	—	—	—	—	—	2/6
Cercopithecus pygerythrus	Vervet Monkey	6	—	2	—	—	—	7/1
Cercopithecus diana	Diana Monkey	2	—	—	—	—	—	1/1
Cercopithecus neglectus	De Brazza's Monkey	2	—	—	—	—	—	1/1
Cercopithecus talapoin	Talapoin Monkey	5	—	—	—	1	1	0/3
Hylobates lar	Lar Gibbon	4	—	1	—	—	—	3/2
Pongo pygmaeus	Orang Utan (Bornean form)	10	—	2	1	—	2	4/5
	(Sumatran × Bornean form)	1	—	—	—	—	1	—
Pan troglodytes	Chimpanzee	8	—	1	—	—	4	1/4
Gorilla gorilla	Gorilla (Lowland form)	1	3	1	—	1	—	2/2
EDENTATA								
Myrmecophaga tridactyla	Giant Anteater	2	—	—	—	1	—	1/0
Choloepus didactylus	Two-toed Sloth	1	—	—	—	—	—	0/1
Chaetophractus villosus	Hairy Armadillo	2	—	—	—	—	—	1/1
Priodontes giganteus	Giant Armadillo	1	—	—	—	—	1	—
RODENTIA								
Ratufa bicolor	Malayan Giant Squirrel	3	—	1	—	—	1	1/1/1
Ratufa indica	Indian Giant Squirrel	1	—	—	—	—	—	0/1
Funisciurus pyrrhopus	Fire-footed Squirrel	6	—	2	2	2	—	1/1/2
Callosciurus erythraeus	Pallas's Squirrel	1	—	—	—	—	—	0/0/1
Callosciurus finlaysoni	Finlayson's Squirrel (Grey form)	1	—	—	—	—	—	0/0/1
Callosciurus bocourti	Bocourt's Squirrel	1	—	—	—	1	—	—
Menetes berdmorei	Berdmore's Squirrel	1	—	—	—	—	1	—
Cynomys ludovicianus	Prairie Marmot	7	6 (6)	—	—	2	6	2/3
Tamias sibiricus	Siberian Chipmunk	3	1	3	—	2	—	1/1/3
Petaurista alborufus	Red & White Flying Squirrel	1	—	—	—	—	—	1/0
Glaucomys sabrinus	Northern Flying Squirrel	1	—	—	—	—	—	0/1
Castor fiber	Beaver	1	1	—	—	—	—	0/0/2
Pedetes capensis	Springhaas	1	—	—	—	—	—	0/0/1
Peromyscus maniculatus	White-footed Mouse	33	—	21	—	2	29	10/13
Onychomys leucogaster	Grasshopper Mouse	—	6	—	—	1	—	2/3
Phodopus sungorus	Dwarf Hamster	69	—	23	—	7	57	13/15
Cricetus cricetus	European Hamster	—	5	—	—	1	2	0/2
Cricetulus barabensis	Chinese Hamster	11	—	27	—	1	22	7/8
Clethrionomys glareolus	Bank Vole	3	—	—	—	3	—	—
Lagurus lagurus	Steppe Lemming	—	8	—	—	—	—	4/4
Gerbillus pyramidum	Greater Egyptian Gerbil	14	2	4	—	5	5	5/5
Meriones shawi	Shaw's Jird	1	2	—	—	3	—	—
Meriones unguiculatus	Clawed Jird	19	—	16	—	1	27	4/3
Cricetomys gambianus	Giant Pouched Rat	3	—	—	—	3	—	—
Acomys cahirinus	Arabian Spiny Mouse	37	—	12	—	10	15	8/16
Arvicanthis niloticus	Nile Rat	33	—	150	—	2	171	4/6
Grammomys dolichurus	Long-tailed Thicket Rat	20	—	6	—	2	7	7/10
Mastomys natalensis	Multimammate Mouse	23	—	37	—	7	37	7/9
Micromys minutus	Harvest Mouse	18	—	46	—	12	38	5/9
Lemniscomys striatus	Striped Grass Mouse	—	6	—	—	—	—	3/3
Rhabdomys pumilio	Four-striped Rat	6	—	—	—	2	—	2/2
Notomys alexis	Brown Hopping Mouse	3	—	—	—	—	2	0/1
Pseudomys australis	Minnie Downs River Mouse	4	—	—	—	2	—	1/1
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Glis glis	Fat Dormouse	4	5	—	—	1	2	2/4
Hystrix indica	Indian Porcupine	5	—	—	—	—	—	1/1/3
Atherurus africanus	African Brush-tailed Porcupine	5	—	1	1	1	—	3/1
Trichys lipura	Long-tailed Porcupine	1	—	—	—	—	—	1/0
Coendou prehensilis	Brazilian Tree Porcupine	1	1	—	—	—	—	1/1
Galea musteloides	Cuis	11	5	2	2	5	1	2/8
Dolichotis patagonum	Mara	7	—	16	10	4	2	1/1/5
Cuniculus paca	Spotted Paca	—	2	—	—	—	—	1/1
Myoprocta pratti	Green Acouchi	2	—	—	—	—	2	—
Capromys pilorides	Cuban Hutia	2	—	—	—	—	—	1/1
Geocapromys brownii	Jamaican Hutia	2	—	—	—	—	—	2/0
Myocastor coypu	Coypu	4	—	28	2	—	23	2/5
Octodon degus	Degu	3	—	3	—	4	—	0/0/2
Proechimys guairae	Casiragua	9	—	8	—	2	3	1/1/10
CARNIVORA								
Canis lupus	Grey Wolf	4	—	—	—	2	—	2/0
Canis latrans	Coyote	2	—	—	—	—	—	1/1
Canis familiaris	Dingo × Singing Dog	2	—	—	—	1	1	—
Fennecus zerda	Fennec Fox	6	—	—	—	1	—	2/3
Selenarctos thibetanus	Asiatic Black Bear	2	—	—	—	—	—	0/2
Ursus arctos	Brown Bear	4	—	2	2	—	—	2/2
Ursus americanus	American Black Bear	5	—	5	2	1	2	3/2
Thalarctos maritimus	Polar Bear	2	—	—	—	—	—	1/1
Ailuropoda melanoleuca	Giant Panda	2	—	—	—	—	—	1/1
Ailurus fulgens	Red Panda	3	—	—	—	—	—	1/2
Nasua nasua	Ring-tailed Coati	3	—	2	—	1	1	2/1
Potos flavus	Kinkajou	3	—	—	—	—	—	2/1
Mustela nivalis	Weasel	1	—	—	—	1	—	—
Mustela putorius	Polecat	1	—	—	—	1	—	—
Martes flavigula	Yellow-throated Marten	1	—	—	—	1	—	—
Ictonyx striatus	Zorilla	1	—	—	—	1	—	—
Arctonyx collaris	Hog Badger	1	—	—	—	1	—	—
Melogale moschata	Chinese Ferret Badger	1	—	—	—	—	—	1/0
Lutra lutra	European Otter	—	2	—	—	2	—	—
Amblonyx cinerea	Oriental Small-clawed Otter	—	2	—	—	—	—	1/1
Genetta genetta	Spotted Genet	2	—	—	—	—	2	—
Genetta tigrina	Blotched Genet	2	—	—	—	—	—	1/1
Arctogalidia trivirgata	Small-toothed Palm Civet	4	—	—	—	—	—	2/2
Paguma larvata	Masked Palm Civet	2	—	—	—	—	—	2/0
Suricata suricatta	Suricate Meerkat	3	—	—	—	2	1	—
Herpestes edwardsi	Indian Grey Mongoose	2	2	—	—	—	—	2/2
Herpestes urva	Crab-eating Mongoose	1	—	—	—	1	—	—
Felis caracal	Caracal Lynx	3	1	—	—	—	1	2/1
Felis serval	Serval	3	—	2	—	—	3	1/1
Felis wiedi	Margay	3	—	3	1	—	—	2/3
Felis concolor	Puma	1	—	—	—	—	—	1/0
Panthera leo	Lion	5	—	11	3	—	8	2/3
Panthera tigris	Tiger	3	1 (1)	—	—	—	—	1/3
Panthera pardus	Leopard	2	—	—	—	1	—	1/0
	(Chinese form)	2	—	—	—	—	—	1/1
Panthera onca	Jaguar	2	—	—	—	—	—	1/1
Acinonyx jubatus	Cheetah	3	—	—	—	1	—	1/1
PINNIPEDIA								
Zalophus californianus	Californian Sealion	6	—	1	—	—	—	2/5
Halichoerus grypus	Grey Seal	2	—	—	—	—	—	1/1
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	—	—	—	2/1
Asinus hemionus	Onager (Turkmen form)	3	—	—	—	—	1	1/1
Hippotigris burchelli	Common Zebra	7	—	1	—	1	—	1/6
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Tapirus indicus	Malayan Tapir	1	—	—	—	—	1	—
Diceros bicornis	Black Rhinoceros	2	2 (1)	1	—	—	2 (2)	2/1
Ceratotherium simum	White Rhinoceros	2	—	—	—	—	—	1/1
ARTIODACTYLA								
Sus scrofa	Wild Boar	5	—	7	—	—	3	3/6
Phacochoerus aethiopicus	Wart Hog	1	2	—	—	—	—	1/2
Tayassu tajacu	Collared Peccary	4	—	—	—	—	—	1/3
Lama glama	Llama	6	—	1	—	—	—	3/4
Lama guanicoe	Guanaco	2	1 (1)	1	1	1	—	0/2
Camelus bactrianus	Bactrian Camel	7	—	—	—	—	—	2/5
Camelus dromedarius	Arabian Camel	1	—	—	—	—	—	0/1
Muntiacus muntjak	Indian Muntjac	4	—	2	—	—	—	3/2/1
Muntiacus reevesi	Reeves's Muntjac	4	—	1	—	—	—	4/1
Cervus timorensis	Timor Deer	6	—	2	—	—	—	3/5
Elaphurus davidianus	Pere David's Deer	1	—	—	—	—	1	—
Pudu pudu	Pudu	2	1	—	—	—	—	2/1
Rangifer tarandus	Reindeer	4	—	—	—	1	—	1/2
Giraffa camelopardalis	Giraffe	7	—	2	—	1	1 (1)	3/4
Tragelaphus strepsiceros	Greater Kudu	6	—	2	—	2	—	1/5
Anoa depressicornis	Anoa	1	—	—	—	—	—	1/0
Bos grunniens	Yak	6	1 (1)	—	—	—	—	3/4
Syncerus caffer	African Buffalo	—	7	—	—	—	—	2/5
Bison bison	American Bison	7	—	2	—	—	2	3/4
Kobus ellipsiprymnus	Common Waterbuck	2	—	—	—	—	—	1/1
Kobus defassa	Defassa Waterbuck	1	—	—	—	1	—	—
Hippotragus niger	Sable Antelope	—	3	—	—	—	—	0/3
Oryx gazella	Gemsbok	2	—	1	—	1	—	1/1
Oryx tao	Scimitar-horned Oryx	7	1 (1)	3	—	1	2 (2)	2/6
Connochaetes taurinus	Brindled Gnu	3	—	—	—	1	2	—
Antilope cervicapra	Blackbuck	32	—	14	5	1	12 (4)	3/20/5
Capra falconeri	Markhor	11	—	4	2	4	—	4/5
Ammotragus lervia	Barbary Sheep	31	—	19	11	3	2	11/23
Ovis musimon	Mouflon	19	—	12	6	1	—	7/17
Ovis canadensis	Bighorn Sheep	3	—	1	1	—	—	2/1
Ovis dalli	Dall's Sheep	2	—	—	—	—	2	—
DOMESTIC								
	Pigs–Gloucester Old Spot	3	—	15	4	1	10	1/2
	Vietnamese Pot-bellied	2	—	—	—	—	—	1/1
	Cattle	5	—	2	—	3	—	1/3
	Goats (excl. Golden Guernseys)	7	—	12	2	1	8	0/8
	Golden Guernsey	6	—	3	—	1	4	2/2
	Dorset Down Sheep	6	—	7	1	1	3 (3)	2/6
	Rabbits	12	—	60	6	5	33	0/0/28
	Guinea Pigs	29	2	115	—	14	83	0/0/49
	Donkeys	6	—	—	—	—	—	3/3
	Ponies	4	—	—	—	—	—	0/4
	Total–Mammals	1048	97 (12)	802	81	189	687 (15)	990

Birds

STRUTHIONIFORMES								
Struthio camelus	Ostrich	2	—	—	—	—	—	1/1
CASUARIIFORMES								
Casuarius bennetti	Bennett's Cassowary	1	—	—	—	—	—	0/1
Casuarius unappendiculatus	One-wattled Cassowary	1	—	—	—	—	—	1/0
Dromaius novaehollandiae	Emu	2	—	—	—	—	—	1/1
SPHENISCIFORMES								
Pygoscelis papua	Gentoo Penguin	2	—	—	—	—	—	0/0/2
Eudyptes crestatus	Rockhopper Penguin	8	—	—	—	2	—	2/1/3
Spheniscus demersus	Black-footed Penguin	17	—	—	—	2	—	3/2/10
Spheniscus humboldti	Humboldt's Penguin	6	—	—	—	—	—	4/2
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
PELECANIFORMES								
Pelecanus onocrotalus	Eastern White Pelican	4	—	—	—	—	—	0/0/4
Pelecanus crispus	Crested Pelican	2	—	—	—	—	—	0/0/2
Pelecanus occidentalis	Brown Pelican	6	1	—	—	—	—	0/0/7
Morus bassanus	Gannet	1	1	—	—	1	—	0/0/1
Phalacrocorax carbo	Cormorant	6	—	—	—	—	—	2/2/2
Phalacrocorax aristotelis	Shag	4	—	—	—	1	—	2/1
Phalacrocorax albiventer	King Shag	1	—	—	—	1	—	—
CICONIIFORMES								
Nycticorax nycticorax	Night Heron	4	—	1	—	—	—	1/1/3
Cochlearius cochlearius	Boatbill	2	—	—	—	—	—	0/0/2
Ardeola ibis	Cattle Egret	14	—	3	—	3	—	5/5/4
Butorides striatus	Striated Heron	1	—	—	—	—	—	0/0/1
Ardea cinerea	Grey Heron	6	—	—	—	—	—	0/0/6
Ciconia abdimii	Abdim's Stork	11	—	—	—	1	—	3/4/3
Ciconia ciconia	White Stork	3	—	—	—	—	—	1/1/1
Ephippiorhynchus asiaticus	Black-necked Stork	2	—	—	—	—	—	1/1
Leptoptilos crumeniferus	Marabou Stork	2	—	—	—	—	—	1/1
Threskiornis aethiopicus	Sacred Ibis	12	—	13	—	6	4	4/4/7
Carphibis spinicollis	Straw-necked Ibis	3	—	—	—	—	—	1/1/1
Pseudibis papillosa	Black Ibis	1	—	—	—	—	—	0/0/1
Eudocimus albus	White Ibis	4	—	4	3	—	—	2/2/1
Eudocimus ruber	Scarlet Ibis	8	—	—	—	2	—	2/0/4
Platalea leucorodia	Spoonbill	3	—	—	—	—	—	0/0/3
Ajaia ajaja	Roseate Spoonbill	1	—	—	—	—	1	—
Phoenicopterus ruber roseus	Greater Flamingo	11	—	—	—	—	—	0/0/11
Phoenicopterus ruber ruber	Rosy Flamingo	8	—	—	—	—	—	0/0/8
Phoenicopterus chilensis	Chilean Flamingo	31	—	1	—	—	—	10/10/12
Phoeniconaias minor	Lesser Flamingo	16	—	—	—	—	—	0/0/16
ANSERIFORMES								
Dendrocygna bicolor	Fulvous Whistling Duck	6	—	2	—	1	2	3/2
Dendrocygna autumnalis	Red-billed Whistling Duck	10	—	—	—	2	—	4/4
Anser fabalis brachyrhynchus	Pink-footed Goose	2	—	—	—	—	1	1/0
Anser caerulescens atlanticus	Greater Snow Goose	5	—	—	—	—	2	1/2
Anser canagicus	Emperor Goose	2	—	—	—	—	—	1/1
Branta sandvicensis	Hawaiian Goose	6	—	—	—	—	—	4/2
Branta leucopsis	Barnacle Goose	5	—	—	—	—	—	3/2
Branta bernicla orientalis	Brent Goose	4	—	—	—	—	—	2/2
Branta ruficollis	Red-breasted Goose	2	—	—	—	—	—	1/1
Cereopsis novaehollandiae	Cape Barren Goose	2	—	—	—	—	—	1/1
Tadorna tadorna	Shelduck	4	3	—	—	3	1	2/1
Aix sponsa	Carolina Duck	—	8	2	—	—	1	3/6
Aix galericulata	Mandarin Duck	14	—	—	—	—	5	5/4
Callonetta leucophrys	Ringed Teal	2	—	—	—	—	—	1/1
Anas penelope	Wigeon	6	—	—	—	—	1	2/3
Anas americana	American Wigeon	1	—	—	—	—	1	—
Anas sibilatrix	Chiloe Wigeon	10	—	—	—	—	—	8/2
Anas crecca	Teal	2	—	—	—	—	—	1/1
Anas capensis	Cape Teal	3	—	—	—	2	—	1/0
Anas platyrhynchus laysanensis	Laysan Duck	2	—	1	—	—	—	1/1/1
Anas acuta	Pintail	6	4	—	—	1	1	4/4
Anas bahamensis	Bahama Pintail	—	—	1	—	—	—	1/0**
Anas querquedula	Garganey	2	—	—	—	—	—	1/1
Anas clypeata	Shoveler	1	2	7	—	1	—	2/7
Marmaronetta angustirostris	Marbled Teal	4	—	—	—	—	—	2/2
Netta rufina	Red-crested Pochard	—	—	6	—	2	—	2/2**
Aythya ferina	Pochard	1	—	—	—	—	—	0/1
Aythya australis australis	Australian White-eye	1	—	—	—	—	1	—
Aythya nyroca	White-eyed Pochard (Ferruginous Duck)	1	—	—	—	1	—	—
Aythya fuligula	Tufted Duck	3	1	—	—	—	—	1/3
Somateria mollissima	Eider Duck	4	3	—	—	1	—	4/2
Bucephala clangula	Goldeneye	2	—	—	—	—	—	1/1
Mergus cucullatus	Hooded Merganser	1	1	—	—	—	—	1/1
Oxyura jamaicensis	North American Ruddy Duck	7	—	4	4	—	2	3/2
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
FALCONIFORMES								
Vultur gryphus	Great Condor	2	—	1	1	—	—	1/1
Milvus migrans migrans	Black Kite	1	—	—	—	—	—	0/0/1
Milvus migrans parasitus	African Black Kite	1	—	—	—	—	—	0/1
Haliastur indus	Brahminy Kite	1	—	—	—	—	—	0/0/1
Haliastur indus intermedius	Javan Brahminy Kite	1	—	—	—	—	—	0/0/1
Haliaeetus vocifer	Fish Eagle	2	—	—	—	—	—	1/1
Neophron percnopterus percnopterus	Egyptian Vulture	2	—	—	—	—	—	1/1
Gyps rueppellii	Ruppell's Griffon Vulture	2	—	—	—	1	—	0/0/1
Gyps fulvus	Griffon Vulture	1	—	—	—	—	—	0/0/1
Torgus tracheliotus	Lappet-faced Vulture	1	—	—	—	—	—	0/0/1
Circaetus gallicus gallicus	Short-toed Eagle	1	—	—	—	—	—	0/1
Terathopius ecaudatus	Bateleur Eagle	1	—	—	—	—	—	0/1
Spilornis cheela ricketti	Chinese Serpent Eagle	2	—	—	—	—	—	1/1
Polyboroides typus	Harrier Hawk	2	—	—	—	—	—	1/1
Butastur rufipennis	Grasshopper Buzzard	1	—	—	—	—	—	0/0/1
Heterospizias meridionalis	Savannah Hawk	1	—	—	—	—	—	0/0/1
Geranoaetus melanoleucus	Chilean Eagle	1	—	—	—	—	—	1/0
Buteo buteo	Buzzard	2	—	—	—	—	—	0/0/2
Aquila rapax	Tawny Eagle	2	1	—	—	—	—	2/1
Aquila rapax orientalis	Western Steppe Eagle	1	—	—	—	—	—	1/0
Aquila heliaca	Imperial Eagle	1	—	—	—	—	—	0/0/1
Aquila wahlbergi	Wahlberg's Eagle	1	—	—	—	—	—	0/0/1
Aquila chrysaetos	Golden Eagle	1	—	—	—	—	—	1/0
Polyborus plancus brasiliensis	Brazilian Carrion Hawk	2	—	—	—	—	—	2/0
Polyborus plancus cheriway	Cheriway Carrion Hawk	2	—	—	—	—	—	0/0/2
Falco cenchroides	Nankeen Kestrel	1	—	—	—	—	—	0/0/1
Falco chicquera	Red-headed Merlin	1	—	—	—	—	—	0/0/1
Falco biarmicus	Lanner Falcon	1	—	—	—	—	—	0/1
GALLIFORMES								
Crax globulosa	Globose Curassow	1	—	—	—	—	—	1/0
Lophortyx californica	Californian Quail	—	1	—	—	—	—	1/0
Alectoris graeca cypriotes	Cyprus Rock Partridge	1	—	—	—	1	—	—
Alectoris rufa	Red-legged Partridge	2	—	—	—	1	—	0/0/1
Coturnix coturnix japonica	Japanese Quail	—	3	—	—	1	—	0/0/2
Excalfactoria chinensis	Chinese Painted Quail	1	2	1	1	—	—	2/1
Lophophorus impeyanus	Impeyan Pheasant	2	—	3	—	—	3	1/1
Gallus sonneratii	Sonnerat's Jungle Fowl	6	—	3	—	2	—	2/2/3
Lophura leucomelana leucomelana	Nepal Kalij Pheasant	4	—	—	—	1	—	2/1
Lophura leucomelana melanota	Black-backed Kalij Pheasant	1	—	—	—	—	—	1/0
Lophura nycthemera	Silver Pheasant	2	1	5	—	1	5	1/1
Lophura imperialis	Imperial Pheasant	5	—	2	—	—	2 (2)	3/2
Lophura swinhoii	Swinhoe's Pheasant	1	—	—	—	—	—	1/0
Lophura diardi	Siamese Fire-back Pheasant	2	—	—	—	—	—	1/1
Crossoptilon crossoptilon	White Eared Pheasant	2	—	—	—	—	—	1/1
Crossoptilon mantchuricum	Brown Eared Pheasant	2	—	1	—	—	1	1/1
Crossoptilon auritum	Blue Eared Pheasant	2	—	2	—	—	—	1/1/2
Catreus wallichi	Cheer Pheasant	2	—	8	—	—	8	1/1
Syrmaticus ellioti	Elliot's Pheasant	1	—	—	—	—	—	1/0
Syrmaticus mikado	Mikado Pheasant	5	—	—	—	1	—	4/0
Syrmaticus soemmerringi soemmerringi	Soemmerring's Copper Pheasant	2	—	—	—	2	—	—
Syrmaticus reevesi	Reeves's Pheasant	3	—	3	—	1	—	1/1/3
Phasianus colchicus	Common Pheasant	2	—	5	—	—	4	2/1
Chrysolophus pictus	Golden Pheasant	1	1	—	—	1	—	1/0
Chrysolophus amherstiae	Lady Amherst's Pheasant	3	—	—	—	2	—	1/0
Polyplectron emphanum	Palawan Peacock Pheasant	3	—	—	—	—	—	1/2
Argusianus argus	Argus Pheasant	2	—	—	—	1	—	0/1
Pavo cristatus	Common Peafowl	4	—	—	—	1	1 (1)	1/1
Pavo muticus	Burmese Peafowl	2	—	—	—	1	1	—
Numida meleagris	Helmeted Guineafowl	4	—	—	—	—	—	2/2
GRUIFORMES								
Grus monacha	Hooded Crane	1	—	—	—	—	1 (1)	—
Grus antigone	Sarus Crane	4	—	1	1	—	—	2/2
Grus rubicunda	Brolga	1	—	—	—	—	—	0/1
Anthropoides virgo	Demoiselle Crane	4	—	—	—	—	—	0/0/4
Anthropoides paradisea	Stanley Crane	3	—	—	—	—	—	1/1/1
Balearica pavonina	West African Crowned Crane	2	—	—	—	—	—	1/1
Balearica regulorum	South African Crowned Crane	4	—	—	—	1	—	1/1/1
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
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
Aramides cajanea × *Aramides axillaris*	Hybrid Cayenne Wood Rail × Venezuelan Wood Rail	1	—	—	—	—	—	0/1
Porphyrula alleni	Allen's Gallinule	1	—	—	—	—	—	0/0/1
Porphyrio poliocephalus	Grey-headed Gallinule	4	—	5	1	—	2	1/1/4
Cariama cristata	Crested Cariama	1	—	—	—	—	1	—
Lissotis melanogaster melanogaster	Black-bellied Bustard	1	—	—	—	—	—	0/0/1
CHARADRIIFORMES								
Haematopus ostralegus	Oystercatcher	7	—	1	—	—	—	1/1/6
Himantopus himantopus	Black-winged Stilt	4	—	—	—	—	—	0/0/4
Recurvirostra avosetta	Avocet	2	—	—	—	1	—	0/0/1
Burhinus magnirostris	Southern Stone Curlew	1	—	—	—	—	1	—
Glareola pratincola	Collared Pratincole	2	—	—	—	—	—	0/0/2
Vanellus vanellus	Lapwing	3	—	—	—	1	—	0/0/2
Vanellus spinosus	Spur-winged Plover	2	—	—	—	—	—	0/1/1
Vanellus tricolor	Banded Plover	3	—	—	—	—	—	0/1/2
Pluvialis apricaria	Golden Plover	2	3	—	—	2	1	0/0/2
Charadrius hiaticula	Ringed Plover	4	5	—	—	3	2	0/0/4
Numenius arquata	Curlew	1	4	—	—	2	—	0/0/3
Tringa totanus	Redshank	4	—	—	—	1	1	0/1/1
Philomachus pugnax	Ruff	11	—	—	—	1	—	3/4/3
Catharacta skua antarctica	Antarctic Skua	3	—	—	—	1	—	0/1/1
Larus cirrocephalus poiocephalus	Grey-headed Gull	11	—	4	—	—	—	4/4/7
Larus novaehollandiae	Silver Gull	4	—	—	—	—	—	1/1/2
Sterna bergii	Crested Tern	1	—	—	—	—	—	0/0/1
Larosterna inca	Inca Tern	6	—	—	—	—	—	1/1/4
Alca torda	Razorbill	1	1	—	—	—	—	0/0/2
Uria aalge	Guillemot	2	1	—	—	—	—	0/0/3
COLUMBIFORMES								
Columba guinea	Speckled Pigeon	31	—	5	1	6	3	9/7/10
Columba elphinstonii	Nilgiri Wood Pigeon	1	—	—	—	1	—	—
Columba picazuro	Picazuro Pigeon	5	—	—	—	—	—	1/1/3
Columba corensis	Naked-eyed Pigeon	1	—	—	—	—	—	0/0/1
Streptopelia turtur	Turtle Dove	3	—	—	—	1	—	0/0/2
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	14	—	—	—	—	—	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	6	—	—	—	1	—	0/1/4
Ocyphaps lophotes	Crested Pigeon	4	—	—	—	—	—	1/1/2
Geopelia cuneata	Diamond Dove	1	2	—	—	1	—	0/0/2
Geopelia striata striata	Zebra Dove	1	—	—	—	—	—	0/0/1
Geopelia humeralis	Barred-shouldered Dove	1	—	—	—	—	—	0/0/1
Zenaida auriculata	Violet-eared Dove	6	—	—	—	1	—	1/0/4
Leptotila jamaicensis jamaicensis	White-bellied Dove	1	—	—	—	1	—	—
Geotrygon versicolor	Mountain Witch Dove	8	—	8	1	2	4 (2)	0/1/8
Caloenas nicobarica	Nicobar Pigeon	—	1	—	—	—	—	0/0/1
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	—	—	—	—	—	1/1/2
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	1	—	—	—	—	1/1
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
Lorius garrulus flavopalliatus	Yellow-backed Lory	—	1	—	—	—	—	0/1
		1	2	3	4	5	6	7

		1	2	3	4	5	6	7
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
Cacatua leadbeateri	Leadbeater's Cockatoo	3	—	—	—	1	—	1/0/1
Cacatua sulphurea	Lesser Sulphur-crested Cockatoo	3	—	—	—	—	—	1/1/1
Cacatua sulphurea parvula	Dwarf Sulphur-crested Cockatoo	1	—	—	—	—	—	0/0/1
Cacatua galerita galerita	Greater Sulphur-crested Cockatoo	3	—	—	—	—	—	2/1
Cacatua moluccensis	Rose-crested Cockatoo	2	—	—	—	—	1	1/0
Cacatua alba	White-crested Cockatoo	2	—	—	—	—	—	1/1
Cacatua sanguinea sanguinea	Bare-eyed Cockatoo	3	—	—	—	—	—	1/1/1
Cacatua tenuirostris pastinator	Western Slender-billed Cockatoo	5	—	—	—	—	—	0/0/5
Nymphicus hollandicus	Cockatiel	13	6	5	—	1	3	7/4/9
Nestor notabilis	Kea	2	—	—	—	—	—	1/1
Tanygnathus mulleri mulleri	Muller's Blue-backed Parrot	—	1	—	—	—	—	0/1
Eclectus roratus	Eclectus Parrot	2	—	—	—	—	—	1/1
Polytelis alexandrae	Queen Alexandra's Parrakeet	1	—	—	—	—	—	0/1
Platycercus eximius eximius	Eastern Rosella Parrakeet	1	1	—	—	—	—	1/0/1
Platycercus adscitus palliceps	Mealy Rosella Parrakeet	1	—	—	—	—	—	1/0
Psephotus haematonotus	Red-rumped Parrakeet	3	—	1	—	1	1	1/1
Neophema pulchella	Turquoisine Parrakeet	—	2	—	—	1	—	0/1
Coracopsis vasa	Vasa Parrot	1	—	—	—	—	—	0/1
Psittacus erithacus	Grey Parrot	5	2	—	—	—	2	1/1/3
Psittacus erithacus timneh	Sierra Leone Grey Parrot	1	—	—	—	—	—	0/0/1
Poicephalus robustus suahelicus	Cape Parrot	—	1	—	—	—	—	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	2	—	—	—	—	0/0/3
Poicephalus rueppellii	Ruppell's Parrot	3	—	—	—	—	1	1/0/1
Agapornis taranta	Abyssinian Lovebird	1	—	—	—	—	1	—
Agapornis roseicollis	Rosy-faced Lovebird	2	1	—	—	—	—	1/2
Agapornis fischeri	Fischer's Lovebird	14	1	11	—	2	—	5/4/15
Loriculis vernalis	Vernal Hanging Parrot	1	—	—	—	—	—	0/0/1
Psittacula eupatria nipalensis	Alexandrine Parrakeet	1	2	—	—	1	—	1/1
Psittacula krameri krameri	African Ring-necked Parrakeet	4	—	1	—	1	—	1/2/1
Psittacula krameri manillensis	Indian Ring-necked Parrakeet	—	3	—	—	1	—	1/1
Psittacula cyanocephala	Plum-headed Parrakeet	2	—	—	—	—	—	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	—	—	—	1	—	1/2
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	—	—	—	1	—	0/0/1
Aratinga jandaya	Yellow-headed Conure	2	—	—	—	—	—	0/0/2
Aratinga canicularis	Petz's Conure	1	—	—	—	—	1	—
Rhynchopsitta pachyrhyncha	Thick-billed Parrot	2	—	—	—	—	—	0/0/2
Brotogeris versicolurus chiriri	Canary-winged Parrakeet	10	—	—	—	3	—	2/2/3
Brotogeris pyrrhopterus	Orange-flanked Parrakeet	5	—	—	—	1	—	0/1/3
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	—	—	—	—	—	1/1
Amazona aestiva	Blue-fronted Amazon Parrot	3	—	—	—	1	—	0/0/2
Amazona ochrocephala	Yellow-fronted Amazon Parrot	3	—	—	—	2	—	0/0/1
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	3	—	—	—	—	—	0/0/3
Corythaixoides leucogaster	White-bellied Go-Away Bird	1	—	—	—	—	1	—
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Tauraco corythaix corythaix	Knysna Turaco	2	—	—	—	1	—	1/0
Tauraco corythaix persa	West African Turaco	2	—	—	—	—	—	0/0/2
Tauraco corythaix livingstonii	Livingstone's Turaco	1	—	—	—	—	—	0/1
Tauraco erythrolophus	Red-crested Turaco	2	—	—	—	—	—	0/0/2
Tauraco hartlaubi	Hartlaub's Turaco	2	—	1	—	1	—	0/0/2
Tauraco leucotis leucotis	White-cheeked Turaco	8	—	1	—	1	—	1/1/6
Eudynamys scolopacea chinensis	Chinese Koel	1	—	—	—	—	—	0/0/1
STRIGIFORMES								
Tyto alba	Barn Owl	—	2	1	—	—	1 (1)	1/1
Otus leucotis	White-faced Scops Owl	2	1	—	—	—	—	0/0/3
Bubo virginianus	Great Horned Owl	—	2	—	—	—	—	1/1
Bubo bubo bubo	Great Eagle Owl	2	—	—	—	—	—	1/1
Bubo bubo omissus	Turkmenian Eagle Owl	2	—	—	—	—	—	0/0/2
Bubo bubo ascalaphus	Savigny's Eagle Owl	1	—	—	—	—	—	1/0
Bubo bubo bengalensis	Indian Eagle Owl	2	—	—	—	—	—	1/1
Bubo capensis mackinderi	Kenya Eagle Owl	2	—	—	—	—	—	1/1
Bubo africanus	Spotted Eagle Owl	1	1	—	—	—	—	1/1
Bubo africanus cinerascens	Abyssinian Spotted Eagle Owl	2	—	1	—	—	1	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
Ninox novaeseelandiae	Boobook Owl	2	—	—	—	—	—	0/0/2
Athene noctua	Little Owl	2	—	4	—	—	—	1/1/4
Speotyto cunicularia	Burrowing Owl	3	—	—	—	—	—	1/1/1
Ciccaba woodfordii	African Wood Owl	2	—	—	—	—	—	1/1
Strix aluco sylvatica	Tawny Owl	2	—	2	—	—	—	1/1/2
Asio flammeus	Short-eared Owl	2	—	—	—	—	—	0/0/2
Aegolius funereus	Tengmalm's Owl	—	2	—	—	1	—	0/0/1
APODIFORMES								
Amazilia amabilis	Blue-chested Humming-bird	1	—	—	—	—	—	0/0/1
S. *Boissonneaua flavescens* (Loddiges) (Venezuela, Colombia, Ecuador)	Buff-tailed Coronet	—	2	—	—	2	—	—
CORACIIFORMES								
Dacelo novaeguineae	Kookaburra	3	—	—	—	—	1	1/1
Momotus momota	Blue-crowned Motmot	2	—	—	—	1	—	0/0/1
Coracias caudata	Lilac-breasted Roller	1	—	—	—	—	—	0/0/1
Coracias benghalensis	Indian Roller	1	—	—	—	—	—	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	6	—	1	—	2	—	2/1/2
Tockus deckeni jacksoni	Jackson's Hornbill	6	—	—	—	1	—	2/3
Penelopides panini	Tarictic Hornbill	3	2	—	—	—	—	3/2
Aceros undulatus	Wreathed Hornbill	1	—	—	—	—	—	0/1
Anthracoceros malayanus	Black Hornbill	2	1	—	—	1	—	1/1
Anthracoceros coronatus convexus	Southern Pied Hornbill	1	—	—	—	—	—	0/1
Bycanistes bucinator	Trumpeter Hornbill	2	—	—	—	—	—	1/1
Bycanistes subcylindricus	Black & White Casqued Hornbill	2	—	—	—	—	—	1/1
Ceratogymna atrata	Black Casqued Hornbill	1	—	—	—	—	—	0/1
Buceros bicornis	Great Indian Hornbill	2	—	—	—	—	—	1/1
Buceros hydrocorax	Rufous Hornbill	1	3	—	—	—	—	0/4
PICIFORMES								
Psilopogon pyrolophus	Fire-tufted Barbet	2	—	—	—	1	—	0/0/1
Megalaima mystacophanos	Gaudy Barbet	1	—	—	—	—	—	0/1
Megalaima oorti	Black-browed Barbet	1	—	—	—	1	—	—
Tricholaema lacrymosum	Spotted-flanked Barbet	4	—	—	—	—	—	2/2
Tricholaema diadematum	Red-fronted Barbet	2	—	—	—	1	—	0/0/1
Lybius guifsobalito	Black-billed Barbet	4	—	—	—	—	—	1/1/2
Lybius bidentatus	Double-toothed Barbet	3	—	—	—	—	—	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
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Ramphastos vitellinus ariel	Ariel Toucan	2	—	—	—	—	—	0/0/2
Ramphastos vitellinus culinatus	Yellow-ridged Toucan	1	—	—	—	—	—	0/0/1
Ramphastos toco	Toco Toucan	2	—	—	—	—	—	1/1
Ramphastos tucanus	Red-billed Toucan	1	—	—	—	—	—	0/0/1
Ramphastos ambiguus swainsonii	Swainson's Toucan	1	—	—	—	—	—	0/0/1
Dinopium benghalense	Golden-backed Woodpecker	1	—	—	—	—	—	0/0/1
PASSERIFORMES								
Procnias nudicollis	Naked-throated Bellbird	1	—	—	—	—	—	1/0
Chiroxiphia pareola	Blue-backed Manakin	2	1	—	—	2	—	1/0
Pitta guajana	Banded Pitta	1	—	—	—	—	—	0/1
Motacilla alba	Pied Wagtail	1	—	—	—	—	—	0/0/1
Anthus spinoletta	Rock Pipit	1	—	—	—	—	—	0/0/1
Pycnonotus leucogenys	White-eared Bulbul	1	—	—	—	—	—	0/0/1
Pycnonotus cafer bengalensis	Red-vented Bulbul	—	2	—	—	—	—	0/0/2
Hypsipetes flavala	Brown-eared Bulbul	2	—	—	—	2	—	—
Chloropsis aurifrons	Golden-fronted Leafbird	—	2	—	—	—	—	1/1
Irena puella	Fairy Bluebird	3	—	—	—	—	—	2/1
Lanius vittatus	Bay-backed Shrike	—	2	—	—	1	—	0/0/1
Bombycilla cedrorum	Cedar Waxwing	2	—	—	—	—	—	0/0/2
Copsychus malabaricus	Shama	1	—	—	—	—	—	1/0
Turdus olivaceus	Olive Thrush	1	—	—	—	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 albogularis	White-throated Jay Thrush	—	4	—	—	—	—	0/0/4
Garrulax leucolophus	White Crested Laughing Thrush	2	2	—	—	—	—	0/0/4
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	4	—	—	—	—	—	2/2
Malurus cyaneus	Superb Blue Wren	—	4	—	—	1	—	1/2
Malurus splendens	Splendid Fairy Wren	3	—	—	—	—	—	2/1
Zosterops japonica	Japanese White-eye	4	—	—	—	1	—	1/0/2
Zosterops palpebrosa	Indian White-eye	1	—	—	—	1	—	—
Zosterops everetti	Everett's White-eye	—	11	—	—	2	—	0/0/9
Zosterops senegalensis	Yellow White-eye	1	—	—	—	—	—	0/0/1
Meliphaga penicillata	White-plumed Honeyeater	2	—	—	—	—	—	0/0/2
Emberiza bruniceps	Red-headed Bunting	1	—	—	—	—	—	0/0/1
Sporophila minuta	Ruddy-breasted Seedeater	2	—	—	—	—	—	1/1
Gubernatrix cristata	Green Cardinal	2	—	—	—	—	—	1/1
Paroaria coronata	Red-crested Cardinal	4	—	—	—	2	—	0/0/2
Cardinalis cardinalis	Virginian Cardinal	1	—	—	—	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
Thraupis episcopus	Blue-Grey Tanager	—	6	—	—	2	—	0/0/4
S. *Euphonia xanthogaster* (Sundervall) (Venezuela, Columbia, Ecuador)	Orange-bellied Euphonia	—	2	—	—	2	—	—
Cyanerpes cyaneus	Red-legged Honeycreeper	1	—	—	—	—	1	—
Molothrus bonariensis	Shiny Cowbird	4	—	—	—	—	—	4/0
Fringilla coelebes	Chaffinch	1	—	—	—	—	—	1/0
Serinus leucopygius	Grey Singing Finch	1	—	—	—	—	—	1/0
Serinus atrogularis	Yellow-rumped Serin	1	—	—	—	—	—	0/0/1
Serinus mozambicus	Green Singing Finch	1	—	—	—	—	—	1/0
Carduelis chloris	Greenfinch	11	—	4	—	3	—	1/1/10
Carduelis carduelis	Goldfinch	—	2	—	—	—	—	0/0/2
Acanthis flammea	Redpoll	2	—	—	—	—	—	1/1
Pinicola subhimachalus	Red-headed Finch	1	—	—	—	1	—	—
Pyrrhula pyrrhula	Bullfinch	—	1	—	—	—	—	1/0
Mandingoa nitidula schlegeli	Schlegel's Twinspot	1	—	—	—	—	—	0/0/1
Spermophaga haematina	Western Bluebill	1	—	—	—	—	—	0/0/1
Estrilda caerulescens	Lavender Finch	1	—	—	—	1	—	—
Estrilda melpoda	Orange-cheeked Waxbill	2	—	—	—	1	—	0/0/1
Estrilda troglodytes	Common Waxbill	1	—	—	—	—	—	0/0/1
Amandava amandava	Avadavat	3	—	—	—	1	—	2/0
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Amandava subflava	Golden-breasted Waxbill	1	—	—	—	—	—	1/0
Neochmia ruficauda	Starfinch	1	—	—	—	—	—	0/0/1
Poephila guttata castanoventris	Zebra Finch	7	1	—	—	—	—	3/4/1
Poephila acuticauda acuticauda	Long-tailed Grass Finch	1	—	—	—	—	1	—
Chloebia gouldiae	Gouldian Finch	2	—	—	—	—	1	0/0/1
Lonchura malabarica	Silverbill	2	—	—	—	—	—	0/0/2
Lonchura bicolor	Blue-billed Mannikin	1	—	—	—	1	—	—
Lonchura molucca atricapilla	Black-headed Mannikin	2	—	—	—	—	—	0/0/2
Lonchura punctulata	Nutmeg Finch	1	—	—	—	—	—	0/0/1
Lonchura malacca	Tri-coloured Mannikin	2	—	—	—	1	—	0/0/1
Lonchura maja	White-headed Mannikin	4	—	—	—	—	—	0/0/4
Lonchura sp. (domesticated)	Bengalese Finch	2	—	—	—	—	—	1/1
Padda oryzivora	Java Sparrow	2	—	—	—	—	—	1/1
Amadina fasciata	Cut-throat Finch	1	1	—	—	—	—	1/0/1
Petronia petronia	Rock Sparrow	2	—	—	—	—	—	1/1
Ploceus melanogaster stephanophorus	Black-billed Weaver	1	—	—	—	—	—	1/0
Ploceus velatus	Masked Weaver	2	—	2	—	1	—	1/0/2
Ploceus cucullatus	Rufous-necked Weaver	1	—	—	—	—	—	1/0
Quelea erythrops	Red-headed Weaver	1	—	—	—	—	—	0/0/1
Quelea quelea	Red-beaked Weaver	4	—	—	—	2	—	0/0/2
Euplectes progne delamerei	Delamere's Giant Whydah	1	—	—	—	—	—	1/0
Vidua paradisaea	Paradise Whydah	2	—	—	—	1	—	0/1
Aplonis panayensis strigata	Malayan Glossy Starling	2	—	—	—	—	—	0/0/2
Onychognathus salvadorii	Bristle-crowned Starling	1	—	—	—	1	—	—
Lamprotornis splendidus splendidus	Splendid Starling	1	—	—	—	1	—	—
Cinnyricinclus sharpii	Sharpe's Starling	3	—	—	—	1	—	0/0/2
Cinnyricinclus leucogaster	Amethyst Starling	1	—	—	—	—	—	1/0
Spreo superbus	Superb Glossy Starling	7	—	—	—	1	—	2/1/3
Sturnus sericeus	Silky Starling	2	—	—	—	—	—	0/0/2
Sturnus cineraceus	Grey Starling	2	—	—	—	—	—	0/0/2
Sturnus sinensis	Chinese Starling	1	—	—	—	—	—	0/1
Leucopsar rothschildi	Rothschild's Grackle	4	—	—	—	—	—	2/2
Acridotheres cristatellus cristatellus	Chinese Crested Mynah	1	—	—	—	—	—	0/0/1
Gracula religiosa intermedia	Nepal Hill Mynah	5	1	—	—	2	—	1/0/3
Struthidea cinerea	Grey Struthidea	2	—	—	—	—	—	0/1/1
Garrulus glandarius	Jay	2	1	—	—	—	—	0/0/3
Cyanopica cyana	Azure-winged Magpie	4	—	—	—	2	—	1/0/1
Dendrocitta leucogastra	Southern Tree Pie	1	—	—	—	1	—	—
Pica pica pica	Magpie	2	—	—	—	—	1	0/0/1
Pyrrhocorax graculus	Alpine Chough	5	—	—	—	1	—	0/1/3
Corvus monedula spermologus	Jackdaw	2	—	—	—	—	—	0/0/2
Corvus frugilegus	Rook	1	—	—	—	—	—	0/0/1
Corvus corone corone	Carrion Crow	4	—	—	—	1	—	0/0/3
Corvus corone cornix	Hooded Crow	2	—	—	—	—	—	0/0/2
Corvus torquatus	Collared Crow	1	—	—	—	1	—	—
Corvus corax corax	Raven	3	—	—	—	—	—	0/0/3
Corvus albicollis	White-necked Raven	2	—	—	—	—	—	0/0/2
	Total–Birds	1121	133	138	13	153	82 (7)	1144

Reptiles

TESTUDINES

Chelydra serpentina serpentina	Snapper	1	—	—	—	—	1	—
Macroclemys temminckii	Alligator-snapper	2	—	—	—	—	2	—
Staurotypus triporcatus	Three-keeled Terrapin	1	—	—	—	—	1	—
Sternotherus odoratus	Stinkpot	2	—	—	—	—	—	0/0/2
Kinosternon subrubrum	Pennsylvanian Mud Terrapin	1	—	—	—	—	—	0/0/1
Kinosternon scorpioides	Scorpion Mud Terrapin	2	—	—	—	—	—	1/0/1
Chrysemys picta picta	Eastern Painted Terrapin	2	—	—	—	1	1	—
Chrysemys scripta scripta	Yellow-bellied Terrapin	5	—	—	—	—	—	1/4
Chrysemys scripta elegans	Red-eared Terrapin	13	45 (5)	—	—	8	36	2/2/10
Chrysemys floridana floridana	Florida Terrapin	3	—	—	—	—	—	0/2/1
Ocadia sinensis	Bennett's Terrapin	1	—	—	—	—	—	1/0
Graptemys kohnii	Mississippi Map Terrapin	1	—	—	—	—	1	—
Chinemys reevesii	Reeves's Terrapin	2	—	—	—	1	—	0/1
Siebenrockiella crassicollis	Thick-necked Terrapin	1	—	—	—	—	—	0/0/1
Mauremys caspica rivulata	Western Caspian Terrapin	1	—	—	—	—	—	1/0
Mauremys caspica leprosa	Spanish Terrapin	3	2	3	—	2	—	0/0/6
Clemmys insculpta	Wood Terrapin	2	—	—	—	—	—	1/1
		1	**2**	**3**	**4**	**5**	**6**	**7**

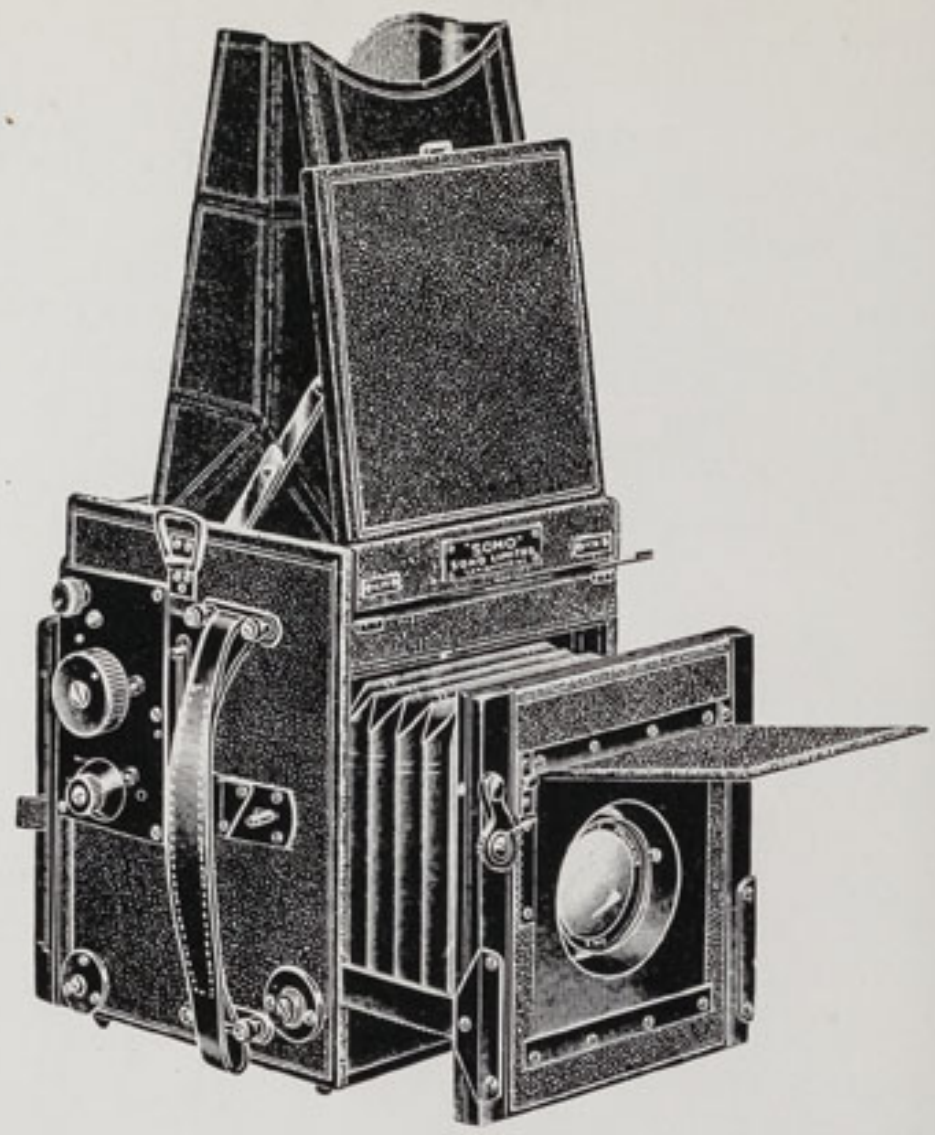
		1	2	3	4	5	6	7
Emys orbicularis	European Pond Tortoise	7	3	—	—	—	2	0/0/8
Terrapene carolina	Carolina Box Tortoise	1	—	—	—	1	—	—
Terrapene carolina triunguis	Three-toed Box Tortoise	1	1	—	—	—	—	1/1
Terrapene carolina major	Greater American Box Tortoise	1	1	—	—	—	—	1/1
Melanochelys trijuga trijuga	Terrapin	3	—	—	—	—	—	1/1/1
Melanochelys trijuga thermalis	Ceylon Black Terrapin	1	—	—	—	—	—	1/0
Geoemyda grandis	Burmese Terrapin	2	—	—	—	—	—	1/1
Cyclemys dentata	Oldham's Terrapin	1	—	—	—	—	—	0/0/1
Cuora trifasciata	Three-banded Terrapin	2	1	—	—	1	1	1/0
Cuora amboinensis	Amboina Box Tortoise	3	—	—	—	—	—	1/2
Testudo graeca	Mediterranean Spur-thighed Tortoise	3	3	—	—	2	1	0/0/3
Testudo hermanni	Hermann's Tortoise	5	—	—	—	2	1	2/0
Testudo kleinmanni	Leith's Tortoise	1	—	—	—	—	—	0/0/1
Testudo horsfieldii	Horsfield's Tortoise	—	2	—	—	—	—	1/1
Geochelone elegans	Starred Tortoise	6	—	—	—	3	—	0/0/3
Malacochersus tornieri	Pancake Tortoise	1	—	—	—	1	—	—
Geochelone sulcata	African Spurred Tortoise	2	—	—	—	—	—	1/1
Geochelone pardalis	Leopard Tortoise	1	—	—	—	1	—	—
Geochelone gigantea gigantea	Seychelles Giant Tortoise	7	—	—	—	—	—	4/2/1
Geochelone elephantopus elephantopus	South Albemarle Giant Tortoise	2	—	—	—	—	—	1/1
Geochelone elephantopus nigrita	Porter's Blackish Giant Tortoise	2	—	—	—	—	—	1/1
Geochelone carbonaria	Red-legged Tortoise	1	—	—	—	—	—	1/0
Chelonia mydas	Green Turtle	1+2*	—	—	—	—	—	0/3
Eretmochelys imbricata	Hawksbill Turtle	—	1	—	—	—	—	0/1
Caretta caretta	Loggerhead Turtle	1	—	—	—	—	—	0/1
Lepidochelys olivacea	Kemp's Ridley Turtle	—+1*	—	—	—	—	—	0/1
Pelusios niger	Black Terrapin	2	—	—	—	—	1	0/1
Pelusios sinuatus	Natal Terrapin	2	—	—	—	—	—	0/2
Pelusios subniger	Blackish Terrapin	7	—	—	—	—	1	0/1/5
Pelomedusa subrufa	Helmeted Terrapin	2	—	—	—	—	2	—
Podocnemis unifilis	Bearded Greaved Tortoise	3	—	—	—	—	3	—
Podocnemis expansa	Great Greaved Tortoise	1	1	—	—	—	—	1/1
Chelus fimbriatus	Matamata	1	—	—	—	—	—	1/0
Emydura macquarrii	Murray River Tortoise	1	—	—	—	—	1	—
Trionyx hurum	Soft-shelled Turtle	—	18	—	—	10	—	0/0/8
Trionyx cartilagineus	Phayre's Soft-shelled Turtle	1	—	—	—	—	—	0/1
Trionyx triunguis	Nile Soft-shelled Turtle	1	—	—	—	—	1	—
Trionyx spiniferus spiniferus	Spiny Soft-shelled Turtle	1	—	—	—	—	—	1/0
CROCODYLIA								
Crocodylus siamensis	Siamese Crocodile	3	—	—	—	—	3	—
Crocodylus niloticus	Nile Crocodile	2	—	—	—	—	2	—
Crocodylus porosus	Estuarine Crocodile	1	—	—	—	—	—	1/0
Crocodylus palustris	Mugger	2	—	—	—	—	—	0/2
Crocodylus moreletii	Morelet's Crocodile	1	—	—	—	—	—	1/0
Osteolaemus tetraspis tetraspis	Broad-fronted Crocodile	1	—	—	—	—	1	—
Alligator mississippiensis	American Alligator	3	—	—	—	—	—	1/2
Caiman crocodilus yacare	Paraguayan Cayman	5	1	—	—	—	1	3/1/1
SAURIA								
Hemitheconyx caudicinctus	African Fat-tailed Gecko	1	—	—	—	—	—	1/0
Hemidactylus turcicus	Turkish Gecko	1	—	—	—	1	—	—
Gehyra mutilata	Peron's House Gecko	1	—	—	—	1	—	—
Gekko gecko	Tokay Gecko	2	—	—	—	—	—	2/0
Tarentola delalandii	Delalande's Gecko	2	—	—	—	2	—	—
Phelsuma abbotti abbotti	Abbott's Day Gecko	1	—	—	—	—	1	—
Phelsuma sp.	Jewel Gecko	1	—	—	—	1	—	—
Eublepharis macularius	Leopard Ground Gecko	7	8	4	1	2	—	2/3/11
Gekko sp.	Gecko	1	—	—	—	1	—	—
Anolis equestris	Greater Cuban Anole	2	—	—	—	1	—	1/0
Anolis carolinensis	Carolina Anole	4	—	—	—	3	—	1/0
Corythophanes cristatus	Helmeted Iguanid	—	3	4	—	2	—	1/1/3
Laemanctus longipes deborrei	Casque-headed Lizard	—	2	—	—	—	—	0/0/2
Tropidurus torquatus hispidus	Taraguira Lizard	2	—	—	—	2	—	—
Anolis sp.		—	11	—	—	—	—	0/0/11
Metopoceros cornutus	Rhinoceros Iguana	1	—	—	—	—	—	1/0
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Iguana iguana	Common Iguana	2	9	—	—	7	—	0/0/4
Dipsosaurus dorsalis	Desert Iguana	5	2	—	—	1	—	2/3/1
Sauromalus obesus	Chuckwalla	4	—	—	—	1	—	2/1
Sceloporus orcutti	Granite Spiny Lizard	—	2	—	—	—	—	1/1
Sceloporus poinsetti	Crevice Spiny Lizard	—	2	—	—	—	—	1/1
Callisaurus draconoides	Zebra-tailed Iguana	—	3	—	—	2	—	1/0
Calotes nigrilabris	Black-lipped Bloodsucker	1	—	—	—	1	—	—
Physignathus cocincinus	Cochin China Water Dragon	5	—	—	—	1	—	1/3
Leiolepis belliana	Bell's Agama	4	—	—	—	4	—	—
Uromastyx acanthinurus	Bell's Dabb Lizard	2	—	—	—	1	—	1/0
Chamaeleo jacksonii	Jackson's Chameleon	—	5	—	—	4	—	1/0
Egernia cunninghami	Cunningham's Skink	1	—	—	—	—	—	0/1
Trachydosaurus rugosus	Shingle-back	2	—	—	—	—	—	0/0/2
Tiliqua gigas	New Guinea Skink	3	—	—	—	1	—	1/1
Tiliqua scincoides	Eastern Blue-tongued Skink	1	—	—	—	—	—	1/0
Mabuya quinquetaeniata	Five-lined Skink	2	—	—	—	1	—	1/0
Eumeces algeriensis	Algerian Skink	1	—	—	—	—	—	0/0/1
Chalcides ocellatus	Eyed Skink	2	—	—	—	1	—	0/0/1
Gerrhosaurus vallidus	Robust Plated-lizard	7	—	1	—	1	—	0/0/7
Lacerta sp.	Lizard	1	—	—	—	1	—	—
Lacerta viridis	Green Lizard	1	12	—	—	3	—	0/0/10
Lacerta trilineata	Balkan Green Lizard	5	—	—	—	4	1	—
Lacerta lepida	Eyed Lizard	11	11	—	—	10	1	1/0/10
Acanthodactylus erythrurus	Fringe-fingered Lizard	—	5	—	—	2	—	0/0/3
Psammodromus algirus	Algerian Sand Lizard	—	5	—	—	2	—	0/0/3
Gallotia galloti	Gallot's Lizard	1	—	—	—	1	—	—
Tupinambis nigropunctatus	Black-pointed Tegu	2	—	—	—	—	—	2/0
Ameiva sp.		—	2	—	—	—	—	0/0/2
Varanus exanthematicus	Bosc's Monitor	1	—	—	—	—	—	1/0
Varanus flavescens	Yellow Monitor	—	1	—	—	—	1	—
Heloderma suspectum	Gila Monster	3	—	—	—	—	—	2/1
Heloderma horridum	Mexican Beaded Lizard	1	—	—	—	—	—	1/0
Gerrhonotus multicarinatus	Southern Alligator Lizard	1	—	—	—	1	—	—
Sealoporus sp.	Fence Lizard	—	1	—	—	1	—	—
Calotes sp.	Lizard	—	1	—	—	—	—	0/0/1
Ophisaurus apodus	Scheltopusik	2	—	—	—	1	—	0/0/1
Anguis fragilis	Slowworm	1	—	—	—	1	—	—
Cordylus giganteus	Sungazer	3	—	—	—	1	—	1/1
Cordylus warreni breyeri	Breyer's Girdled Lizard	2	—	—	—	—	—	2/0
Cordylus vittifer	Transvaal Girdled Lizard	1	—	—	—	1	—	—
Platysaurus guttatus	Rhodesian Rock Lizard	2	—	—	—	—	—	1/1
Platysaurus guttatus minor	Lesser Rhodesian Rock Lizard	2	—	—	—	—	—	1/1
Pseudocordylus microlepidotus melanotus	Small-scaled Girdled Lizard	—	1	—	—	1	—	—
SERPENTES								
Liasis amethistinus	Amethystine Python	1	—	—	—	—	—	0/1
Morelia spilotus variegata	Carpet Python	1	—	—	—	—	—	1/0
Python reticulatus	Reticulated Python	4	3	—	—	1	3	1/2
Python molurus	Indian Rock Python	3	5	—	—	1	1	1/4/1
Python regius	Royal Python	4	8	—	—	2	3	0/2/5
Chondropython viridis	Papuan Tree Python	2	—	—	—	2	—	—
Eunectes murinus	Anaconda	1	—	—	—	—	—	0/1
Eunectes notaeus	Yellow Anaconda	1	—	—	—	—	—	1/0
Boa constrictor	Boa Constrictor	7	1	—	—	1	—	4/2/1
Eryx conicus	Russell's Sand-boa	3	—	—	—	2	—	0/0/1
Eryx jaculus	Javelin Sand-boa	1	—	—	—	1	—	—
Eryx johnii	John's Sand-boa	1	—	—	—	—	1	—
Natrix natrix	Grass Snake	—	2	—	—	1	—	0/0/1
Natrix maura	Viperine Snake	1	—	—	—	1	—	—
Rhabdophis subminiator	Red-necked Keelback	—	1	—	—	1	—	—
Thamnophis sirtalis	Common Garter Snake	—	5	—	—	—	—	0/0/5
Thamnophis sirtalis similis	Blue-striped Garter Snake	—	3	—	—	1	—	0/0/2
Thamnophis sirtalis parietalis	Red-sided Garter Snake	—	2	15	—	9	7	0/0/1
Thamnophis radix	Prairie Garter Snake	—	2	—	—	—	—	0/0/2
Boaedon fuliginosus	African House Snake	7	—	2	—	—	—	1/6/2
Lycodon laoensis	Indo-Chinese Wolf Snake	—	1	—	—	1	—	—
Elaphe guttata	Corn Snake	2	2	—	—	2	—	0/1/1
Elaphe vulpina gloydi	Eastern Fox Snake	1	—	—	—	1	—	—
Elaphe obsoleta quadrivittata	Yellow Rat Snake	—	2	—	—	1	—	0/0/1
Elaphe radiata	Eastern Copperhead Rat Snake	1	6	—	—	4	—	0/0/3
		1	**2**	**3**	**4**	**5**	**6**	**7**

Cassowary. Chicks 10 weeks' old
Whipsnade Park

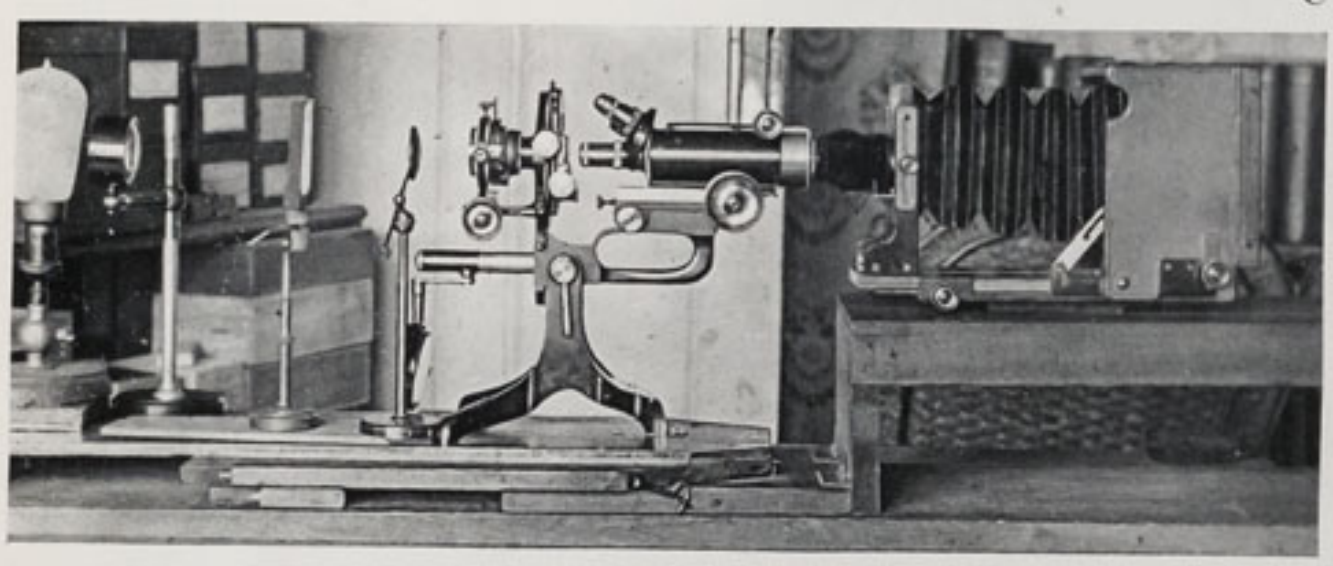
The Special Zoo Bus Service

A

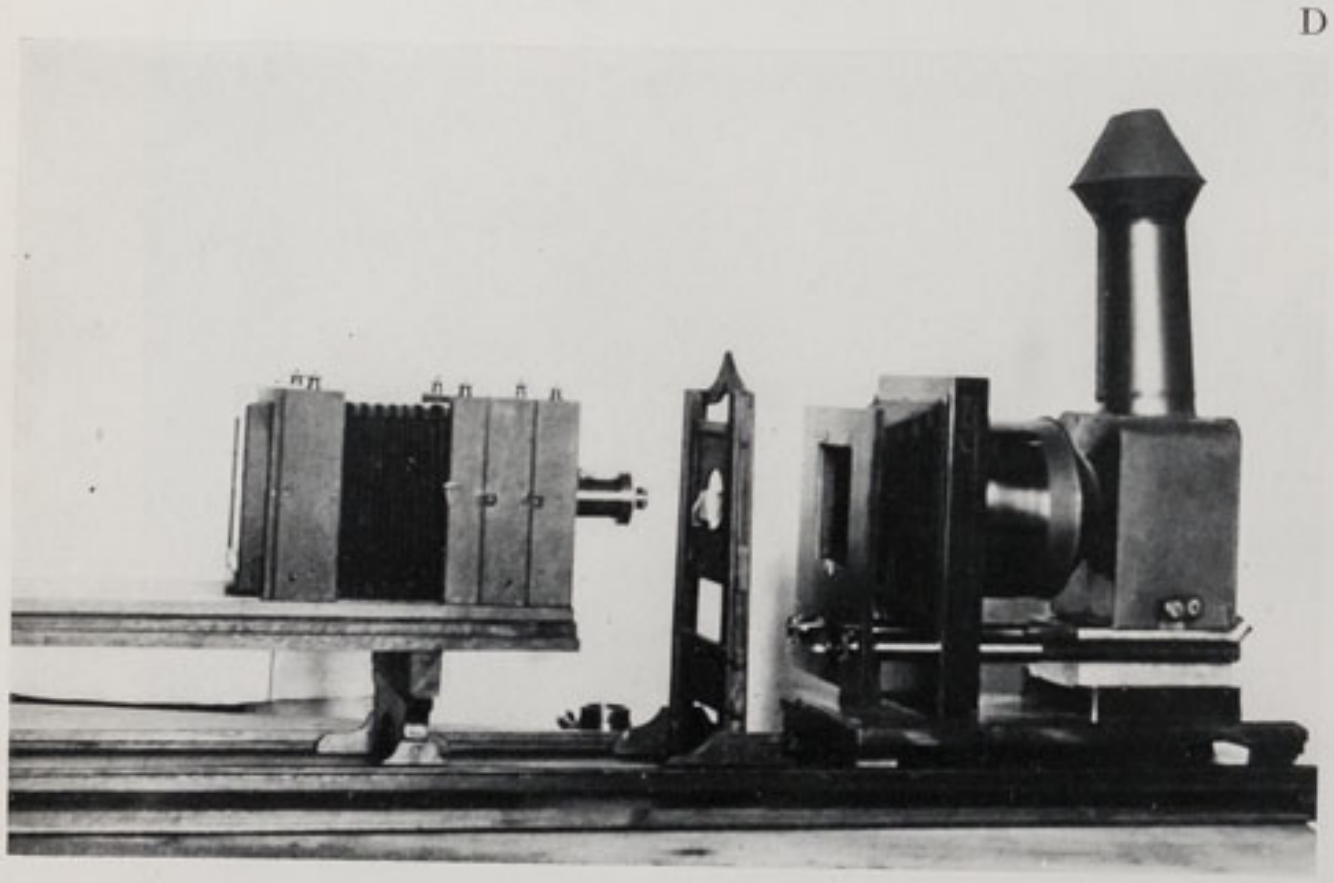


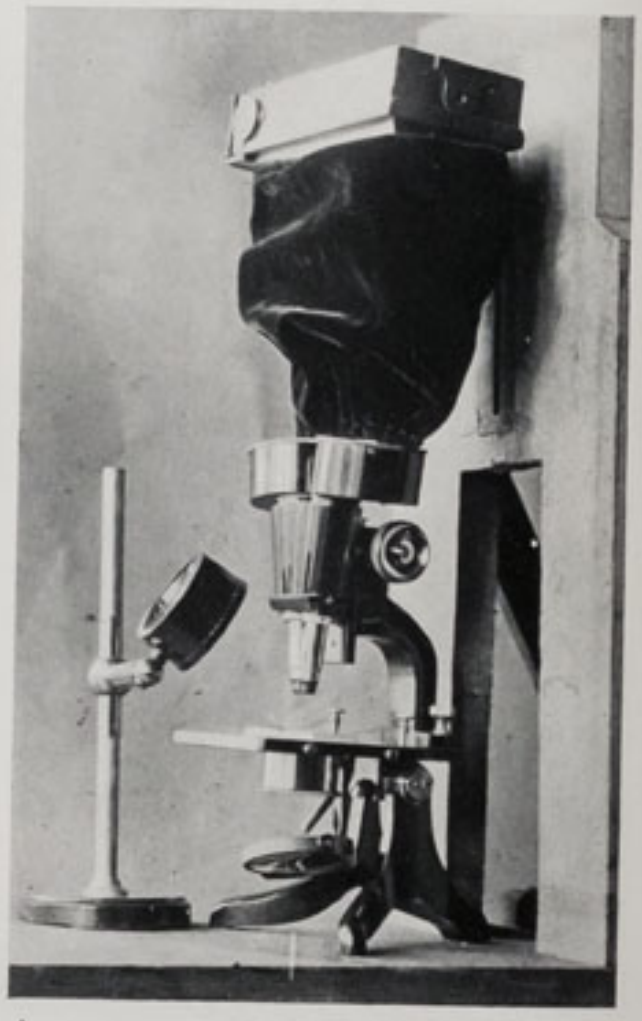
B

C



D





E

Apparatus used by Martin Duncan
(see page 12)

A. Specimen stand, using half plate camera.
B. Quarter-plate single lens reflex camera.
C. Photomicrography outfit.
D. Macro photography outfit, using the lamp house of a horizontal enlarger as a light source.
E. Home made photomicrography apparatus; a velvet sleeve fitted between microscope and camera to exclude light.

		1	2	3	4	5	6	7
Elaphe scalaris	Ladder Snake	—	2	7	—	—	—	1/1/7
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	2	—	—	—	1	—	0/0/1
Pituophis melanoleucus	Pine Snake	—	1	—	—	—	—	0/0/1
Hydrodynastes gigas	Boipevussu Snake	4	—	—	—	3	—	0/1
Rhinocheilus lecontei	Long-nosed Snake	1	1	—	—	1	—	0/0/1
Lampropeltis getulus holbrooki	Speckled King Snake	2	—	—	—	—	—	1/0/1
Lampropeltis getulus californiae	California King Snake	1	1	—	—	—	—	1/1
Malpolon monspessulanus	Montpellier Snake	5	—	—	—	—	—	0/5
Rhamphiophis oxyrhynchus rostratus	Rufous Beaked-Snake	1	—	—	—	—	1	—
Chrysopelea ornata	Ornate Tree Snake	1	2	—	—	3	—	—
Bungarus fasciatus	Banded Krait	—	2	—	—	1	1	—
Walterinnesia aegyptia	Innes' Cobra	3	—	—	—	—	—	1/2
Naja haje	Egyptian Cobra	1	1	—	—	—	—	1/1
Naja nivea	Cape Cobra	1	—	—	—	—	—	1/0
Naja melanoleuca	Black and White Cobra	1	—	—	—	—	—	1/0
Naja nigricollis	Black-necked Cobra	1	—	—	—	—	—	0/1
Naja naja	Indian Cobra	2	—	—	—	—	—	1/1
Dendroaspis angusticeps	Common Green Mamba	1	—	—	—	—	—	0/1
Dendroaspis polylepsis	Black Mamba	1	1	—	—	—	—	1/1
Vipera berus	Adder	1	1	—	—	2	—	—
Vipera xanthina palaestinae	Palestine Viper	4	—	—	—	—	—	2/2
Vipera ammodytes meridionalis	Long-nosed Viper	—	11	3	—	4	6	2/2
Vipera lebetina schweizeri	Daudin's Viper	1	—	—	—	—	—	1/0
Vipera russelli	Russell's Viper	—	3	—	—	3	—	—
Bitis arietans	Puff Adder	4	1	—	—	1	—	2/2
Bitis gabonica	Gaboon Viper	2	—	—	—	1	—	1/0
Echis carinatus	Carpet Viper	1	2	—	—	2	—	1/0
Echis coloratus	Burton's Carpet Viper	2	—	—	—	2	—	—
Agkistrodon piscivorus	Cottonmouth	4	—	—	—	2	—	2/0
Agkistrodon contortrix mokasen	Northern Copperhead	3	—	—	—	—	—	2/1
Agkistrodon hypnale	Merrem's Hump-nosed Viper	1	—	—	—	—	—	0/1
Calloselasma rhodostoma	Malayan Pit Viper	1	—	—	—	1	—	—
Trimeresurus popeorum	Pope's Pit Viper	1	6	24	4	17	2	1/1/6
Bothrops lanceolatus	Martinique Fer-de-lance	1	—	—	—	—	—	1/0
Sistrurus miliarius	Pygmy Rattlesnake	2	2	—	—	—	—	2/2
Crotalus atrox	Western Diamond-back Rattlesnake	2	1	—	—	—	—	1/2
Crotalus viridis viridis	Prairie Rattlesnake	1	—	—	—	—	1	—
	Total–Reptiles	348+3*	246 (5)	63	5	181	93	381

Amphibians

URODELA

Siren lacertina	Greater Siren	1	—	—	—	—	—	0/0/1
Necturus maculosus	Mud-puppy	1	2	—	—	2	—	0/0/1
Andrias japonicus	Giant Salamander	1	—	—	—	—	—	0/0/1
Triturus cristatus	Crested Newt	6	—	40	—	14	—	0/0/32
Triturus marmoratus	Marbled Newt	3	—	—	—	3	—	—
Triturus vulgaris	Common Smooth Newt	7	4	—	—	—	—	0/0/11
Euproctus asper	Pyrenean Brook Salamander	—	5	—	—	—	—	0/0/5
Pleurodeles waltl	Sharp-ribbed Salamander	1	3	—	—	2	—	0/0/2
Salamandra salamandra	Fire Salamander	2	5	—	—	3	—	0/0/4
Ambystoma tigrinum	Tiger Salamander	4	2	—	—	2	—	0/0/4
Ambystoma opacum	Marbled Salamander	—	5	—	—	—	—	0/0/5
Ambystoma mexicanum	Axolotl	12	2	—	—	12	—	0/0/2

ANURA

Xenopus laevis	Clawed Frog	5	5	—	—	4	—	0/0/6
Xenopus muelleri	Muller's Clawed Frog	—	2	—	—	—	—	0/0/2
Pipa pipa	Surinam Toad	—	2	—	—	—	—	0/0/2
Bombina variegata	Yellow-bellied Toad	—	7	—	—	2	—	0/0/5
Alytes obstetricans	Midwife Toad	4	—	—	—	—	—	0/0/4
Bufo calamita	Natterjack	—	9	—	—	—	—	0/0/9
Bufo bufo	Common European Toad	25	60	10	—	31	—	0/0/64
Bufo mauritanicus	Moroccan Toad	2	—	—	—	2	—	—
Bufo americanus	American Toad	2	3	—	—	1	—	0/0/4
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Bufo woodhousii fowleri	Fowler's Toad	—	6	—	—	—	—	0/0/6
Bufo marinus	Giant Toad	1	6	—	—	1	—	4/2
Bufo quercincus	Oak Toad	4	—	—	—	4	—	—
Hyla arborea	European Tree Frog	4	7	—	—	9	—	0/0/2
Hyla versicolor	Common Grey Tree Frog	—	6	—	—	—	—	0/0/6
Hyla rubra rubra	Daudin's Tree Frog	—	1	—	—	—	—	0/0/1
Hyla septentrionalis	Cuban Tree Frog	4	—	—	—	—	—	0/0/4
Rana esculenta	Edible Frog	32	16	—	—	8	20	0/0/20
Rana ridibunda	Marsh Frog	20	—	—	—	1	—	0/0/19
Rana temporaria	Common Frog	30	—	40	—	44	12	0/0/14
Rana galamensis	Galam Lake Frog	—	4	—	—	—	—	0/0/4
Pyxicephalus adspersus	African Bull Frog	1	—	—	—	—	—	1/0
Rana catesbeiana	American Bull Frog	3	2	—	—	1	—	1/3
Rana pipiens	Leopard Frog	2	—	—	—	—	—	0/0/2
Rana erythraea	Gold-lined Frog	3	5	—	—	—	—	0/0/8
Kassina senegalensis	Senegalese Striped Frog	5	1	—	—	—	—	0/0/6
Kaloula pulchra	Malayan Bull Frog	4	—	—	—	3	—	0/0/1
	Total–Amphibians	189	170	90	—	149	32	268

WHIPSNADE PARK

Mammals

MARSUPIALIA

Macropus rufogriseus	Red-necked Wallaby	179	—	204	—	23	111	6/4/239
Megaleia rufa	Red Kangaroo	—	3 (3)	—	—	1	1 (1)	1/0

PRIMATES

Galago crassicaudatus	Thick-tailed Bushbaby	1	—	—	—	1	—	—
Erythrocebus patas	Patas Monkey	1	—	—	—	—	—	1/0
Pan troglodytes	Chimpanzee	6	—	—	—	—	—	1/5

RODENTIA

Cynomys ludovicianus	Prairie Marmot	38	—	30	—	1	14 (6)	0/0/53
Tamias sibiricus	Siberian Chipmunk	1	—	—	—	1	—	—
Dolichotis patagonum	Mara	19	1	2	1	6	1	4/1/9
Dasyprocta punctata	Central American Agouti	8	—	1	—	4	2	1/1/1

CETACEA

Tursiops truncatus	Bottle-nosed Dolphin	4	2	—	—	—	2	1/3

CARNIVORA

Canis lupus	Grey Wolf	22	—	—	—	2	—	3/2/15
Lycaon pictus	Cape Hunting Dog	5	—	—	—	—	—	2/3
Tremarctos ornatus	Spectacled Bear	2	—	1	1	—	—	1/1
Ursus arctos	Brown Bear	3	—	1	—	—	—	2/2
Ursus arctos	Brown Bear (Kodiak form)	2	—	—	—	—	—	1/1
Thalarctos maritimus	Polar Bear	2	—	1	—	—	—	1/1/1
Ailurus fulgens	Red Panda	2	—	—	—	—	—	1/1
Nasua nasua	Ring-tailed Coati	10	—	4	—	1	9	1/3
Suricata suricatta	Suricate Meerkat	3	—	—	—	1	—	0/2
Felis lynx	Northern Lynx	4	—	—	—	1	—	0/3
Felis serval	Serval	2	—	—	—	—	—	1/1
Panthera leo	Lion	5	—	4	—	2	—	1/3/3
Panthera tigris	Tiger	3	—	4	—	—	5 (1)	0/2
Panthera tigris	Tiger ('Sumatran' form)	1	1	—	—	—	—	1/1
Panthera onca	Jaguar	4	—	1	1	—	2	1/1
Acinonyx jubatus	Cheetah	13	2	8	—	1	6	6/10

PINNIPEDIA

Zalophus californianus	Californian Sealion	—	2	—	—	—	2	—
Otaria byronia	Southern Sealion	2	—	—	—	—	—	1/1
Phoca vitulina	Common Seal	—	3	—	—	—	3	—

PROBOSCIDEA

Elephas maximus	Indian Elephant	1	—	—	—	—	—	0/1
Loxodonta africana	African Elephant	3	—	—	—	—	—	1/2
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
PERISSODACTYLA								
Equus przewalskii	Przewalski's Horse	15	—	7	3	—	5	2/12
Asinus hemionus	Onager (Persian form)	6	—	—	—	—	—	2/4
Hippotigris zebra	Mountain Zebra	5	—	—	—	1	—	1/3
Hippotigris burchelli	Common Zebra	8	—	1	1	1	—	2/5
Rhinoceros unicornis	Indian Rhinoceros	2	—	—	—	—	—	1/1
Diceros bicornis	Black Rhinoceros	1	2 (2)	—	—	—	1 (1)	1/1
Ceratotherium simum	White Rhinoceros	14	—	2	—	1	—	3/12
ARTIODACTYLA								
Sus scrofa	Wild Boar	3	—	—	—	—	1	1/1
Tayassu tajacu	Collared Peccary	14	—	3	—	3	2	6/6
Hippopotamus amphibius	Hippopotamus	5	—	1	—	—	2	1/2/1
Choeropsis liberiensis	Pygmy Hippopotamus	6	1	—	—	1	1	1/4
Lama glama	Llama	28	1	11	2	3	2	8/25
Lama guanicoe	Guanaco	19	—	10	2	1	8 (1)	4/13/1
Camelus bactrianus	Bactrian Camel	16	1	4	—	—	3	7/11
Camelus dromedarius	Arabian Camel	9	1	—	—	2	—	1/7
Muntiacus reevesi	Reeves's Muntjac	11	1	—	—	—	1	0/0/11
Dama dama	Fallow Deer	45	—	23	8	1	1	7/14/37
Axis axis	Axis Deer	25	—	11	2	3	—	4/8/19
Axis porcinus	Hog Deer	30	1	7	—	6	3	4/2/23
Cervus duvauceli	Barasingha	16	—	4	1	—	2	8/8/1
Cervus nippon	Sika Deer (Ryukyu × Japanese form)	10	—	5	—	9	—	3/2/1
Cervus nippon	Sika Deer (Formosan form)	30	—	11	3	4	—	5/7/22
Cervus elaphus	Red Deer	38	—	17	2	4	1	5/3/40
Elaphurus davidianus	Père David's Deer	45	—	15	5	2	7	19/24/3
Alces alces	Moose	3	—	2	—	—	—	2/3
Rangifer tarandus	Reindeer	9	—	4	1	1	—	5/6
Hydropotes inermis	Chinese Water Deer	51	—	35	—	4	22	0/0/60
Giraffa camelopardalis	Giraffe	3	1 (1)	—	—	2	—	1/1
Tragelaphus spekei	Sitatunga	17	—	6	2	3	6	2/10
Boselaphus tragocamelus	Nilgai	11	—	5	1	5	1	2/6/1
Bos grunniens	Yak	11	—	2	1	2	2 (1)	4/4
Syncerus caffer	Cape Buffalo	4	1	1	—	2	—	3/1
Bison bonasus	European Bison	14	—	—	—	1	1	2/10
Bison bison	American Bison	10	—	4	—	—	1	4/8/1
Oryx tao	Scimitar-horned Oryx	6	2 (2)	—	—	2	1 (1)	5/0
Damaliscus dorcas	Blesbok	5	—	1	—	—	—	2/4
Connochaetes taurinus	Brindled Gnu	7	—	2	—	3	—	1/4/1
Antilope cervicapra	Blackbuck	7	9 (4)	—	—	1	2	13/0
Gazella thomsoni	Thomson's Gazelle	23	—	8	—	7	1	6/8/9
Ovibos moschatus	Musk Ox	4	—	2	2	—	—	1/3
Ovis musimon	Mouflon	22	—	12	—	1	2	5/7/19
DOMESTIC								
	Ponies	16	—	2	1	2	—	9/6
	Pygmy Donkey	2	—	—	—	—	—	1/1
	Vietnamese Pot-bellied Pig	3	—	—	—	—	—	1/2
	Windsor White Goat	17	1	17	4	5	3	12/11
	Dorset Down Sheep	—	3 (3)	—	—	—	3	—
	Total–Mammals	992	39 (15)	496	44	128	243 (12)	1112

Birds

STRUTHIONIFORMES								
Struthio camelus	Ostrich	3	3	—	—	—	1	2/1/2
RHEIFORMES								
Rhea americana	Common Rhea	8	—	5	—	3	1	4/2/3
CASUARIIFORMES								
Casuarius casuarius	Australian Cassowary	2	—	2	—	1	—	1/1/1
Dromaius novaehollandiae	Emu	14	2	6	—	1	8	5/6/2
SPHENISCIFORMES								
Aptenodytes patagonica	King Penguin	9	—	2	—	—	—	2/3/6
Eudyptes crestatus	Rockhopper Penguin	6	—	—	—	—	—	0/0/6
Spheniscus humboldti	Humboldt's Penguin	40	—	19	—	6	8	10/10/25
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
CICONIIFORMES								
Ciconia ciconia	White Stork	2	—	—	—	—	—	0/0/2
Threskiornis aethiopicus	Sacred Ibis	7	—	—	—	3	—	0/0/4
Phoenicopterus ruber roseus	Greater Flamingo	11	—	—	—	4	—	0/0/7
Phoenicopterus ruber ruber	Rosy Flamingo	62	—	7	—	5	—	17/17/30
Phoenicopterus chilensis	Chilean Flamingo	48	—	10	—	1	—	10/10/37
ANSERIFORMES								
Dendrocygna eytoni	Eyton's Whistling Duck	2	—	—	—	—	2	—
Dendrocygna bicolor	Fulvous Whistling Duck	2	3	—	—	3	—	1/1
Cygnus atratus	Black Swan	14	—	—	—	—	—	4/4/6
Cygnus melanocoryphus	Black-necked Swan	3	—	—	—	—	1	1/1
Cygnus cygnus	Whooper Swan	2	—	—	—	—	—	1/1
Coscoroba coscoroba	Coscoroba Swan	2	2	—	—	—	—	2/2
Anser cygnoides	Chinese Goose	1	—	—	—	—	—	1/0
Anser anser	Greylag Goose	18	—	—	—	—	1	6/6/5
Anser indicus	Bar-headed Goose	23	—	3	—	—	2	6/6/12
Anser caerulescens caerulescens	Lesser Snow Goose	13	—	4	—	—	—	5/5/7
Anser caerulescens atlanticus	Greater Snow Goose	33	—	1	—	1	9	4/4/16
Anser canagicus	Emperor Goose	10	—	3	—	—	—	4/5/4
Branta sandvicensis	Hawaiian Goose	9	—	1	—	—	—	2/3/4
Branta canadensis	Canada Goose	16	—	15	1	3	13	7/7
Branta leucopsis	Barnacle Goose	22	—	7	3	1	2	3/3/17
Branta ruficollis	Red-breasted Goose	55	—	—	—	4	5	22/23/1
Cereopsis novaehollandiae	Cape Barren Goose	8	1	12	3	1	2	9/6
Alopochen aegyptiacus	Egyptian Goose	6	—	—	—	1	—	1/1/3
Tadorna cana	South African Shelduck	6	—	2	—	1	—	4/1/2
Tadorna variegata	New Zealand Shelduck	3	—	—	—	1	—	1/1
Tadorna tadorna	Shelduck	5	—	—	—	—	—	3/2
Plectropterus gambensis	Spur-winged Goose	1	—	—	—	—	—	1/0
Aix sponsa	Carolina Duck	14	—	1	—	3	—	6/1/5
Aix galericulata	Mandarin Duck	12	—	5	—	1	—	3/2/11
Chenonetta jubata	Maned Goose	4	—	3	—	—	—	2/2/3
Anas penelope	Wigeon	7	—	—	—	—	—	1/2/4
Anas sibilatrix	Chiloe Wigeon	13	—	4	—	—	—	3/3/11
Anas falcata	Falcated Teal	7	—	—	—	—	—	3/4
Anas streptera	Gadwall	3	—	—	—	—	—	1/2
Anas formosa	Baikal Teal	6	—	—	—	—	—	1/1/4
Anas crecca	Teal	2	—	—	—	—	—	1/1
Anas superciliosa	New Zealand Grey Duck	3	—	—	—	—	—	3/0
Anas specularioides	Crested Duck	26	—	—	—	—	—	5/6/15
Anas acuta	Pintail	4	—	—	—	—	—	2/2
Anas bahamensis	Bahama Pintail	2	—	—	—	—	—	1/1
Anas querquedula	Garganey	3	—	—	—	1	—	1/1
Anas clypeata	Shoveler	3	2	—	—	—	—	2/3
Netta rufina	Red-crested Pochard	5	—	—	—	—	—	2/2/1
Aythya ferina	Pochard	7	—	—	—	—	—	4/3
Aythya fuligula	Tufted Duck	3	—	—	—	—	—	2/1
Aythya marila	Scaup	3	—	—	—	—	—	0/3
Somateria mollissima	Eider Duck	6	—	3	—	—	—	4/5
Bucephala islandica	Barrow's Goldeneye	4	—	—	—	—	—	2/2
FALCONIFORMES								
Gyps africanus	African White-backed Vulture	1	1	—	—	—	—	1/1
Gyps rueppellii	Ruppell's Griffon Vulture	1	—	—	—	—	—	0/0/1
Gyps fulvus	Griffon Vulture	2	—	—	—	—	—	0/0/2
Torgos tracheliotus	Lappet-faced Vulture	3	—	—	—	—	—	0/0/3
Sagittarius serpentarius	Secretary Bird	6	—	—	—	—	—	2/0/4
GALLIFORMES								
Penelope purpurascens	Purple Guan	3	—	—	—	3	—	—
Meleagris gallopavo	North American Turkey	38	—	—	—	2	1	0/0/35
Francolinus erckelii	Erckel's Francolin	1	—	—	—	—	—	1/0
Lophophorus impeyanus	Impeyan Pheasant	5	—	6	—	2	—	3/2/4
Gallus gallus	Jungle Fowl	2	—	—	—	—	2	—
Gallus sonneratii	Sonnerat's Jungle Fowl	2	4	—	—	—	—	2/2/2
Lophura nycthemera	Silver Pheasant	12	—	—	—	—	—	3/4/5
Lophura imperialis	Imperial Pheasant	—	2 (2)	—	—	—	—	1/1
Crossoptilon mantchuricum	Brown Eared Pheasant	4	—	—	—	1	—	1/2
Catreus wallichi	Cheer Pheasant	4	—	5	—	—	—	1/1/7
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Syrmaticus mikado	Mikado Pheasant	1	—	—	—	—	—	1/0
Syrmaticus soemmerringi scintillans	Scintillating Copper Pheasant	1	1	—	—	—	—	1/1
Syrmaticus reevesi	Reeves's Pheasant	5	—	—	—	1	1	1/1/1
Phasianus colchicus	Common Pheasant	2	—	—	—	—	—	1/1
Chrysolophus pictus	Golden Pheasant	5	1	—	—	—	—	5/1
Chrysolophus amherstiae	Lady Amherst's Pheasant	4	—	—	—	—	—	2/2
Pavo cristatus	Common Peafowl	56	1 (1)	—	—	3	6	0/0/48
Numida meleagris	Helmeted Guineafowl	25	—	—	—	2	—	0/0/23
GRUIFORMES								
Grus grus	Common Crane	3	—	—	—	—	—	0/0/3
Grus grus lilfordi	Lilford's Crane	—	1	—	—	—	—	0/0/1
Grus monacha	Hooded Crane	1	1 (1)	—	—	—	—	2/0
Grus canadensis	Sandhill Crane	2	—	—	—	1	—	0/1
Grus japonensis	Manchurian Crane	3	—	3	—	—	—	1/1/4
Grus vipio	White-naped Crane	3	1	—	—	—	—	2/2
Grus antigone	Sarus Crane	4	—	—	—	—	—	2/2
Grus rubicunda	Brolga	2	—	—	—	—	—	1/1
Bugeranus carunculatus	Wattled Crane	4	—	—	—	—	—	2/2
Anthropoides virgo	Demoiselle Crane	9	1	—	—	1	—	1/1/7
Anthropoides paradisea	Stanley Crane	1	2	—	—	—	—	1/2
Balearica pavonina pavonina	West African Crowned Crane	11	—	—	—	4	—	0/0/7
Balearica regulorum	South African Crowned Crane	17	—	—	—	3	—	1/1/12
Choriotis kori	Kori Bustard	6	—	—	—	—	—	1/1/4
COLUMBIFORMES								
Streptopelia 'risoria'	Java Dove (White var.)	6	—	—	—	—	—	0/0/6
Geotrygon versicolor	Mountain Witch Dove	—	2 (2)	—	—	1	—	0/0/1
Goura cristata	Blue Crowned Pigeon	1	—	—	—	1	—	—
Goura victoria	Victoria Crowned Pigeon	3	—	—	—	—	1	1/1
PSITTACIFORMES								
Trichoglossus haematodus	Swainson's Lorikeet	4	—	—	—	—	—	0/0/4
Eolophus roseicapillus	Roseate Cockatoo	4	—	—	—	—	—	0/0/4
Cacatua leadbeateri	Leadbeater's Cockatoo	2	—	—	—	—	—	2/0
Cacatua sulphurea	Lesser Sulphur-crested Cockatoo	3	—	—	—	—	1	0/1/1
Cacatua galerita	Great Sulphur-crested Cockatoo	3	—	—	—	—	—	0/0/3
Cacatua moluccensis	Moluccan Cockatoo	2	—	—	—	—	—	1/1
Cacatua sanguinea	Bare-eyed Cockatoo	3	—	1	—	—	—	1/2/1
Nymphicus hollandicus	Cockatiel	12	—	—	—	3	—	2/1/6
Platycercus eximius cecilae	Golden-mantled Rosella	4	—	—	—	2	—	0/0/2
Platycercus eximius	Eastern Rosella Parrakeet	1	—	—	—	—	—	0/0/1
Psephotus haematonotus	Red-rumped Parrakeet	7	—	4	—	—	—	3/1/7
Psittacus erithacus	Grey Parrot	3	1	—	—	—	1	0/0/3
Psittacula eupatria nipalensis	Alexandrine Parakeet	1	—	—	—	—	—	1/0
Psittacula krameri manillensis	Indian Ring-necked Parakeet	8	—	3	—	1	—	2/1/7
Psittacula cyanocephala rosa	Blossom-headed Parakeet	1	—	—	—	1	—	—
Ara ararauna	Blue and Yellow Macaw	2	—	—	—	—	—	1/0/1
Ara macao	Scarlet Macaw	3	—	—	—	—	—	1/1/1
Ara chloroptera	Green-winged Macaw	5	—	1	—	—	—	2/2/2
Brotogeris versicolurus chiriri	Canary-winged Parrakeet	1	—	—	—	1	—	—
Amazona aestiva	Blue-fronted Amazon Parrot	2	—	—	—	1	—	0/0/1
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	1 (1)	—	—	1	—	0/1
Bubo capensis mackinderi	Kenya Eagle Owl	2	—	1	—	—	1	1/1
Nyctea scandiaca	Snowy Owl	2	—	—	—	—	—	2/0
Strix aluco sylvatica	Tawny Owl	2	—	—	—	—	—	1/1
CORACIIFORMES								
Dacelo novaeguineae	Kookaburra	2	—	2	—	1	—	1/1/1
PASSERIFORMES								
Serinus mozambicus	Green Singing Finch	1	—	—	—	—	—	1/0
Uraeginthus bengalus	Cordon Bleu	2	—	—	—	1	—	0/0/1
Estrilda melpoda	Orange-cheeked Waxbill	1	—	—	—	—	—	0/0/1
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Estrilda troglodytes	Common Waxbill	3	—	—	—	—	—	0/0/3
Estrilda astrild	St Helena Waxbill	1	—	—	—	—	—	1/0
Amandava subflava	Golden-breasted Waxbill	4	—	—	—	—	—	2/2
Gracula religiosa	Hill Mynah	1	—	—	—	—	—	0/0/1
Urocissa erythrorhyncha	Red-billed Blue Pie	1	—	—	—	—	—	0/0/1
	Total–Birds	959	33 (7)	140	7	82	69	974
Reptiles								
TESTUDINATA								
Chrysemys scripta elegans	Red-eared Terrapin	5	—	—	—	—	5 (5)	—
SAURIA								
Trachydosaurus rugosus	Shingle-back	1	—	—	—	1	—	—
Tiliqua gerradii	Pink-tongued Skink	1	—	—	—	—	—	0/0/1
SERPENTES								
Python regius	Royal Python	5	—	—	—	—	—	0/0/5
	Total–Reptiles	12	—	—	—	1	5 (5)	6
Summary								
Regent's Park	Mammals	1048	97 (12)	802	81	189	687 (15)	990
	Birds	1121	133	138	13	153	82 (7)	1144
	Reptiles	348 +3*	246 (5)	63	5	181	93	381
	Amphibians	189	170	90	—	149	32	268
	Total	2706 +3*	646 (17)	1093	99	672	894 (22)	2783
	Estimated number of fishes and invertebrates in the collection at 31 December 1978:							
	Fishes			2920				
	Invertebrates (excluding locusts, ants and bees)			3238				
Whipsnade Park	Mammals	992	39 (15)	496	44	128	243 (12)	1112
	Birds	959	33 (7)	140	7	82	69	974
	Reptiles	12	—	—	—	1	5 (5)	6
	Total	1963	72 (22)	636	51	211	317 (17)	2092
	Grand Total–Zoological Society of London	4669 +3*	718(39)	1729	150	883	1211(39)	4875

*Not included in 1977 record.

**Hatched from eggs acquired from elsewhere.

1 2 3 4 5 6 7

List of Donors of Animals to the Society

REGENT'S PARK

Baker, Mr R., 1 Adder
Ballington, Mr P., 1 Californian Quail
Banasz, Mrs T., 5 African Clawed Frog
Barbe, Mrs M., 1 Fischer's Lovebird
Berrisford, Mrs J. A., 2 Red-eared Terrapin
Bethnal Green Police Station, 1 Grass Snake
Bimson, Miss M., 2 Goldfinch, 1 Bullfinch
Bishop, Mr J. G., 4 Red-eared Terrapin
British Airways, 11 *Anolis* sp., 2 *Ameiva* sp.
Brunel University, 8 Steppe Lemming
Burnes, Mrs J. R., 4 Mediterranean Spur-thighed Tortoise
Chapman, Master Evan and Miss Siobhan, Stick-insects
Charter, Mr R., 1 Maroon Clown, 1 Sea-horse, 4 Anemone, 2 Fanworm, 1 Dancing Shrimp
Cooper, Mr J., 1 Spotted Eagle Owl
Costley, Mr J., 1 Tawny Eagle
Couzens, Mrs C., 60 Oak Eggar caterpillar
Cowdy, Mrs S., 5 Fat-tailed Dormouse
Crowcroft, Dr G., 2 White-toothed Shrew
Clacton Dolphinarium, 5 Sole, 10 Pollack, 4 Rockling, 19 Pout, 3 Coal Fish, 2 Whiting, 16 Plaice, 2 Brill, 2 Dogfish, 2 Grey Mullet, 7 Cod, 2 Dab, 4 Skate, 7 Dahlia Anemone, 3 Sea-Urchin, 8 Prawn, 4 Edible Crab, 8 Starfish, 20 Hermit Crab, 5 Swimming Crab, 2 Spider Crab, 3 Scorpion Fish, collection of invertebrates
Cruickshank, Miss E., 3 Zebra-tailed Sand Lizard, 1 Pygmy Iguana
de Courcey-Wheeler, Mr S., 1 Zebra Finch
Dickson, Mrs, 1 Siberian Chipmunk
Drew, Mr C., 2 Red-vented Bulbul
Dudley, Mr G. J., 2 Red-eared Terrapin
Eden, Mr J., 1 European Pond Tortoise
Ellis, Mr S., 3 Galam Lake Frog, 2 Desert Scorpion
England, Mr M. D., 1 Blue-backed Manakin
Fabian, Mr D., 2 Sea Bream, 1 Comber, 2 Convict Cichlid, 7 Beadlet Anemone, 1 Sea Cucumber, 3 Crab
Ferguson, Mr A. R., 1 Hawksbill Turtle
French, Mr H. J., 1 Arawana, 1 Silver Dollar Fish, 1 Fire Eel, 1 Bumblebee Catfish, 1 Pink Pimelodella, 2 Striped Acanthodoras
Gale, Mr J., 1 Razorbill
Gardener, Mr J., 2 Tinfoil Barb
Gloucester, TRH The Duke and Duchess of, 2 Indian Ring-necked Parrakeet
Goodhill, Mrs C., 1 Three-banded Terrapin
Greenwood, Mr B., 1 Muller's Blue-backed Parrot
Hadley, Mr, 1 Long-nosed Snake
Hall, Mr G., 2 *Tilapia mossambica*
Hammond, Mr, 1 Snapper Turtle
Harding, Mr N. L. A., 1 Galam Lake Frog
Harmer, Mr D. R., 2 Green Lizard, 2 American Fence Lizard
Harwich, Mrs, 1 Common Iguana
Holmes, Mr W. M., 1 Snakehead
Horne, Mr J., 1 Panther Fish, 2 Batfish, 1 Sharksucker, 1 Dragon Fish
Howman, Mr K., 1 Golden Pheasant, 1 Silver Pheasant
Jones, Mr G., 1 Desert Iguana
Keer, Mrs, 1 Indian Rock Python
Kennedy, Miss L. A., 1 Salamander
King, Mr D. J., 2 Elegant Terrapin, 2 Red-eared Terrapin
Knight, Mr A. P., 1 Royal Python
Landen, Miss P., 2 Alexandrine Parrakeet
Latow, Miss M., 1 Yellow-backed Lory
leCroix, Mr Neil, 7 European Salamander
Lomax, Mr R., 1 African Grey Parrot
Marlar, Miss M., 2 Giant Toad, 1 Gold-lined Frog, 1 Common African Toad, 1 Clawed Frog, 1 American Toad
Marshall, Mrs M., Culture of stick-insect (*Baculum* sp.)
Moore, Mr S., 3 European Scorpion
Mortimer, Mr M., 1 Paraguay Cayman
Newmark, Messrs J. & G., James, Mr A., Fitzsimmons, Mr C., Ottie, Mr A. J., 1 Jumping Spider, 6 Orb-web Spider, 2 Bird-eating Spider, 1 Jungle Scorpion, 1 Whip Scorpion, 16 Praying Mantis, 8 Butterfly larva, 2 Long-horn Grasshopper, 1 Short-horn Grasshopper, 1 Long-headed Grasshopper, 3 Millipede, 1 Water Scorpion, 1 Ant Lion larva, Culture of bugs, 1 Hermit Crab, 2 Malayan Bull Frog, 1 Hose's Frog, 8 Frog sp., 1 Indo-Chinese Wolf Snake
Osborne, Dr, 2 Black Widow Spider
Parker, Mr L. C., 1 Giant Gourami
Pennycook, Master Steven, 600 Stick-insect
Poole-Robb, Master A., 9 Stick-insect
Rainey, Mrs G., 2 Black Moor, 1 Shubunkin, 1 Fantail
Rankilor, Miss D., 1 Mediterranean Spur-thighed Tortoise
Reed, Mr D. V., 1 Hawk-eyed Moth caterpillar, 1 Tussock Moth caterpillar
Reynolds, Mr C. D., 1 Freshwater Eel
Rotterdam Royal Zoological Society, 1 Dusky Lory
Royal Parks, The, 3 Shelduck, 4 Pintail, 8 Caroline Duck, 2 Shoveler
RSPCA, 1 African Field Cricket, 1 Rose Beetle, 13 Giant African Land Snail, 2 Red-sided Garter Snake, 2 Horsfield's Tortoise, 18 Soft-shelled Turtle, 3 Royal Python, 1 Common Boa Constrictor, 5 Garter Snake, 4 Red-eared Terrapin, 1 *Calotes* sp., 3 Japanese Quail, 1 African Grey Parrot
Selman, Miss P. E., 2 Diamond Dove
Skirten, Mr R., 1 Indian Ring-necked Parrakeet
Slattery, Mrs J. S., 2 Red-eared Terrapin
Sloanes, Mr A. W., 1 Indian Rock Python
Smith, Mrs M., 3 Everett's White-eye
Smith, Mr P., 2 Great Horned Owl
Steel, the late Mr N., 1 Nicobar Pigeon
Stevens, Mr C. R., 1 Spanish Terrapin, 3 Red-eared Terrapin
Stevens, Miss E., 3 Brimstone Moth
Stewart, Mr N., 1 Rosy-faced Lovebird
Stockwell College of Education, Bromley, Kent, 1 Monitor Lizard, 1 Spanish Terrapin, 2 Black Axolotl, 1 European Pond Tortoise
Taylor, Mr M., 4 Silver Shark, 1 Brown Tang
Thomas, Mr L., 1 Eastern Rosella Parrakeet
Toole, Mr B., 1 Red-bellied Piranha
Turnbull, Mr & Mrs T. S., 1 Nepal Hill Mynah
Watkins, Mrs N., 1 Red-eared Terrapin
Webster, Mr G., 11 Eyed Lizard, 10 Green Lizard
West, Mr & Mrs J., 2 Orange-bellied Senegal Parrot
Whimster, Dr, 4 Leopard Gecko
Whittington, Miss T., Stick-insects
Wilson, Mr A., 1 Indian Rock Python
Wishart, Mrs S., 1 Common Iguana
Whopples, Mr G. V., 1 Red-legged Tarantula
Wildfowl Trust, The, 6 Blue-Grey Tanager
Wright, Mr J., 2 Garter Snake
Young, Mr & Mrs J. D., 1 Gannet, 1 Guillemot

Animal Sanctuary, Apsley Guise,
1 Reeves's Muntjac
Bearman, Mrs J., 10 Spotted European
Salamander
Davies, Mr R., 2 Tortoise
Duke, Mr J. R., 1 Grey Parrot
Gentle, Mrs I., 1 Tortoise
Hoffman, Mrs, 1 South Down Lamb
Twycross Zoo Park, 1 Mara

Regulations

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

REGULATION 2
The proposal form shall be substantially as in Form B. The Council will consider the following to be qualifications which might determine whether a candidate has made, or is making, a contribution to the advancement of zoology:

A. The possession of an Honours or higher degree of a recognized University, or an equivalent qualification in
   i. natural science, of which a major portion has been taken in zoological science, or
   ii. veterinary science.

OR

B. The possession of a degree of a recognized University, or equivalent qualification, taken at least partly in zoology or a specialized field relating to zoology, combined with a professional post in zoological work (including a teaching post in biology to at least the Advanced Level of the General Certificate of Education).

OR

C. An original contribution to zoological knowledge, of a standard judged adequate by the Council, published either in book form or in a recognized scientific journal.

Regulations previously numbered 6–12 are now numbered 6–11 and are as follows:

REGULATION 6
Entrance Fees and subscriptions
The Entrance Fee shall be remitted in the following circumstances:

i. If the wife or husband of an Ordinary Fellow, or the widow or widower of a recently deceased Ordinary Fellow, is elected an Ordinary Fellow.
ii. If an Ordinary Fellow, having resigned his Fellowship, is subsequently re-elected.
iii. If the wife or husband of an Associate, or the widow or widower of a recently deceased Associate, is elected an Associate.
iv. If an Associate, having resigned his Associateship, is subsequently re-elected an Associate.
v. If an Associate, of at least 7 years standing, is elected an Ordinary Fellow.
vi. If an Associate is undertaking full-time education, certified by the Head of the Institution at which he is a pupil or student.

REGULATION 7
£5 out of the annual subscription of £15 shall be remitted in the case of Ordinary Fellows resident within the British Isles but outside a radius of 50 miles from Charing Cross.

REGULATION 8
£4 out of the annual subscription of £18 shall be remitted in the case of a Scientific Fellow who does not wish to receive the *Journal of Zoology*.

REGULATION 9
£3 out of the annual subscription of £10 shall be remitted in the case of Associates resident within the British Isles but outside a radius of 50 miles from Charing Cross.

REGULATION 10
When an Ordinary Fellow or an Associate is elected on or after 1st October in any year, his subscription for that year shall be remitted.

REGULATION 11
When a Scientific Fellow is elected on or after 1st October in any year, his subscription for that year shall, unless he wishes to receive the *Journal of Zoology*, be remitted.

Regulations previously numbered 13 to 18 are now re-numbered 12 to 17 and amended as follows:

REGULATION 12
Overseas List

i. An Ordinary Fellow who is resident outside the British Isles at the time of his election shall be registered on the Overseas List, in which case £10 out of the annual subscription of £15 shall be remitted.
ii. An Ordinary Fellow who takes up residence outside the British Isles after election or intends at any time to reside outside the British Isles for a period of more than twelve months shall be transferred to the Overseas List. During his residence abroad, £10 out of the annual subscription of £15 shall be remitted, except in respect of the year in which he leaves the British Isles.
iii. A Scientific Fellow who is resident outside the British Isles at the time of his election shall be registered on the Overseas List. If he does not wish to receive the *Journal of Zoology*, £13 out of the annual subscription of £18 shall be remitted, except in respect of the year in which he leaves the British Isles.
iv. A Scientific Fellow who takes up residence outside the British Isles after election or intends at any time to reside outside the British Isles for a period of more than twelve months shall be transferred to the Overseas List. If he does not wish to receive the *Journal of Zoology* during his residence abroad, £13 out of the annual subscription of £18 shall be remitted, except in respect of the year in which he leaves the British Isles.
v. An Associate who is resident outside the British Isles at the time of his election shall be registered on the Overseas List, in which case £5 out of the annual subscription of £10 shall be remitted.
vi. An Associate who takes up residence outside the British Isles after election or intends at any time to reside outside the British Isles for a period of more than twelve months shall be transferred to the Overseas List. During his residence abroad £5 out of the annual subscription of £10 shall be remitted, except in respect of the year in which he leaves the British Isles.
vii. Any Fellow or Associate registered on the Overseas List who resides in the British Isles for a continuous period of more than six months shall in that calendar year become liable for the full subscription applicable to Fellows or Associates in the same category resident in the British Isles; except that when the period does not fall within one calendar year the Fellow or Associate shall be liable to the full subscription for the second year only.

REGULATION 13
Life Fellows
The following Life Composition Fees shall be payable by any Fellow who wishes to compound his future subscriptions:

Age Group	18–29	30–39	40–49	50–59	60 years and over
	£330	£300	£265	£225	£100

provided that any Fellow who has reached the age of sixty-five and has at least twenty-five years membership may compound his future subscription by making a single payment of £40 subject, if he is a Scientific Fellow, to relinquishing the privilege of receiving the *Journal of Zoology* without charge.

REGULATION 17
An Ordinary Fellow and a Scientific Fellow may on any one day introduce two guests (two children under 16 counting as one guest) without charge, and upon the same conditions as the public are admitted, to the Zoological Gardens, Regent's Park, to Whipsnade Park and to any enclosure within either for which an entrance fee is charged to the public.

Regulation previously numbered 19 is deleted and thus previous Regulation 20 becomes 18:

REGULATION 18
An Associate may on any one day introduce one guest (two children under 16 counting as one guest) without charge and upon the same conditions as the public are admitted, to the Zoological Gardens, Regent's Park and to Whipsnade Park.

All subsequent Regulations are renumbered and now end at Regulation 33.
Several of these Regulations are amended as follows:

REGULATION 20
Use of the Members' Restaurant, Regent's Park
Fellows and Associates may, when visiting the Gardens, use and introduce guests to, the Members' Restaurant and Enclosure during the hours when the Gardens are open to the public. The number of guests is not limited, but each guest must have been admitted to the Gardens either as a guest without charge under Regulation 17 or 18 or on submission of guest tickets purchased at the special concessionary rate, or on payment of the normal public admission charge.

REGULATION 21
Wife or Husband of a Fellow
The wife or husband of a Fellow may, in his or her absence, exercise those privileges which are granted by Regulations 14 to 17, 19 and 20.

REGULATION 24
Honorary Fellows
Honorary Fellows and Corresponding Members shall be entitled to all the privileges granted to Ordinary Fellows by Regulations 14 to 22.

REGULATION 25
Publication (*Byelaw 55*)
A copy of each part of the *Journal of Zoology* shall be issued to Scientific Fellows who make application to receive them for their own personal use, save to those who have compounded their subscription by the single payment of £40 under the terms of Regulation 13.

REGULATION 27
A copy of each part of the *Journal of Zoology* shall be issued, without charge, to an Honorary Fellow, but not to a Corresponding Member, who desires to receive them.

Application Form A is amended by the substitution of 18 years for 21 years.
Application Form B is amended.
Application Form C is amended by the substitution of 18 years for 21 years and a statement added that applicants under age 18 require a reference.

APPENDIX 7

Donations to The Zoological Record Fund

	£
American Museum of Natural History	258.30
American Society of Ichthyologists and Herpetologists	367.50
British Museum (Natural History)	1,450.00
Conchological Society of Great Britain and Ireland	2.00
Entomological Society of Alberta	11.38
Malacological Society of London	2.10
Michigan, University of	24.86
Royal Entomological Society	12.50
Society for the Study of Amphibians and Reptiles	49.66
	£2,178.30

Meetings during 1979

Scientific Meetings at 5.00 pm

Tuesday, 13th February
Tuesday, 13th March
Tuesday, 10th April
Tuesday, 8th May
Tuesday, 12th June
Tuesday, 9th October
Tuesday, 13th November
Tuesday, 11th December

Symposia

Thursday and Friday, 31st May and 1st June: 'Perspectives in primate biology' (to mark the 75th birthday of the President, Professor Lord Zuckerman),
(Thursday and Friday, 22nd and 23rd November):
'Insectivore biology'.

Scientific Activities–INCOME AND EXPENDITURE FOR THE YEAR ENDED 31st DECEMBER 1978

	INSTITUTE OF ZOOLOGY				OTHER SCIENTIFIC AND EDUCATIONAL ACTIVITIES							
	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 1977
EXPENDITURE	£	£	£	£	£	£	£	£	£	£	£	£
Salaries	64,837	74,781	202,351	341,969	36,776	22,836	11,481	12,250	156,366	13,222	594,900	544,461
Paper and printing	—	—	—	—	3,314	—	30,752	14,909	77,093	—	126,068	71,065
Other direct materials and services	14,355	16,782	63,547	94,684	—	21,091	—	1,451	83,524	2,932	203,682	184,341
Equipment	1,000	14,453	5,079	20,532	—	—	—	—	—	—	20,532	17,234
Fuel, light and other overheads	—	15,386	33,542	48,928	6,646	—	1,855	—	22,597	—	80,026	59,159
	80,192	121,402	304,519	506,113	46,736	43,927	44,088	28,610	339,580	16,154	1,025,208	876,260
INCOME												
Fees received	2,496	—	—	2,496	—	—	—	—	—	—	2,496	2,818
Scientific Fund: Investment Income	—	26,776	—	26,776	—	—	—	—	—	—	26,776	24,532
Grants: specific research projects	—	31,734	151,495	183,229	—	—	—	—	—	—	183,229	180,865
Wolfson Foundation grant	—	—	39,000	39,000	—	—	—	—	—	—	39,000	39,000
A.B.R.C. Contribution	11,850	18,000	45,150	75,000	—	—	—	—	—	—	75,000	
Donations	1,000	—	1,644	2,644	—	—	—	—	—	—	2,644	1,808
Education visits and club fees	—	—	—	—	37,797	—	—	—	—	—	37,797	32,684
Sale of publications	—	—	—	—	—	—	63,902	17,065	221,084	—	302,051	370,011
	15,346	76,510	237,289	329,145	37,797	—	63,902	17,065	221,084	—	668,993	651,718
	—	—	—	—	—	—	(19,814)*	—	(118,496)†	—	98,682	(46,863)
EXPENDITURE MET BY SOCIETY	64,846	44,892	67,230	176,968	8,939	43,927	—	11,545	—	16,154	257,533	271,405
	80,192	121,402	304,519	506,113	46,736	43,927	44,088	28,610	339,580	16,154	1,025,208	876,260

Notes:

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

† Deficit transferred to Publication Funds

Balance Sheet at 31st December 1978

1977				
£	£		£	£
	225,313	Sundry creditors and receipts in advance		318,632
	91	Heer Bequest		91
	6,632	Fantham Bequest (note 1)		8,837
	13,714	Nuffield Laboratories Equipment Fund (note 2)		—
	317,781	Scientific Fund (note 2)		360,559
	29,388	Publications Funds (note 3)		—
	19,669	Composition Fund		19,928
	1,556	Staff Benevolent Fund (note 4)		1,829
		Reserves		
264,670		General Reserve (note 6)	419,870	
242,604		Major Repairs and Renewals Fund (note 7)	397,820	
100,000		Pensions Contributions Reserve	100,000	
42,000		Depreciation of Investments Reserve	—	
649,274				917,690
—		Income and Expenditure Account		33,410
£1,263,418				£1,660,976

For the notes which form part of these accounts see page 52.

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 1978, 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
22nd February, 1979

1977				
£	£		£	£
123,524		Freehold Property at cost, less sales	113,213	
123,524		Less General Purposes Account (Depreciation Reserve) (note 5)	113,213	
———	—		———	—
		Stocks (note 8)		
1,000		Scientific publications (nominal valuation)	1,000	
23,917		Guides, books, etc.	15,233	
50,766		Catering Departments – provisions, etc.	42,867	
———	75,683		———	59,100
	179,726	Sundry debtors and payments in advance		196,609
	808,691	Investments and deposits at cost (market value £1,010,770)		894,105
	45,739	Bank Balances—Current and Deposit Accounts		379,654
	8,300	Cash in hand		8,320
	145,279	Rebuilding Account (note 9)		34,081
		Publications Funds (note 3)		89,107
	———			———
	£1,263,418			£1,660,976

BUXTON
Treasurer

Income and Expenditure Account for the year ended 31st December 1978

1977		INCOME		
£	£		£	£
49,046		Members' subscriptions and entrance fees	51,181	
8,533		*Less* transferred to publications	9,580	
———	40,513		———	41,601
		Interest and dividends		
28,133		General (after allocation to Funds)	58,061	
8,735		Net income from De Arroyave Fund (note 10)	8,744	
57		Income from Davis Fund (note 11)	57	
———	36,925		———	66,862
		Scientific (see page 47 for detailed income)		
249,023		Institute of Zoology – total income	329,145	
32,684		Education scheme and Young Zoologists' Club	37,797	
50,363		Journal, Transactions and Symposia	63,902	
24,068		International Zoo Yearbook	17,065	
295,580		Zoological Record and Nomenclator	221,084	
———	651,718		———	668,993
	—	Publications Funds – Transfer of excess of Expenditure over receipts to the Fund		118,496
		Regent's Park		
1,721,758		Admission of visitors to Gardens	1,941,698	
74,991		Admission of visitors to Aquarium	85,030	
158,375		Catering and retail services – net receipts (note 12)	222,008	
3,142		Animals	2,391	
26,070		All other receipts	26,949	
———	1,984,336		———	2,278,076
		Whipsnade Park		
348,376		Admission of visitors to Park	356,886	
44,352		Admission of cars to Park	59,960	
11,956		Car parks – parking fees	14,071	
13,145		Catering and retail services – net receipts (note 12)	19,470	
16,840		Animals	58,711	
6,525		All other receipts	6,579	
———	441,194		———	515,677
	£3,154,686			£3,689,705

1977		EXPENDITURE			
£	£		£	£	£
	184,779	General administration			233,924
	70,000	Allotment to Major Repairs and Renewals Fund (note 7)			150,000
	12,527	Interest on overdraft			3,535
		Pensions			
6,301		Payments to pensioners		8,182	
77,868		Contributions to Trustees of Pension Fund		99,146	
———	84,169			———	107,328
		Scientific (see page 47 for detailed expenditure)			
451,321		Institute of Zoology – total expenditure		506,113	
43,376		Education scheme and Young Zoologists' Club		46,736	
43,349		Library		43,927	
36,713		Journal, Transactions and Symposia		44,088	
24,632		International Zoo Yearbook		28,610	
262,367		Zoological Record and Nomenclator		339,580	
14,502		Other expenditure		16,154	
———	876,260			———	1,025,208
	33,213	Publications Funds – transfer of excess of receipts over expenditure to the Fund			—
		Regent's Park			
		Zoological Gardens			
15,613		Rates and insurance	21,623		
558,229		Salaries	614,775		
142,762		Provisions	141,511		
199,601		Fuel, light, water, transport	192,812		
50,168		Miscellaneous	58,496		
			———	1,029,217	
		Works			
190,612		General maintenance		195,892	
—		Heating main replacement		134,193	
43,038		Gardening		46,094	
22,448		Advertising		31,202	
8,889		Purchase of animals		14,565	
———	1,231,360			———	1,451,163
		Whipsnade Park			
		Zoological Park			
11,842		Rates and insurance	13,101		
228,784		Salaries	245,331		
93,387		Provisions	94,948		
44,408		Fuel, light, water, transport	60,067		
24,953		Miscellaneous	27,708		
			———	441,155	
72,499		Works		76,905	
20,725		Farm, gardens and forestry		21,981	
23,827		Advertising		14,314	
4,229		Purchase of animals		15,782	
———	524,654			———	570,137
	60,000	Transfer to Rebuilding Account Deficit (note 9)			60,000
		Appropriations to meet future liabilities and contingencies			
25,000		Transfer to Major Repairs and Renewals Fund (note 7)		—	
27,888		Transfer to General Reserve (note 6)		55,000	
———	52,888			———	55,000
		Balance			
	24,836	Surplus for the year			33,410
	£3,154,686				£3,689,705

Notes on the Accounts

31st December 1978

1. FANTHAM BEQUEST

	£	£
Balance at 1st January		6,632
Investment income		199
Profit on sale of investments		2,006
Balance at 31st December		£8,837

2. SCIENTIFIC FUND

Balances at 1st January:		
Scientific Fund	317,781	
Nuffield Laboratories Equipment Fund	13,714	
		331,495
Donations		29,530
Profit on sale of investments		6,915
Equipment:		
Allocation of investment income		686
Less expenditure		(8,067)
Balance at 31st December		£360,559

3. PUBLICATIONS FUNDS: ZOOLOGICAL RECORD AND NEAVE LLOYD

Balances at 1st January:		
Zoological Record Fund	36,472	
Neave Lloyd Fund	7,083 *Dr*	
		29,389
Sales and donations		221,084
		250,473
Less: Publication and distribution costs		339,580
Balances at 31st December:		
Zoological Record Fund	75,115 *Dr*	
Neave Lloyd Fund	13,992 *Dr*	
		£89,107 *Dr*

No allowance has been made for future costs estimated at £70,000 chargeable to advance sales received.

4. STAFF BENEVOLENT FUND

Balance at 1st January	1,188	
G. J. Ashby Memorial Fund	368	
		1,556
Allocation of investment income		105
Loan repayments		416
		2,077
Less: Grants		248
Balance at 31st December	1,413	
G. J. Ashby Memorial Fund	416	
		£1,829

5. GENERAL PURPOSES ACCOUNT

Balance at 1st January	123,524
To General Reserve	10,311
Balance at 31st December	£113,213

6. GENERAL RESERVE

Balance at 1st January	264,670
Fees of Deceased Compounders	420
Profit on sale of investments	47,469
From: General Purposes Account	10,311
Investments Depreciation Reserve	42,000
Income and Expenditure Account	55,000
Balance at 31st December	£419,870

7. MAJOR REPAIRS AND RENEWALS FUND

Balance at 1st January	242,604
Allocation of investment income	12,130
From Income and Expenditure Account	150,000
Less: Expenditure	(6,914)
Balance at 31st December	£397,820

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		145,279 *Dr*
New Works		33,101
		178,380 *Dr*
Less:		
Donations and Grants	84,299	
From Income and Expenditure Account	60,000	
		144,299
Balance at 31st December		£34,081 *Dr*

10. DE ARROYAVE FUND

The Capital of the Fund is held by the Official Custodian for Charities. The Income from the Fund was £8,789.

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	36,859	83,715	120,574
Whipsnade Park	2,400	15,295	17,695
	£39,259	£99,010	£138,269

Cover illustrations *Above:* Scenes in the Zoo 1897. *Below:* The old Camel House