THE ZOOLOGICAL SOCIETY OF LONDON

Annual Report 1981

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

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

A new Charter was granted to the Society in 1963.

The Society's Gardens in Regent's Park – now known all over the world as the London Zoo – were opened in 1828. A hundred years later the Society acquired and, in 1931 opened, Whipsnade Park, an area of some 500 acres of farm and downland where the rural setting forms a splendid background for animals that are able to roam in large paddocks. Whipsnade Park and the London Zoo are complementary and together house one of the finest and most comprehensive collections of wild animals in the world.

The Society was formed as a scientific society and this remains its prime purpose. Throughout its existence members of its staff, as well as many eminent zoologists and other visiting scientists, have studied material derived from the Collection and have made important contributions to our knowledge of taxonomy, comparative anatomy and physiology, human and veterinary medicine, pathology, ecology and animal behaviour. 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 155 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. From Volume 115, the *Record* will be published in conjunction with BIOSIS (BioSciences Information Service/Biological Abstracts, Philadelphia, USA).

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

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

Report of the Council

The Council has pleasure in presenting its 153rd Annual Report to the Annual General Meeting of the Society to be held on 12th May 1982 at 4.00 pm in the Society's Meeting Room at Regent's Park.

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PATRON: HER MAJESTY THE QUEEN

COUNCIL 1981–1982

President: Professor Lord Zuckerman, OM, KCB, MD, DSc, FIBiol, FRS
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The Hon. Sir Ronald Waterhouse, *Vice-President*
Sir Richard Way, KCB, CBE, *Vice-President*
W. L. Whitehouse, RD, MB, FRCS, FRCOG, 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
1978 Professor José Carvalho
Museu Nacional,
Quinta da Boa Vista
Rio de Janeiro, Brazil 20940
1957 Professor Robert Courrier
L'Institut de France (Académie des Sciences),
23 Quai de Conti, Paris 6, France
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
1978 Sir Charles Fleming
Balivean, 42 Wadestown Road, Wellington, New Zealand
1978 Professor Ghilarov
Member of the USSR Academy of Sciences,
Institute of Evolutionary Morphology & Ecology of Animals, Moscow 117071, Leninskij Prospekt 33, USSR
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
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

Introduction by the President

In the Council's Report for 1980 I explained the circumstances which had made it necessary for the Society to appeal to the Government and to the Greater London Council for financial help to enable us to discharge the responsibilities laid upon us by our Royal Charter. As has already been announced, the Government has responded sympathetically to our appeal. However, I think it is important to remind Fellows of the difficulties which we face.

For more than 150 years the Society has succeeded in maintaining a zoological collection which, soon after it was established in Regent's Park, had become the national zoo. In the fifty years since 1931, we have also built up and maintained its sister institution at Whipsnade Park. We did all this without any annual subvention from public funds of the kind provided to related institutions such as the British Museum (Natural History) and the Royal Botanic Gardens at Kew, or as is given by the Arts Council to various opera companies, theatres, orchestras and galleries. In other countries national zoos and, indeed, many civic zoos, are supported either in whole or in part out of public funds. We, however, have operated as an educational charity that depends on the revenue collected at the gates to meet the cost of animal food, the wages and salaries of our staff, and the maintenance of the Zoo's public amenities and buildings. Until the start of the Second World War, gate income was even sufficient to provide most of the money that was needed for building although, as is well known, our rebuilding programme over the past twenty-five years has been financed mainly by funds provided by private benefactors, at the same time as grants from major British and American foundations have paid for the establishment of laboratories and other research facilities. The only help that we have had over the years from public funds were two capital grants from the Exchequer, the first in 1964 and the second in 1970, together amounting to £1,850,000, and one of £100,000 in 1964 from the then London County Council. It is worth recording that when the Government of the day informed Parliament that it proposed making a second grant to the Society, it stated that it 'had in mind that the Zoo has become, in fact, if not in form, a national institution.'

During 1977 and 1978 we had a surplus on operating account of about half-a-million pounds. As a charity, any surpluses which accrue can only be used to build up reserves to provide working capital; to meet future contingencies, and in support of our activities. In 1979 the most serious down-turn in our history began and, in spite of a 10 per cent increase in revenue, we ended up with a deficit of £130,000. In 1980 a further increase of 12 per cent in revenue was insufficient to prevent the deficit on our operating account rising to £550,000. In 1981 revenue actually fell by 5 per cent while our operating deficit increased catastrophically to £1,037,000.

The seriousness of these changes in our financial fortunes is dramatically displayed by the comparative figures for five year periods over the last 20 years.

	Accumulated Surplus or Deficit (deficit figures in brackets)		*Average Annual Attendances*	
Years	*Actual*	*At 1981 Values*	*Regent's Park*	*Whipsnade*
	£	£		
1962–66	99,000	520,000	1,872,843	646,508
1967–71*	(38,000)*	(142,000)*	1,933,340	544,546
1972–76	198,000	472,000	1,898,045	534,577
1977–81	(1,172,000)	(1,034,000)	1,433,337	401,634

*The deficit in this five-year period is explained by the fact that we were using part of the increased revenues for each of the years concerned to support our rebuilding programme.

Costs go on rising, and visitors, as we anticipated last year might be the case, are being deterred from coming by the increases we have had to make in our gate charges in an attempt to meet our outlays. On top of all this, the weather, for the better part of 1981, was appalling. We fully recognize that we are not the only sufferers, either from the down-turn in the economic state of the country and the consequent decline in overall consumer expenditure, or from the bad weather. Other public attractions for which the consumer pays have also come off badly, some even worse than we did. Severe fluctuations in attendances, and therefore of income, affect all exhibitions, but the Society's problem in coping with this situation is unique. The main part of the assets which it might be thought could be used as security to cover bank loans are the buildings which we ourselves have erected in Regent's Park. While they have a value of tens of millions of pounds, they could not be used for this purpose because the Crown is the ground landlord of the thirty-six acres of Regent's Park we look after. In effect, all our buildings represent a gift from the Society to the nation.

In spite, however, of the sharp down-turn in attendances and revenue over the past three years, there is no reason to suppose that the Regent's Park and Whipsnade zoos have ceased to be a draw. The Council is supported in this view by more than one market survey carried out during the past ten or more years. In 1981 a sample survey of 263 households in the South-East—admittedly a small number—showed that, in one in four of the households, at least one member had visited the Zoo in the previous three years. In another survey of a thousand households in Britain as a whole, the figure was one in seven. The same survey indicated that parents still consider that taking their children to the Zoo is an essential part of their education. The number of visitors to Whipsnade, after a fall in the early '70s, declined only slightly in the last five years. On its Fiftieth Anniversary day in 1981, nearly 30,000 people, the second highest total ever, visited Whipsnade to take advantage of the 1931 prices that were charged that day, despite heavy rain for much of the time.

There is little or no foundation for the view that is sometimes expressed that TV programmes about animals make people less keen to see exotic animals in the flesh. Such programmes have been on the air for over twenty years, long before the recent

sharp decline in our attendances. On this point David Attenborough, the most distinguished presenter of wildlife programmes, had this to say:

> ' It is essential that human beings should remain in touch with the reality of the natural world. You may say that with films and television and photographs people can appreciate what an elephant is like, but I don't think you can from print, or a television set; you have to see one, you have to appreciate the immensity of the beast, the smell that it makes, the noise that it makes, and that town dwellers can do in zoos. '
> (*The Zoo. A portrait of an Institution.* BBC - TV)

In short, while we raised our entrance charges to levels at which, assuming no decline in attendances, we had estimated that our rising costs would be matched, it would seem that we may have now priced ourselves out of the market. As I reminded Fellows last year, the major component of our costs is made up of salaries and wages, where we necessarily abide by public-service wage settlements.

Apart from our representations to the Government and GLC, we have continued to seek economies additional to those which we had achieved in 1980 when we made an agreement with BIOSIS, an American scientific publishing corporation, to take over financial and managerial control of the *Zoological Record*, with the editorial responsibility remaining with the Society. This will remove from our shoulders a major financial burden. Wherever it could be done without prejudice to the care of our animals, we have continued to delay filling posts when they became vacant. Recently we transferred the management of our catering services to Grandmet Catering Services Limited, a move which promises to increase our catering revenues substantially.

But the likelihood that the Society can continue to be responsible for the running of a major national institution now depends on the help that can be provided by public funds. Unfortunately, but not unexpectedly, the Greater London Council, while indicating that it might be able to help 'at a later stage', decided that, because of prevailing restrictions on its expenditure, 'it would be difficult to justify any financial commitment to an institution which is primarily of national rather than local significance'.

For its part, the Government, as I have already said, responded to our appeal and arranged for a review of the Society's finances, and of the adequacy of our accounting records. Following this, on the 18th February 1982, the Secretary of State for the Environment informed Parliament that:

> 'The Zoological Society of London has indicated to the Government that it is in financial difficulties, and has sought assistance.
>
> 'The Government have considered this request sympathetically, having in mind that the Zoo has an international reputation, that it is a major London amenity and also an important tourist attraction. The Government, after a close scrutiny of the Society's financial situation, have therefore agreed to make a grant to the Society of an amount sufficient to keep it in funds, having regard to available bank overdraft facilities, for a short period, during which a study will be conducted with the utmost urgency into whether the Society can be made self-supporting in the longer term. The possibility of any further Government involvement at the end of the period will be for consideration in the light of the findings of the study and of the prospects of the Society becoming self-supporting. The form of the study, to be jointly sponsored and financed by the Government and the Society, is under urgent consideration, and I shall make a further announcement shortly.
>
> 'The grant is not expected to exceed £1 million and can be met from savings in the Department's existing provision. Pending parliamentary approval of a Supplementary Estimate for this, an advance will be made from the Contingencies Fund, since funds are required immediately.'

The inquiry into the Society's long-term prospects referred to in this statement is now under way.

In conclusion, and on behalf of the Society, I should like to thank the Secretary of State and his officials, as well as our Bankers, for the sympathetic consideration they have given, and are still giving to our affairs. I feel sure that the optimism I have in our future will not prove to be misplaced.

Zuckerman

President

Review of the Year

Their Royal Highnesses the Prince and Princess of Wales

Messages of congratulation and best wishes were sent by the President on behalf of the Council, Fellows and Staff of the Society to their Royal Highnesses the Prince and Princess of Wales on the announcement of their engagement in February and on the occasion of their marriage on 29 July, 1981.

Annual General Meeting

The Annual General Meeting was held on 19 May, with the President, Professor Lord Zuckerman, in the chair.

In accordance with Article 12 of the Charter, the Secretary Dr E. D. Barlow (appointed in June 1980 to fill the casual vacancy created by the resignation of Dr R. H. Hedley), retired from office. Similarly, Dr R. H. Hedley (appointed an Ordinary Member of Council to fill the casual vacancy created by Dr Barlow's appointment as Secretary) retired together with the following Fellows who retired as Ordinary Members of Council: Sir Denis Barnes and The Duke of Wellington (Ordinary Fellows); Professor E. J. W. Barrington, Sir Michael Perrin and Professor K. Simkiss (Scientific Fellows).

Dr E. D. Barlow was elected Secretary and the following Fellows were elected Members of Council: William H. McAlpine and Charles J. Perrin (Ordinary Fellows); Professor B. Boycott, Professor W. S. Bullough, Dr R. H. Hedley and Mr W. L. Whitehouse (Scientific Fellows).

The President presented the following awards for contributions to zoology:

THE PRINCE PHILIP PRIZE (awarded for an account of practical work involving some aspect of living animals, by a pupil under 19 years of age of a school in the United Kingdom) to *James Burton*, King's College, Taunton, for his essay 'Observation and investigation into the social behaviour of the spiny spider crab—*Maia squinado*'. Since Mr Burton was absent abroad, the Prize was received on his behalf by a member of the staff of King's College, Taunton.

THE STAMFORD RAFFLES AWARD (awarded to an amateur zoologist for distinguished contributions to zoology) to *Dr E. H. Eason*, for distinguished work on the taxonomy of centipedes.

THE THOMAS HENRY HUXLEY AWARD (for original work submitted as a doctoral thesis) to *Dr A. J. Woakes*, University of Birmingham, for his thesis 'Biotelemetry and its application to the study of avian physiology'.

THE SCIENTIFIC MEDAL (awarded to persons under 40 years of age for distinguished work in zoology) to *Dr J. M. Elliott*, Freshwater Biological Association, Ambleside, for his work on the ecology of benthic stream invertebrates and fishes.

THE ZOOLOGICAL SOCIETY OF LONDON FRINK MEDAL FOR BRITISH ZOOLOGISTS (awarded to zoologists for significant and original contributions to zoology in its wider implications) to *Professor W. H. Thorpe, FRS.*

Membership

At the end of the year, there were 2,518 Fellows and 4,275 Associates. On 14 January more than a hundred attended a meeting in the Society's Meeting Rooms, and elected a Steering Committee under the Chairmanship of Lady Daphne Straight, with Mr W. Whitehouse as Secretary, to consider schemes to raise funds for the Society.

During 1981, the Committee, with the help of other Members, organized a number of social functions. Two important schemes have been planned to interest visitors to the Zoo. The first is to launch an Animal Sponsorship and Adoption Scheme, fashioned on the lines of similar schemes run by members' organizations in some American zoos, and designed to contribute towards the cost of the upkeep of animals in the Society's Zoos. The second will be an exhibition to illustrate the theme of the interdependence of man and animals in North America, based on animals from that region in the Collections at Regent's Park.

Obituary

The Council records with deep regret the death of Viscount Chaplin, a member of Council from 1934 to 1938 and from 1950 to 1951, and Secretary of the Society from 1952 to 1955. Viscount Chaplin died on 18 December, after a long illness. The Council also regrets to report the death of Dr G. W. Corner of the American Philosophical Society, an Honorary Fellow since 1955.

Finance

In the Introduction to this Report, the President has described the outcome of the representations made by the Society to the Government and to the Greater London Council about its financial problems. Discussions with the Government continued throughout 1981, a year that brought no respite from the depressing economic conditions which had put the Society into deficit in 1979 and 1980. As the general economic situation deteriorated so did the Society's fortunes.

The number of visitors to Regent's Park dropped by 21% over the year, a serious and entirely unforeseen rate of decline, which was nevertheless in line with the depressed performance of many other leisure and consumer activities in Britain in 1981. The number of visitors to Whipsnade fell by only 2%; the publicity and special events of its Fiftieth Anniversary celebrations no doubt helped to keep up attendances. For the two Zoos together the drop was 16%.

While the main reason for the decline in the number of visitors to Regent's Park and the resulting serious shortfall in income was undoubtedly the deterioration in the general economic situation, and the associated fall in consumer expenditure, the weather also made an unusually adverse contribution. The spring of 1980 was mild and pleasant. That of 1981 was one of the worst on record, with a particularly bad Easter; May, June and July were all poor months, and it was only in August that we enjoyed anything like good summer weather. The unexpectedly early severe winter weather removed any possibility of a boost in attendances over the long Christmas holiday period.

The forecast of income from admission charges in 1981 was based on the belief that attendances would be no worse

than those for the very poor year of 1980, and that they might even be better if public expectations of an improvement in the economy were borne out. Entrance prices were raised in both Zoos in April to cover increased wages and salaries and to allow for the effects of inflation on other items of expenditure, such as fuel and animal food. In the event, because of the reduced attendances, and despite the increased prices, income from admission charges was far below estimate. As a result of a variety of stringent economy measures, operating expenditure, at £5,142,000, was also kept well below estimate. It was only 7% more than that for 1980, which was much less than the inflation rate for the year. Overall there was an operational deficit of £1,152,000, which included a transfer of funds to the Repairs and Renewals Fund.

Grants, Gifts and Donations

The President was informed that Her Majesty the Queen, the Society's Patron, had graciously agreed to increase her annual donation to the Society from 1982. The Society is grateful for this encouragement to its work.

Grants totalling £305,772 were received to support the work of the Institute of Zoology. This amount includes a second contribution of £50,000 from the Wolfson Foundation following that made in 1980.

The British Library made the second of three annual grants of £4,000 towards the cost of repairing and rebinding some of the rare and valuable books held in the Society's Library.

Among the individual gifts received were the following legacies: £13,501 from the estate of Mr C. D. Erbes, to be used for the development of new methods of presenting information about animals; £1,000 from the estate of Mrs F. B. Gaffeney and £6,371 from the estate of Ethel Tomkinson. An anonymous donation of £300 was received and many other gifts have been made, some towards the costs of feeding particular animals and others for the general purposes of the Society.

The Joint Air Reconnaissance Intelligence Centre of RAF Brampton continues its support of the collection of lynxes which it adopted last year. Plants for use at Regent's Park have again been supplied by the Royal Botanic Gardens at Kew and gifts of plants have also been received from Chessington Zoo and from Mr J. Berman and Mr J. Calderwood.

All these generous and helpful contributions towards the work of the Society are much appreciated by the Council.

The London Zoo

Visitors during the year: 1,053,000

General

Mr Neil McFarlane, Junior Minister at the Department of the Environment, visited Regent's Park on 23 September, touring the Institute of Zoology as well as part of the Zoo.

The Hon R. Premadasa, Prime Minister of Sri Lanka, made a private visit on 18 July. Other welcome visitors from overseas were a party of Japanese World Wildlife Fund supporters, who also went to Whipsnade, and a delegation of Algerian Government officials who were in Britain under the auspices of the British Council to make arrangements for Zoo staff training and general co-operation with the Zoological Society of London.

The connection between the London Zoo and A. A. Milne's immortal 'Winnie the Pooh', named after a well-known Zoo bear of the 1920s, was commemorated on 23 September when a bronze bear cub and plaque by Lorne McKean were unveiled near the Mappin Terraces by Mr Christopher Milne. The sculpture was the gift of the Trustees of Pooh Properties.

When admission prices to the Zoo were increased in April, the charge for the Aquarium was removed, thus making entry free for the first time since its opening in 1924.

The Zoo Licensing Act 1981, passed on 27 July, brings all zoos in Britain under legal control for the first time. Licences are issued subject to inspection by teams made up of inspectors appointed both by the Secretary of State for the Environment and by the appropriate local authorities.

The London and Whipsnade Zoos were inspected in 1981 under the Rules of the British Zoo Federation, an organization which has ensured high standards in its member zoos since its foundation in 1967. When the new Zoo Licensing Act comes into force, future zoo inspections will be carried out under its provisions.

Buildings, Services and Grounds

In view of the difficult financial situation during 1981, building work was restricted to maintenance necessary to ensure the safe and efficient operation of amenities and services. A limited amount of reconstruction of existing facilities to improve exhibits was also undertaken.

Following the recommendations made in 1980 by the Society's electrical and mechanical consultants, a programme for improving the maintenance of these services and for the renovation of the old electrical systems in the Aquarium, Insect House and Parrot House was drawn up; work started in the Aquarium. A thorough overhaul of various parts of the Zoo's heating system was also started. This included the installation of new circulating pumps for the two main boilers. Unfortunately, delivery of the new pumps was delayed by manufacturing problems, and this prevented proper operation of the centralized heating system in the autumn.

Parts of the concrete structure of the Mappin Terraces, including the Aquarium, were repaired. There was also a large programme of repairs to asphalt surfaces, on roofs, such as that of the Reptile House, and floors, as in the Clore Pavilion.

The Society's Meeting Rooms were given their first major refurbishment after more than 15 years' continuous use. The upholstery of the seats was repaired and the carpeting renewed.

Changes to animal exhibits included the replacement of the flat concrete bases of the Gibbons Enclosure and Clock Tower Aviary (previously Cockatoo Aviary) by grassed and landscaped surfaces; waterproofing and redecoration of the main crocodile pool in the Reptile House, and the installation of special barriers around part of the Giant Panda enclosure to provide quarantine conditions for the male, 'Chia-Chia', after his return from Washington.

A portable building incorporating wash-rooms and lavatories for grounds staff was installed in the Old Prosectorium Yard to replace scattered and out of date facilities.

In accordance with a recommendation of the 1980 Education Review Group, responsibility for the provision of zoological information for the public was transferred to the Education Department at the beginning of 1981. The progress made by the Department in this respect is reported later in this Report.

The ornamental flower-bed in front of the Birds of Prey Aviaries was planted with the White Lion logo used for Whipsnade's Fiftieth Anniversary.

More diseased elms along the Zoo's boundary on the Outer Circle of Regent's Park were cut down. A plan for tree surgery and new planting in 1982 was approved by the Gardens and Parks Committee.

The Collection

MAMMAL SECTION

Giant Pandas were much in the news during the year. In March the Society's male 'Chia-Chia' was sent to the National Zoo in Washington in the hope, unsuccessful as it proved, that he would mate with their female. The female came into heat unusually early, and the two animals, when introduced to one another, fought for over an hour without mating and were then separated lest the female should be seriously injured. 'Chia-Chia' was returned to Regent's Park in June, and, after the statutory six months' quarantine, was reintroduced to the female 'Ching-Ching' without difficulty.

'Ching-Ching' recovered more quickly than was expected from the serious illness she had suffered in 1980, and unexpectedly came into heat in April, during 'Chia-Chia's' absence. Since her mate 'Chia-Chia' was away, she was inseminated artificially with stored semen taken from him before he was sent to Washington. Subsequent events are reported in the section of this report dealing with Research.

As in 1980, a female Indian Elephant was sent to Rotterdam, where there are prospects of her breeding. With the experience gained last year, crating and loading 'Anna' was accomplished smoothly and quickly, and she settled in well in Rotterdam.

The adult female Gorilla 'Lomie' was sent to Howletts Zoo Park in Kent to have her third baby, and is proving a perfect mother. Apparently the company of several other adult Gorillas makes her more protective and attentive towards her baby than when she was in Regent's Park.

After it had finished its year's quarantine, one of the two male Okapi which came from Rotterdam in 1979 was sent to Bristol Zoo, as planned, and a female received in its place. This animal, 'Bilota', and the young male 'Papyrus', which

remained at Regent's Park, have settled down well together and both are thriving.

As usual, and as listed in Appendix 4, there was a large number of births, of which some deserve particular mention. Two calves were born to the Greater Kudu herd, and two offspring to a pair of Ruffed Lemurs. In both cases these were second-generation young of animals which were themselves born at Regent's Park. The pair of Oriental Small-clawed Otters reared one young, the first Otter to be reared at Regent's Park in this Century. A Pudu was born and reared by the only female in Britain of this delicate and threatened species. A Bighorn Sheep, newly imported from Antwerp, gave birth to a lamb while in quarantine, so helping to increase the group more quickly than expected. The big breeding groups of Indian Fruit Bats, Wild Boar, Blackbuck, Barbary Sheep, Mouflon, Zebra, Pigtail Monkeys, Sugar Gliders, Marmosets and Tamarins, produced their usual annual quota of young. Other notable births included three White-faced Saki Monkeys, two Beavers, four Large Tree Shrews, three Scimitar-horned Oryx, a Waterbuck, a Mandrill, and three Timor Deer. Four important species produced young which did not survive: Polar Bear, Aardvark, Gaur and Pygmy Hippopotamus; the latter two were mothers producing their first offspring, and past experience suggests that first-born animals are less likely to survive than are later offspring.

A number of species which have not been in the Regent's Park Collection for many years were acquired, including Sloth Bears, Colobus Monkey, Rock Cavy, Elephant Shrew, Pygmy Hedgehog Tenrec, Woodchuck, and Roan Antelope. Two captive-bred pairs of the highly endangered Golden Lion Tamarins were obtained. With several other species, particularly primates, we reorganized groupings by exchanges with other zoos in order to improve breeding.

For many years rides for the public on Camels and by Llama cart and Pony cart had been suspended on Sundays. This has now been changed to cater for the largest possible number of visitors.

Bird Section

The numbers of species and individuals that were bred were somewhat greater than in the previous year. The increase would certainly have been higher but for a breakdown in an incubator at a critical period. This caused the death of a number of developing embryos, including, unfortunately, some birds of prey. Species successfully incubated and reared artificially included Black-footed Penguins, Sacred Ibis, Grey-headed Gulls, Grey-headed Gallinules, many ducks, pheasants and quail. The latter were the progeny of a small collection of quail kindly deposited by the Quail Group of the World Pheasant Association.

Birds successfully reared by their parents included Night Herons, Abdim's Storks, Jerdon's Imperial Pigeon, and many owls—three Snowy Owls, two Great Eagle Owls, four Abyssinian Spotted Eagle Owls, one Spotted Eagle Owl, one Tawny Owl, and after many problems of incompatibility, three Boobook Owls. There was also a welcome increase in successful breeding in the parrot collection, and particularly pleasing was the rearing of the rarely bred Ruppell's Parrot and Dusky Lory.

All the young Chilean Flamingos that were bred were lost, almost certainly because of predation by Herring Gulls. These gulls now nest in the vicinity of the Zoo, and some have developed the habit of killing and eating young birds, including our susceptible flamingo chicks. This happened despite a close watch during daylight hours; it is a problem which is likely to recur, and will be difficult to solve.

An extremely useful exchange for two Spotted Eagle Owls, two of the closely related Abyssinian Spotted Eagle Owls, and a Burrowing Owl, was made with East Berlin Zoo. We received two Long-legged Buzzards, two Rusty Barred Owls, two Tengmalm's Owls, and a male Egyptian Vulture to make a pair with our recently widowed bird. Mr K. Denham generously donated to the Society part of his collection, including Great Green Leafbirds, Black-throated Laughing Thrushes, Chestnut-capped Laughing Thrush, Silver-beaked Tanager, Bourke's Parrakeets, Red-bellied Conures, and a number of Hanging Parrots.

Two Eastern White Pelicans which had been causing embarrassment by eating live birds in St James's Park were presented to the Collection by the Department of the Environment. They are now part of our colony of pelicans amongst whom they do not have the opportunity to exercise their unpleasant feeding habits.

Other interesting species brought into the Collection included Least Seedsnipe, Black-bellied Seedcrackers, Gold-billed Ground Doves, African Thrushes and, appropriately in 1981, Princess of Wales' Parrakeets.

A male Fraser's Eagle Owl was sent to Wassenaar Zoo in Holland in exchange for a female, which has now joined our single male. Boobook Owls bred here were exchanged for other captive bred Boobooks, so that we now have two potential breeding pairs.

The old Cockatoo Aviary, now called the Clock Tower Aviary, was landscaped and renovated and now contains birds of the Australasian region.

Blood was taken from a number of birds for chromosome patterning analysis by the Genetics Department of the Institute of Zoology. This method of sexing is proving to be invaluable and a great help in managing the collection.

In the last annual report mention was made of 'Cocky', a Sulphur-crested Cockatoo which has lived in the Zoo longer than any other bird, having arrived here in 1925. It has now been established, via members of the family who gave 'Cocky' to the Zoo, that he had been with the family since the beginning of the century, and is therefore at least 80 years old. Though 'Cocky' is now definitely showing signs of age, he still talks, loves company, and is reasonably active.

Reptile House

Arrivals during the year included one Yellow Rat Snake, three Sinaloan Milk Snakes, three Boipevassu Snakes, two Northern Pine Snakes, three Gaboon Vipers and one Cochin China Water Dragon; all were additions to breeding groups.

Reptiles bred during the year included eight Indian Cobras, six Western Diamond-back Rattlesnakes, three Montpellier Snakes, 16 Boipevassu Snakes, eight Speckled King Snakes, seven Black Rat Snakes, 14 African House Snakes, one Boa Constrictor, three Australian Tree Skinks, 10 Leopard Geckos and five Ladder Snakes.

The techniques used in the breeding programme include controlled lighting and temperature in the cages of a number

Whipsnade Park

of species and the hibernation of other species in a ventilated refrigerator.

Periodically during incubation the eggs are weighed and measurements taken. Next year it is hoped to incubate at different temperatures the eggs of certain species where the sex of the individual is apparently influenced by high or low temperatures.

After the International Herpetological Congress at Oxford University, a number of foreign herpetologists visited the Reptile House and arrangements have been made for us to acquire for breeding purposes some reptiles from Australia and the United States of America.

Four Many-banded Kraits have been deposited by University College, London. Reptile House staff will be obtaining venom from the Kraits, which is required by the University.

The Reptile House staff are successfully breeding Waxmoth as an additional item to reptile diets.

During the year the large crocodile pool has been renovated and work has continued on repairs to the Reptile House roof.

Aquarium

Work on several marine tanks has been completed, and these now contain a selection of Mediterranean fish, the first kept at Regent's Park for some years. The new arrivals include Butterfly Blennies, Peacock Wrasse, Cardinal Fish, Two-banded Bream, Cleaner Wrasse, Long-snouted Wrasse, Moray Eels, Sole and Scorpionfish.

Other arrivals during the year included three Florida Garfish from the John G. Shedd Aquarium in Chicago, Pangasius Catfish, Reedfish, Remora, Pantherfish, Lungfish, Sucking Catfish, Trigger Fish, Pipefish and Shrimpfish.

Insect House

Animals added to the Collection included a Dwarf-clawed Scorpion, Chinese Mantis, Giant Land Snails, and Chafer Beetles and larvae. On the whole, the Insect House is more than self-sustaining, and it supplied insects to various schools, scout groups, and university departments both in Britain and overseas. Bird-eating Spiders, European Black Widow Spiders, Praying Mantises and Arboreal Cockroaches were among the species bred.

About a quarter of a million locusts and large numbers of blowflies, houseflies and mealworms were produced as food for mammals, birds and reptiles in the Collection at Regent's Park.

Visitors during the year: 392,000
Cars brought into the park: 41,000

Fiftieth Anniversary Celebrations

His Royal Highness The Prince Philip, Duke of Edinburgh, visited Whipsnade on 18 May to launch the programme of events celebrating the Fiftieth Anniversary of the Opening of the Park. He was received by the President and Council, whose guests also included the Lord Lieutenant and High Sheriff of Bedfordshire and representatives of Government, Local Authorities, other local interests, British zoos and conservation bodies. His Royal Highness opened a conservation exhibition and later toured the Park.

On Saturday, 23 May 1981, exactly 50 years to the day after Whipsnade first opened to the pubic, visitors were invited in at the equivalent of the 1931 prices of 1/– for Adults or 6d for Children. Despite appalling weather for most of the day, which turned the Car Park and neighbouring by-roads into quagmires, very nearly 30,000 visitors arrived, a figure reached only once before in Whipsnade's history. The rain did not prevent people enjoying the extra attractions such as the conservation exhibition and tours by vintage buses. Nearly every member of Whipsnade's staff and several from Regent's Park were there to help in making the day a memorable one.

There were more 'special' days later in the summer; for very young children, with Mr Johnny Morris as the host on 29 May; for under-privileged and handicapped children on 6 June, when Mr Rod Hull and 'Emu' joined in the fun; and for members of the Young Zoologists Club and the World Wildlife Fund's Panda Club on various days in June and July. On 22 August a Family Day Out was organized in co-operation with the Dunstable branch of the Round Table; sadly, as so often happened during the summer of 1981, the success of this day was marred by bad weather.

Whipsnade and its achievements over 50 years were well reported in Press, Radio and TV. 'Whipsnade, Breeding for Survival', a book by Elspeth Huxley, published in April, pays tribute to Whipsnade's role as a model establishment for the conservation and breeding of exotic animals. In June, the Society's Symposium 'Advances in the Medical Care of Non-domestic Animals' was held to mark the Fiftieth Anniversary and to recognize the amount of experience and knowledge gained at Whipsnade in the care of wild animals.

The White Lion on the slopes of the Downs, Whipsnade's symbol, was incorporated in the logo used for all the activities of the Anniversary Year. The Lion itself was given a new whiteness with the generous help of Blue Circle Industries, which provided a cement product, and of men from HMS Daedalus, the RN Station at Lee-on-Solent, who spent a week spreading it. Lighting up the outline of the Lion at night was made possible through the generous gift of equipment from Haden International Ltd.

Like its even more famous parent, the Zoological Society of London, Whipsnade has become an institution of world renown. As the world's first 'Open' Zoo, with animals kept in relatively large areas and in more natural conditions than had hitherto been the case, Whipsnade became the model for other new zoos set up to complement or to replace the traditional city zoos, and, in more recent years, the inspir-

ation for the many new country zoos which have come to be known more popularly as 'wildlife parks'.

Whipsnade's reputation is based on its success in breeding many species, particularly those rare and endangered, to the point of self-sufficiency. In the process it has acquired unrivalled experience in the management of captive animals and has also provided a source of supply of zoo-bred animals to other zoos in Britain and elsewhere in the world, thus reducing the demand from wild stocks. It has made a unique contribution to wildlife conservation.

General

As has already been noted, Whipsnade once again survived a year of economic depression and desperate weather with the resilience shown in the last two equally difficult years.

No major building works were carried out during the year, and all available resources were devoted to improvements and renovations connected with the Anniversary celebrations or to normal maintenance and security work. The Cloisters Cafeteria and Home Farm building were redecorated and renovated where necessary. The security of the cash office was improved in accordance with recommendations from The Prudential Corporation Limited, the Society's insurers; the parapet over the pedestrian tunnel from the Zoo to the Car Park, partially demolished by a car, was repaired; work on the new public barrier around the Chimpanzee enclosure was finished; a new section of water main was laid and a recording meter installed at a strategic point to check on possible leaks in the water reticulation system.

More information about the geographical grouping of animals in the Park was provided during the year, when new 'regional' signs were put up to cover animals from India kept in the three adjoining paddocks of Round Close, Cut Throat Paddock and Lay Meadow, and those from the northern hemisphere, such as Wolves and Bison, in the enclosures along the edge of the Downs.

The Collection

One of the most impressive statistics of the Whipsnade Collection is that, in the 50 years of its existence, 18,561 animals have been bred in the Park and only 357 imported from the wild. Many of the animals born at Whipsnade have been distributed to other reputable collections, thus helping them to reduce their demands on wild stocks and so making an indirect contribution to the conservation of wildlife. Some notable examples in 1981 were: three Przewalski's Wild Horses born at Whipsnade, with two others born at Marwell, were sent to the Tama Park Zoo in Tokyo in March to form the first group of this species in Japan. This important transfer had, of course, the approval, and indeed encouragement, of the Keeper of the International Studbook for Przewalski's Horses. In September four White Rhinos went to Australia, two each for the Sydney and Melbourne Zoos, and eight Père David's Deer were sent to stock a new Whipsnade-type country establishment of the Amsterdam Zoo. Père David's Deer and Chinese Water Deer went to the Paris Zoo and five European Bison were deposited in Woburn Park, where specimens of this species have been kept in the Duke of Bedford's collection since 1900, as a reserve herd for the highly successful Whipsnade group.

The female Black Rhinoceros born at Whipsnade in 1979 went to Marwell in June where it makes a pair with a male, born at Regent's Park. This move, with others involving Black Rhinos, is part of a programme agreed among leading British zoos to make the best use of the stock in Britain of this now endangered species.

The pair of young Indian Rhinoceroses, representing the third rhinoceros species at Whipsnade, produced their first calf in May, but it was stillborn. Regular breeding by this pair, both themselves captive-born, is hoped for.

Among the many other births and hatchings at Whipsnade during 1981, all recorded in Appendix 4, are two more White Rhinos, making 24 altogether since the White Rhinoceros herd arrived at Whipsnade in 1970; and 16 Humboldt's Penguins by the group which started breeding nearly 10 years ago. This makes nearly 100 young birds in the last five years, several of which are now being distributed to other collections.

Three of the breeding Cheetah females at Whipsnade died during the year. 'Jiffie' died in January, aged 11, after having given birth to 22 cubs, including the first second-generation captive-born litter. 'Eve' died in March having had 19 cubs; and 'Janica' died in July aged 13 having had 21. Three young female Cheetahs born at the Pretoria Zoo's special Cheetah research establishment were presented to the Society and arrived in London to start quarantine in December. Eventually they should help to keep the Whipsnade breeding programme going after its successful first 10 years, as well as bringing new blood into the Cheetah collection.

Scientific and Educational Activities

Scientific Meetings

Eight scientific meetings were held in 1981. The February meeting was the fifth organized by Professor M. Peaker on 'The scientific basis of wild animal husbandry', with the theme ' The Giant Panda in captivity '. Dr O. T. Oftedal spoke on ' Digestion trials and diet formulation ', Professor J. P. Hearn, Dr J. K. Hodges and Dr H. D. M. Moore on 'Reproductive studies', and Mr D. M. Jones and Mr J. A. Knight on 'Clinical management', illustrating their paper with a film on surgical procedures. In March Mrs J. E. J. Whitten gave a talk on 'Ecological separation of diurnal squirrels in rainforest', and Miss O. J. M. Enock presented her 'Observations of leaf cutter bees'. Dr A. R. Hardy spoke in March on 'Owls in farmland', and Dr B. C. R. Bertram on 'Communal nesting in ostriches'. The May meeting included papers from Dr G. A. Target on ' Malaria: a novel approach to vaccination', and from Dr T. A. J. Reader on 'Molluscan immunity in relation to digenean infections', while Dr M. G. Taylor introduced and commented upon his film 'Schistosomiasis in the Sudan: a study in comparative medicine'. Professor J. D. Pye was the speaker in June, describing 'Bats on the River Kwai'. In October Dr W. Peter Crowcroft spoke of the work of the Metropolitan Toronto Zoo, in an 'Introduction to Canada's greatest zoo'. Dr J. S. Queiroz gave a paper on 'Effects of spider (*Latrodectus*) venom on motor and sensory nerve terminals of skeletal muscle', and Professor J. P. Hearn gave a 'Report on the female panda Ching-Ching'. Dr J. R. Krebs spoke at the November meeting on 'Marsh tits and memory: experiments on food storing', and Mr M. E. Birkhead on 'The private life of the Dunnock'. In December Dr M. R. K. Lambert gave a paper on 'The Mediterranean spur-thighed or common garden tortoise (*Testudo graeca*): a problem for conservation', and Dr R. A. Avery spoke on 'Thermoregulation in temperate lizards: why do they bother ?'.

Symposia

The following symposia were held:

17 and 18 June: 'Advances in the veterinary care of zoo animals', held to mark the 50th anniversary of Whipsnade Park, and organized by Mr D. M. Jones.

25 and 27 November: 'Animal disease in relation to animal conservation', organized by the staff of the Society, with the aid of a grant from the Ministry of Agriculture, Fisheries and Food.

Publications

Journal of Zoology Volumes 193, 194 and 195 were published, and together contain 108 papers. The Council warmly thanks the many referees who so generously give their assistance in the assessment of the very large number of manuscripts submitted for publication.

Transactions One part was published: Volume 36, Part 1, 'Further quantitative studies of form and function in the primate pelvis with special references to *Australopithecus*', by E. H. Ashton, R. M. Flinn, W. J. Moore, C. E. Oxnard and T. F. Spence.

Symposia Three volumes were published: No. 46, 'Perspectives in primate biology', edited by Professor E. H. Ashton and Professor R. L. Holmes; No. 47, 'Biology of the House mouse', edited by Professor R. J. Berry; and No. 48, 'Vertebrate locomotion', edited by Professor M. H. Day.

Zoological Record

Volume 113 (1976 literature): Publication was completed during the year.

Volume 114 (1977 literature): Publication was completed in December. This is the last volume for which the Society is totally responsible.

Volume 115 (1978 literature): The entire volume was published in December. This is the first volume to be produced by BIOSIS (*Biological Abstracts/BioSciences Information Service*, Philadelphia), under the Agreement referred to in last year's Annual Report.

The conventional (not computer-assisted) methods used to produce Volume 114, and the introduction of new computer equipment and programs for the production of Volume 115, have enabled the volumes to progress in parallel. The result has been the completion of both volumes in 1981, thereby halving the delay in publication.

The Agreement with BIOSIS provided for the establishment of an Advisory Committee with equal representation from the Society and BIOSIS. The purpose of the Committee is to advise both parties as to the manner in which each is carrying out its responsibilities, and to make recommendations concerning the activities and future development of the *Record* and any ancillary services. The first meeting of this joint Committee was held on October 14 and 15, under the Chairmanship of Professor Barrington. Among the subjects discussed were literature coverage and growth, publication schedules, and new products from the data base. On October 15, Committee members visited the Zoological Record office at Ashley House, in Boston Spa, Yorkshire. They met the staff and saw something of the various stages in the preparation of the *Record*.

The first year of the joint venture has proved most satisfactory, and we look forward to further successful progress next year.

The Council wishes to thank the Board of the British Library, and the Director General of its Lending Division, for access to the library at Boston Spa, and for the informative and enjoyable tour arranged for members of the Advisory Committee. Grateful thanks are also due to the Trustees and staff of the British Museum (Natural History) for accommodation and advice; and to the staff of the United Kingdom Chemical Society Information Service for their help in completing Volume 113.

International Zoo Yearbook

As anticipated, publication of the *International Zoo Yearbook* was delayed for the second year running and Volume 21, due out in 1981, was not ready for distribution until the New Year.

Preparations for Volume 22 proceeded smoothly and with a popular and topical section 1, 'New World monkeys', promises to be a useful and successful volume. Greater emphasis than usual has been given to recent work in the wild and to conservation problems, and we were fortunate to have the help and advice of Russell A. Mittermeier, Chair-

man of the IUCN/SSC Primate Group. Following an authoritative introduction by Dr Mittermeier, summarizing the problems facing these primates in the wild, the 21 papers fall into three main groups: conservation and status in the wild; management in captivity; research in reproduction.

The regular feature 'New developments in the zoo world' is shorter than in Volume 21, but, with over 30 articles, still provides good coverage of both familiar and little-known species under the headings of breeding, husbandry, hand-rearing, buildings and exhibits, and education.

Volume 22 contains the biennial list of 'Zoos and aquaria of the world' and the list of new buildings and exhibits, as well as the annual list of vertebrates bred in 1980, the census of rare animals in captivity and the list of studbooks for rare or endangered species in captivity.

The Library

During 1981 the Library continued to provide a service to Fellows and Associates of the Society and to members of its staff. In addition a new category of user was introduced during the year. It is now possible for anyone to apply for a ticket at a cost of £5 per year, to use the Library for reference purposes.

The scheme is intended particularly but not exclusively for students and, in the six months since its inception it has been used by 34 individuals, attracted particularly by the Library's rich resources in periodicals, which now number 1500 current titles, and by its ample and comfortable accommodation for readers.

The Library's importance is also due to its fine collection of older books and manuscripts, which are much consulted by zoologists, both from this country and from overseas. The project for the repair and conservation of these works has proceeded during the year and 199 volumes were sent to the binder. The cost of this project is met by a grant generously provided by the British Library.

Further help with our manuscripts came from the library of Cambridge University, whose specialist staff restored and mounted most handsomely the Society's letters from Charles Darwin.

As the general economic situation deteriorates, it becomes more difficult to keep abreast of the current output of literature. The Library has grown to its present size and importance largely because of the generosity of Fellows over the past 150 years and the Society is most grateful to those of its members who continue this tradition. A collection of four books was presented by Mr P. J. Sharp in memory of Mrs Rosemary Sharp. Mr A. W. Baker again presented books to the Library. Others who presented books include: Professor Bullough, Mr M. J. Chapman, Mr R. H. Daly, Professor Stacey B. Day, Dr A. Dixson, Mr A. Douglas, Sir Charles Fleming, Professor J. Hearn, Mr T. Hornsey, Mr J. M. Massey Stewart, Mr J. I. Menzies, Professor John Napier, Prof. Dr Pilleri, Dr I. Rieger, Professor John Stanley, Mr Gerry Wood and Professor Lord Zuckerman. Peking Zoo also donated a fine book on the Giant Panda.

Education Department

Programme for Schools

Attendances at lecture/demonstrations for schools were as follows:

Regent's Park:	Spring Term	20,481
	Summer Term	14,174
	Autumn Term	16,946
Whipsnade Park:	Summer Term	3,118
	Total	54,719

The total number of attendances was 4% lower than that for 1980. Those from secondary schools to Regent's Park during the Spring and Autumn Terms were much the same as in earlier years, but during the Summer Term attendances at Regent's Park by primary schools and at Whipsnade by secondary schools declined. The reasons were falling school rolls, cuts in school budgets, the cost of transport and increases in the charge made to each pupil attending. Included for the first time in these attendance figures are the numbers of primary school children who took part in guided tours. The latter are a new feature, initiated in response to one of the recommendations of the 1980 Education Review Group. They were introduced during the summer term and the autumn term, and were attended by 3,357 children and 1,318 children respectively. Some of the larger mammals formed the subject of the tours on which small parties of children were led by members of a specially trained group of 43 volunteers, who gave their services free. Schools which participated were very appreciative of the service offered, and it is hoped that in future years more will take part in organized visits of this kind during the winter months. The Society is most grateful to those who led the tours and set a pattern of voluntary service.

A sixth form symposium entitled *The Natural History of Reproduction in Primates*, was held in December. Professor J. P. Hearn, Director of Science, was Chairman, and the speakers were Dr S. K. Bearder of the Oxford Polytechnic, Dr A. F. Dixson of the Institute of Zoology, Dr J. Herbert of Cambridge University, and Dr R. D. Martin of University College, London. Sixth form pupils from a wide area of south-eastern England filled the Meeting Room for the occasion.

Other Courses and Events

Special lecture/demonstrations were arranged for students from Bristol University, Brunel University, Bulmershe College of Higher Education, Chelmer Institute of Higher Education, Chelsea College, Goldsmith's College, Harrow School of Art, Hatfield Polytechnic, the London Foot Hospital, Loughborough College, Loughton College of Further Education, the North East London Polytechnic, Paddington Technical College, University College London, the University of Surrey, and Wolverhampton Polytechnic. During the Easter vacation a short course in Vertebrate Zoology was organized for university students of zoology. The speakers were Dr A. F. Dixson, of the Institute of Zoology, Dr P. H. Greenwood of the British Museum (Natural History), Professor J. P. Hearn, Director of Science, and Dr Garth Underwood of the City of London Polytechnic. A half unit of the degree course of the University of London, on the reproductive physiology of mammals, was conducted by the Society's staff under the

supervision of the Director of Science. Discussions took place on proposals to base an additional course unit on resources available at the London Zoo and at the British Museum (Natural History).

A training course was held for those who volunteered to conduct guided tours for primary school children during school visits to the London Zoo. Co-operation was maintained with the Inner London Education Authority's Centre for Life Studies. A folder of information sheets designed for teachers, entitled *Using the Zoo*, was produced jointly by the staffs of the Society's Education Department and the Centre for Life Studies, and in July the Education Department again assisted in conducting a special course for sixth form biologists from Inner London schools. Three thousand free tickets were distributed to adults accompanying preschool play-groups which visited Whipsnade for the special day on 29 May 1981, hosted by Mr Johnny Morris. Twelve thousand free tickets for the special day on 6 June 1981, at which Mr Rod Hull acted as host, were issued for socially and physically handicapped children. These occasions, held as part of Whipsnade's Fiftieth Anniversary celebrations, were much appreciated.

Three well attended meetings were held immediately after Christmas for the children and friends of members of the Society. Professor J. P. Hearn, Director of Science, gave a talk entitled *Catch me a Kangaroo*, the BBC's film *The Making of a Natural History Film* was shown, and an *At Home* was held at which some of the Society's staff and animals provided informative entertainment.

Young Zoologists' Club

Membership of the Club increased during the year and three issues of *Zoo Magazine* were produced for members. Meetings included a joint meeting with the Royal Society for the Protection of Birds' Young Ornithologists' Club on wild birds visiting the London Zoo, a visit to the RSPB at Sandy, a visit to Marwell Zoo, a safari to the British Museum (Natural History), a talk on keeping reptiles, a Zoo Quest at the London Zoo, and a special day at Whipsnade.

Provision of Information for the Public

At the beginning of the year the Education Department was made responsible for 'interpreting' the Society's collection of animals at the London Zoo and Whipsnade Park to visiting members of the public. At Regent's Park three talking labels of a new design were introduced, using tapes made with the aid of the BBC and featuring the voice of Mr Johnny Morris as well as recordings of animals from the BBC's Sound Archives. Experimental signs to help to illustrate the sizes of animals were introduced. The number of notices giving interesting facts about the animals on show was increased. There are now more of these labels than at any previous time, but many more are still required. New methods by which they might be more efficiently produced in an attractive and illustrated form are being investigated.

During the summer the services of a qualified teacher, Mr J. M. L. Down, were made available by the Inner London Education Authority. Mr Down devised and conducted a programme of guided tours for members of the public at Regent's Park in June, July and September. Many visitors commented favourably on this service. An experimental series of illustrated talks was also given for visitors in the Zoo Centre at midday on Sundays.

Both the *London Zoo Guide* and the *Whipsnade Zoo Guide* were revised and brought up to date for publication in 1982.

Research

THE INSTITUTE OF ZOOLOGY

The Zoological Society of London has carried out and encouraged scientific research and discussion since its foundation in 1826. The research of the Society's scientific staff is designed to make full use of the unique opportunities afforded by the Collections of exotic species in order to gain knowledge that will help in the improvement of animal and human welfare. The Institute's objectives are:

1. *Basic science:* To advance fundamental knowledge of zoology and animal physiology.
2. *Conservation:* To improve the diagnosis and treatment of disease, the breeding and management of animals in captivity and in the wild.
3. *Comparative medicine:* To apply the findings from research to medical and agricultural science.
4. *Education:* To pursue an active teaching and training programme at undergraduate, postgraduate and postdoctoral levels (in addition to the Society's comprehensive programmes for school children).
5. *Collaboration:* To act as a resource centre in working with up to 200 other institutions in joint projects or in the supply of research materials.

The Institute comprises the Nuffield Laboratories of Comparative Medicine, the Wellcome Laboratories of Comparative Physiology, the Animal Hospital and the Curators' Research Units. There are approximately 100 members of staff, 30 at PhD level. At any one time there are up to 80 research projects under way and the Institute publishes about 100 scientific papers each year.

A full account of the research carried out by the Society's staff is published in the Scientific Report (1979–1981) which is available on request. Approximately two-thirds of the costs of the research staff and projects are covered by grants from the Research Councils and other agencies. The remaining one-third is met by the Society and this sum supports the Veterinary Department in its care and treatment of the animals and the work of the scientific departments that is essential for and directly applicable to the management and breeding of animals in captivity and in the wild.

Research programmes are coordinated between seven departments:

Genetics

Dr D. B. Whitehouse reorganized the work of the department to concentrate on finding biochemical indicators of inbreeding in primates and equids and on new methods for sexing monomorphic species of birds. In addition a laboratory was established for cell culture that will help monitor inbreeding and develop new ways of identifying chromosomes.

A total of one hundred and thirty Przewalski Horses was examined for 57 biochemical markers of which 18 showed inherited variation. Five chromosome products were identified from the karyotypes of 54 animals. A project was initiated to locate individually marked genes on chromosomes. This study will provide new paternity tests for rare horses and other endangered species.

The department participated in the Great Apes Advisory Panel that was set up by 23 zoos and laboratories to improve the breeding of the Great Apes in captivity, all of them species which are threatened or endangered in the wild. Questionnaires and kits for the collection of blood samples were sent to all the participating zoos. Samples are now being received for genetic analysis. Other studies on primates included genetic analysis of groups of Common Marmosets, Owl Monkeys and Baboons.

Research on the genetics of the Artiodactyla was extended to include Scimitar-horned Oryx and Mouflon. An unusual karyotype resulting from centric fission was found in a Common Zebra; the genetic relationships of species of Deer were analysed; and a variant haemoglobin was found in inbred Mouflon.

Several genetic associations with particular diseases were studied, including ataxia in Przewalski Horses, and osteoarthritis in Collared Peccaries. The results of these and other studies will allow genetic counselling and diagnosis of genetic disorders in animals, with the consequent improvement of breeding.

During the past year, methods for sexing monomorphic species of birds were improved and applied successfully to Secretary birds, Kookaburras, Crowned Hornbills and four species of Owls.

Infectious Diseases

Dr G. R. Smith and Mrs Janet Oliphant made further studies on mycoplasmas which cause respiratory and systemic infections of ruminants. A novel method of immunological analysis was developed to help diagnosis of these conditions, improving the precision of the available tests. The results are important in the control and prevention of these diseases.

In a project with the North West Water Authority, the cause of recent deaths among water birds on the Mersey estuary is being investigated with particular emphasis on the important but often difficult practical problem of distinguishing botulism from chemical intoxication. Examination of mud samples from Botswana and Nigeria have supported an earlier suggestion, obtained from Mauritius, that *Clostridium botulinum* type C multiplies freely in tropical inland waters. This shows that botulism in waterfowl, although never reported from the Tropics, must surely occur.

Pilot studies are under way on gram-negative anaerobe infections in exotic species which may yield new light on several diseases of both veterinary and medical importance.

In the Immunoassay Unit Drs A. Voller and D. E. Bidwell studied ways of improving immunological methods for the measurement of biological materials. The ELISA microplate assays for early diagnosis of malaria, hepatitis, toxocariasis and Chagas' disease were further developed and new ELISA assays for thyroglobulin and alpha-feto-protein were established. Several joint projects with other departments of the Institute were undertaken, including the development of monoclonal antibodies against H-Y antigen with the department of Genetics and the development of monoclonal antibodies against sperm developmental antigens with the department of Reproduction. The results from these studies will improve methods of sexing young animals or embryos and help clarify the biochemical requirements for sperm maturation.

Nutritional Biochemistry

Professor M. A. Crawford and his colleagues developed their research programme to investigate the biochemistry of the

essential fatty acids, known as EFAs, and their function in brain and body growth. In addition the relationships between EFAs and prostaglandins are being examined. These studies address fundamental scientific questions as well as providing new diagnostic methods and treatments for the management of animal and human nutrition.

Basic research of EFA deficiency in Rats, Rabbits and Guinea Pigs revealed several species differences in the utilization of EFAs in placental function and brain development. A number of studies were carried out on the nutritional requirements of exotic species, especially in Mouflon, where supplementary EFA improved neonatal survival, and in Dolphins, where a comparison of levels of EFAs in tissues from captive and wild Dolphins suggested improvements in the diets of captive Dolphins. A study of the nutritional requirements of Scimitar-horned Oryx, carried out by Mr G. Williams, Mr W. Hare, Miss Melanie Duc and Miss Pamela Stevens, showed that animals maintained on synthetic diets produced milk with considerably less energy content than those maintained on grass. Improvements in the diet fed to these Oryx should result in improved neonatal survival.

Several aspects of human nutrition were studied comparatively. In a project carried out in the East End of London, Mrs Wendy Doyle and Professor Crawford, in collaboration with Dr B. Laurance from the Queen Elizabeth Hospital for Children, Hackney, found that the levels of linoleic and arachidonic acids in maternal plasma were low in women who produced small babies. Arachidonic acid may therefore provide a method of monitoring maternal food intake and foetal well-being that would not be detected by conventional dietary studies. In addition, arachidonic acid is necessary for synthesis of the prostaglandins probably involved in parturition and is required for the formation of cell membranes in the placenta and foetus.

Mr D. Kuhn and Miss Stevens carried out a study of EFA transport and metabolism by the perfused human placenta. A perfusion chamber was developed and built by Mr W. G. Ray and Mr P. R. E. Wallace in the Institute's workshops, providing a stable environment for the study of placental gas exchange, endocrinology and metabolism.

Radiology

Professor G. H. du Boulay, Dr D. J. Boullin and Mrs Victoria Aitken studied vasospastic fractions in the cerebrospinal fluid of human patients suffering from head and spinal cord injuries. They also examined the response of cerebral arteries to high fat diets and continued to build up a museum of comparative radiology.

Vasospastic fractions in the cerebrospinal fluid were shown to be responsible for angiographic spasm. The active fractions were partially characterized by column chromatography and further purification is in progress.

A possible association was studied between high fat diets and disordered reactivity of blood gases in cerebral arteries that may be relevant to the occurrence of strokes. In addition the effects of dihomogammalinoleic acid in reducing the disorder is being examined.

A project has commenced to develop the use of non-invasive methods, such as radiology and ultrasonography, for monitoring reproductive function and the diagnosis of disease in exotic species.

Reproduction

The department's research programme developed in the four related areas of endocrinology, behaviour, gamete biology and developmental biology, under Dr J. K. Hodges, Dr A. F. Dixson, Dr H. D. M. Moore and Professor J. P. Hearn respectively. A team approach evolved in studies of the reproductive physiology of Zoo animals, laboratory primates and humans.

Reproduction in Zoo Animals

Great Apes

The high incidence of testicular atrophy in captive Gorillas reported earlier by Dr Dixson was not found in studies of Orang-utans and Chimpanzees and a comparative study of puberty in male Gorillas and Orang-utans is now in progress. A service for pregnancy diagnosis in Great Apes and other primate species was continued for animals in the Society's Collections and from various other zoos in the United Kingdom.

African Elephant

Dr Hodges and Mrs Cilla Henderson completed a study of steroid levels throughout pregnancy in the African Elephant, and by modifying assay procedures a pregnancy test may now be developed for this species. The study is being extended to examine female Elephants in British Zoos with a view to establishing a simple urinary steroid test that would detect early pregnancy and help the management of captive Elephants.

Black Rhinoceros

Mrs Henderson found that urinary oestrogens could be measured relatively easily during the oestrous cycle in this species and may form the basis for an early pregnancy test.

Giant Panda

A number of studies were carried out on both the male and female Giant Pandas, involving the staff of the departments of Reproduction and Veterinary Science and the Mammal Section of the Zoo. Dr Hodges and Mrs Deborah Bevan developed and tested urinary steroid assays to monitor oestrus and pregnancy. Dr Moore and Mr T. Hartman established methods for electroejaculation of the male, freezing of semen and artificial insemination. During the time the male was on breeding loan at the National Zoological Park, Washington, the female Panda 'Ching-Ching' unexpectedly came into oestrus and was inseminated artificially. In the subsequent five months levels of plasma and urinary progesterone increased, suggesting a possible pregnancy. Preparations were made in case a birth occurred, but it was found that progesterone was being secreted by the ovary in large quantities, resulting in a very swollen uterus. It was not possible to establish unequivocally if an early pregnancy had occurred, but treatment with prostaglandins reduced progesterone levels and the uterus has now resumed its normal size.

Puma and Cheetah

Studies continued on the reproductive physiology of these cats, allowing the measurement of hormones during the normal cycle and artificial ovulation. Quantities of semen were

recovered and stored successfully. Research by Drs Hodges and Moore (Reproduction) and Messrs D. M. Jones and J. A. Knight (Veterinary Science) is aimed at developing a repeatable method of artificial ovulation and insemination in these animals.

Bennett's Wallaby
Professor Hearn, Dr Hodges, Mr D. Fleming, Miss Sara Gems and Mr A. Hill completed a study of the endocrine events controlling embryonic diapause in this species. An investigation of seasonal breeding of Wallabies at Whipsnade was started by Mr Fleming and studies were started on the culture of early embryos.

Laboratory Primate Research

The Institute's breeding colonies of Common Marmosets, Owl Monkeys and Cotton-topped Tamarins continue to thrive. These New World primates, especially the Marmoset, are valuable species for studies related to conservation, comparative physiology and medicine.

Dr Hodges, Dr Sally-Ann Eastman, Mrs Henderson, Mrs Bevan and Mr Hill established nine steroid and gonadotrophin hormone assays, enabling studies to be made of the endocrinology of pregnancy, corpus luteum function and the hormonal relationship between mother and baby. Consequently it is now possible to monitor reproductive cycles, pregnancy or puberty by measuring hormones in the urine of many species, without any stress to the animal being studied. Dr Dixson, Dr Susan Schofield, Dr K. Kendrick and Miss Lynn George completed stereotactic maps of the monoamine hormones in the brains of Owl Monkeys and Marmosets, investigating the way in which brain hormones control sexual and aggressive behaviour. The results are improving our knowledge of the brain mechanisms that coordinate all reproductive processes, including seasonal breeding.

Dr Moore, Dr W. V. Holt, Dr Asha Prakash, Mr Hartman and Mr R. North studied the process of sperm maturation and the function of the epididymis. They raised several antibodies against antigens on Hamster, Rabbit, Marmoset and human sperm. The studies are designed to provide better methods of sperm storage and, perhaps, an immunological method of controlling fertility. Professor Hearn, Miss Gems and Mr C. R. Harlow completed basic studies on the recovery, freezing, culture and transfer of embryos and commenced research on superovulation, *in vitro* fertilization and the process of implantation in primates. This work should provide methods of improved breeding and storage of embryos in exotic species, as well as providing knowledge relevant to similar studies in the human.

Veterinary Science

Mr D. M. Jones, Mr D. G. Ashton and Mr J. A. Knight are responsible for the veterinary care of animals within the Collections and the research projects of the Institute.

Regent's Park

During the year 553 animals from the Collection were examined clinically either in their quarters or in the Animal Hospital. A further 179 patients were referred from private practice. Seven hundred and forty-one post-mortem examinations were performed including 107 external cases.

During the year the stock within the Collection remained in good health, though an outbreak of influenza affected the Institute's Marmoset colonies in the early spring.

Throughout 1981 the department's clinical research continued. The nutrition of the Scimitar-horned Oryx was examined and a study commenced of the milk components in this species. The survival of many young animals would be assured if synthetic diets based on the natural milk components were available. This work is carried out in association with Marwell Zoological Park and the Department of Applied Biology at Cambridge University. The nutritional needs of Mouflon were also studied. Work carried out with the Department of Pathology at the Royal Veterinary College, University of London, suggests that the Scimitar-horned Oryx may be a carrier of malignant catarrhal fever virus. This finding has implications for the conservation of ungulate species both in the wild and in captivity. Research continued into methods of anaesthesia that allow short or long term sedation of animals, thus enabling safe treatment or transport.

Undoubtedly the most interesting clinical case of the year was that of the female Giant Panda 'Ching-Ching' who had recovered from chronic peritonitis in 1980, which was probably caused by duodenal inflammation. Her condition improved throughout the year despite two setbacks. Details of the artificial insemination of 'Ching-Ching' and the related studies carried out jointly between the departments of Reproduction and Veterinary Science and the Mammal Section of the Zoo have already been mentioned. Many medical and veterinary institutions have continued their support for the department on this and other cases. Mr E. L. Head also donated ionization and oxygen concentrating equipment for use with the Panda.

Whipsnade Park

The Whipsnade stock continues to be very healthy. During the year 100 cases were examined clinically and 418 post-mortem examinations were performed on animals from the Collection. One of the more interesting cases involved collaboration with the Eastman Dental Hospital in the successful replacement of an artificial canine tooth in a Jaguar.

Haematology

Dr Christine Hawkey, Mr M. G. Hart and Mr G. Leeser provided a diagnostic haematology service for the department, in order to establish reference values for a wide range of species in the Collections at Regent's Park and Whipsnade. Studies were completed on the effects of Ancrod, an extract of snake venom, on avian blood coagulation, and the effects of anaesthetics on the blood count of animals were examined. A field haematology laboratory was designed and tested during a visit by Dr Hawkey and Mr Jones to the Jonglei area of the Sudan. Mr P. C. R. Pearce continued his study of disorders in the development of the heart in fetal rats, examining the mechanisms of action of thyroid hormones and the protective effects of some beta adrenergic drugs.

Curators' Research

The Curators are responsible for the management of the Society's Collections of animals at Regent's Park and Whipsnade on a scientific basis, ensuring the highest standards

of care while providing an exhibition that is scientifically correct, educationally valuable and aesthetically attractive. During the year further progress was made towards communal management of stocks of animals in British Zoos, including joint projects on Great Apes, Black and White Rhinoceros, Pygmy Hippopotamus, Red Pandas, all three species of Zebra, and Humboldt's and Black-footed Penguins. Exchange of stocks is carried out under the rules of the International Wild Animal Studbook system, the coordinator of which is Mr P. J. Olney, Editor of the *International Zoo Yearbook* and Curator of Birds.

Dr B. C. R. Bertram, Curator of Mammals, with the help of several voluntary research assistants, improved the methods of identifying and marking animals in the Collection. They also studied the reactions of the public to exhibits and to the information displayed; the feeding behaviour of small mammals, and the suckling behaviour of Blackbuck. Data were also collected routinely by the keeper staff on the animals they keep. Several keepers have suggested research projects which they are developing in consultation with Institute scientists. Professor A. J. E. Cave, Honorary Research Associate, continued his studies on the innervation of the Rhinoceros heart and the morphology of the cervical vertebrae of the higher primates.

Studies of birds by Mr Olney and his staff included an expansion of the incubation and rearing unit. An incubator, designed primarily for birds of prey and built in the Institute's workshops, was added to the unit. Baseline data were collected on the humidity and temperature requirements of eggs for a number of species. Data were also collected on the natural rearing of Taractic Hornbills and the artificial rearing of Sacred Ibis.

Dr H. G. Vevers, Curator of the Aquarium, completed his studies on the secretions of the preen gland. Mr D. Ball and the staff of the Reptile House continued to incubate reptile eggs in standard hospital incubators, greatly improving hatching rates.

At Whipsnade studies were carried out in 1981 on the nutrition and breeding of Reeves's Muntjac and Bennett's Wallabies, with some Muntjac being fitted with radio collars in order to examine their movements throughout the Park.

Staff

Dr Rachel Fisher left the Genetics department, moving to the University of Michigan, and Dr J. G. Matthews left to return to veterinary practice. Dr Anne Bartlett left the Immunology Unit after 14 years service, following the birth of a son. Dr S. C. Cunnane joined the Nutritional Biochemistry department on a year's secondment from the Rowett Institute. Dr D. J. Boullin was appointed Honorary Research Associate in Radiology department and Mrs Victoria Aitken returned to the department after 6 months maternity leave; Miss Jennifer Beckett substituted for her during her absence. In the Reproduction department Dr W. V. Holt was appointed Research Cytologist and Dr Sally-Anne Eastman and Dr K. Kendrick joined as Research Assistants. Dr Asha Prakash (University of New Delhi) completed a year's WHO supported research on male reproductive physiology and Dr Christine Wang (University of Hong Kong) spent a 3 month WHO visiting fellowship working on fertilization. Mr E. O. Wango (University of Nairobi) joined the department on a one year WHO training studentship to work on epididymal function in mammals. Dr Jacqueline Hunter and Dr Susan Kingsley were awarded PhD degrees from the University of London for studies on the reproductive physiology of the Owl Monkey and the Orang-utan. Mrs Cilla Henderson left for the University of Ottawa and Dr Susan Schofield completed her 3 year MRC research fellowship. In the Veterinary Science department, Mr D. G. Ashton, Veterinary Officer (Whipsnade), left to return to veterinary practice. During the year 21 visiting research workers from 12 countries worked in the Institute for short periods. In addition 28 students worked in the Institute on research projects for their degrees or to learn research techniques or veterinary procedures.

Advisory and Consultant Services

Every day the Society receives requests for information and advice from sources ranging from scientific and government institutions, to children asking about their pets.

The following list is indicative of the services offered by the Society's staff.

Animal Management and Conservation

An ecological study of areas in northern Niger which might be suitable for desert and sub-desert parks and reserves, associated with the International Union for the Conservation of Nature and Natural Resources, the Fauna and Flora Preservation Society, and Marwell Zoological Society.
Nature Conservancy Council: Preparation of a handbook on the handling of British deer.

Architecture and Planning

Kuwait: Advice to the John S. Bonnington Partnership on the proposed new National Zoo and on the design of the proposed Salmiya Island Dolphinarium on the new waterfront.
Saudi Arabia: Advising the Triad/Owers and Lumley Consortium on their submission for a proposed new Zoo and Wild Animal Park in Jeddah. Advising the Halcrow Group Architectural Practice on their submission for a proposed new Aquarium and Dolphinarium on the waterfront in Jubail.
Qatar: Preparation and submission of a Management Study, in association with the John S. Bonnington Partnership, to the Municipality of Doha for the operation of the new Zoo.
United Kingdom: Advising Queen Mary's Hospital for Children, Carshalton, Surrey, on improvements to their Pets Corner for disabled children.

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; advice on enzyme immunoassays.
British Museum (Natural History): Radiological examination of fish skeletons.
CIBA/Geigy, Switzerland: Collaboration on development of adjuvants.
European Economic Community: Advice on serological methods.
Galton Laboratory: Studies on human and comparative genetics.
Laboratory of the Government Chemist: Collaborative analytical studies of lipids.
London School of Hygiene and Tropical Medicine: Collaborative projects on diseases transmissible to man from primates.
Manchester Museum: Radiological examination and identification of mummified animals.
Middlesex Hospital Medical School: Haematological examination of animals. X-rays of primate skulls.
Ministry of Agriculture, Fisheries and Food: Collaboration on the analysis of dietary lipids.
National Heart Hospital: Collaborative studies on cardiomyopathy.
National Museum of Wales: X-rays for the identification of fishes.
North Karelia Coronary Prevention Project, Finland: Analysis of milk lipids, adipose tissue and dietary fats.
North West Water Board: Advice on deaths of birds on the Mersey Estuary.
Ortho Diagnostics (USA): Collaboration on development of immunoassays.
Radcliffe Infirmary, Oxford: Collaborative studies on cerebral vessels in stroke (pharmacology and histology).
Roche Products Limited: Collaborative studies on essential fatty acids and prostaglandins. X-ray studies of cerebral arteries.
Royal Free Hospital Medical School: Collaborative studies on cardiomyopathy; production of antisera.
Unilever, Vlaadingen (Holland): Collaboration on lipid analysis.
University of Oxford: Joint research with Biochemistry Department on cerebral ischemia using nuclear magnetic resonance.
US Department of Commerce: Studies on dolphin lipids.
World Health Organization: The Nuffield Laboratories 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. Training in serological methods given to workers from Argentina, Australia, Belgium, Canada, People's Republic of China, France, Gabon, Gambia, India, Nigeria, Philippines, Switzerland, Thailand, UK, USA and Upper Volta.
Zoos: Radioimmunoassays for monitoring hormonal status and pregnancy; genetic phenotyping; haematological and radiological examinations.

Comparative Physiology

Blond McIndoe Centre for Transplantation Biology: Collaborative studies on transferrins on trophoblast.
Cardiothoracic Institute: Collaborative research on the cardiovascular physiology of mammals from high altitudes.
European Economic Community: Advice on compilation of 'Primate Registry'.
Institute of Neurology (London): Collaborative studies on cerebral vessels.
Institute of Obstetrics and Gynaecology (London): Collaborative research on gonadotrophin receptors.
Institute of Primate Research (Kenya): Collaborative studies on reproductive endocrinology in primates.
Institute of Urology (London): Collaborative research on epididymal physiology.
Medical Research Council (Mammalian Development Unit): Collaborative research on early development in primates.
San Diego Zoo Research Department (USA): Collaborative projects on comparative urinary oestrogen analysis in primates.
Smithsonian Institution, Washington (USA): Collaborative studies on reproductive endocrinology in the Giant Panda.
University of London: Collaborative research and teaching with Bedford College (primate evolution and reproduction), Birkbeck College and University College (reproduction in mammals). Training of students in radioimmunoassay techniques and in behavioural studies.
World Health Organization: Visits to give lectures and technical advice on primate reproductive physiology in Korea, Nairobi (University of Nairobi and the Institute of Primate Research). Training of staff from the University of Nairobi,

Kenya, University of Delhi, India and University of Hong Kong.
World Wildlife Fund: Visit to China to give technical advice on the setting up of a Giant Panda Research Centre.
Zoos: Radioimmunoassays for pregnancy diagnosis and hormonal status in Great apes. Advice on husbandry of New World primates.

Training and International Liaison
Nigerian Government: Training three keepers from the Kano and Maiduguri zoos.

Veterinary Consultancy Services
Mefit Babtie (on behalf of Commissioner for the Jonglei Area of Southern Sudan). Chairmanship of the Scientific Steering Committee advising on ecological work in the Jonglei Area. Supervision of veterinary aspects of the livestock and wildlife fieldwork associated with this project.
Brooke Hospital for Animals, Cairo: Advice on veterinary aspects.
Consultant Veterinary Advice: Bedford College, London; London School of Hygiene and Tropical Medicine (Microbiology Department); 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.

Collaboration with Scientific Societies, Zoological, Conservation and Research Organizations

Archives Internationale de Pharmaco-dynamie: Dr D. J. Boullin (Editorial Board)
Association for Animal Haematology: Dr C. M. Hawkey, Mr M. G. Hart (Committee Members)
Biological Council: Mr P. J. Olney (Council)
Birds of the Western Palearctic: Mr P. J. Olney (Editorial Board)
British Institute of Radiology: Professor G. H. du Boulay (Past President; Council and Appeal Co-ordinator)
British Ornithologists' Union: Mr P. J. Olney (Secretary – until April 1981; Editorial Board 'New Dictionary')
British Veterinary Association: Mr D. M. Jones (Council; Animal Welfare Committee; Public Relations Group), Mr V. J. A. Manton (Council and Small Animals Committee)
British Veterinary Zoological Society: Mr D. M. Jones (President), Mr V. J. A. Manton (Senior Vice-President), Mr D. G. Ashton (Hon. Secretary)
Brooke Hospital for Animals, Cairo: Mr D. M. Jones (Vice-Chairman)
Central Middlesex Hospital: Professor M. A. Crawford (Member, Management Committee of Research Unit for Action Research on Multiple Sclerosis)
CoEnCo: Mr M. K. Boorer (Natural History Youth Subcommittee)
Department of Health and Social Security: Professor G. H. du Boulay (Advisory Committees on Computerized Tomography)
European Association for Aquatic Mammals: Mr V. J. A. Manton (President elect)
European Association of Radiology: Professor G. H. du Boulay (British delegate to the Statutes Commission and Member of Computer Applications Committee)
English Tourist Board: Mr C. G. C. Rawlins (Member of Committee of Enquiry into Financial Welfare of British Zoos)
European Economic Community: Professor M. A. Crawford (Member, Ad hoc Committee on dietary fats)
Fauna and Flora Preservation Society: Mr D. M. Jones (Hon. Secretary)
George Washington University, Washington (USA): Dr D. J. Boullin (Special Lecturer in Pharmacology)
Great Ape Advisory Panel (British Zoos): Dr A. F. Dixson (Member)
Inner London Education Authority, Horniman Museum Advisory Committee: Mr M. K. Boorer
International Council for Bird Preservation (British Section): Mr P. J. Olney (Council – until June 1981; Chairman – from June 1981)
International Journal of Parasitology: Dr A. Voller (Editorial Board)
International Ornithological Committee (Committee of 100): Mr P. J. Olney (Member)
International Union for the Conservation of Nature and Natural Resources (Species Survival Commission): Mr P. J. Olney (Member): Mr C. G. C. Rawlins (Vice Chairman, Captive Breeding Specialist Group)
International Union of Directors of Zoological Gardens: Mr C. G. C. Rawlins (Past President) (Member, Membership Committee)
Jersey Wildlife Preservation Trust: Dr A. F. Dixson (Visiting Lecturer and Tutor, Summer School on 'Primate Biology and Conservation')
Journal of Autism and Childhood Schizophrenia: Dr D. J. Boullin (Editorial Board)
Journal of Clinical Pathology: Dr A. Voller (Editorial Board)
Journal of Comparative Pathology: Dr G. R. Smith (Editorial Board)
Journal of Immunoassay: Dr A. Voller (Editorial Board)
Journal of Immunological Methods: Dr A. Voller (Editorial Board)
Journal of Medical Microbiology: Dr G. R. Smith (Editorial Board)
Journal of Medical Primatology: Professor J. P. Hearn (Editorial Council)
Journals of Reproduction and Fertility Limited: Professor J. P. Hearn (Executive Council)
Linnean Society of London: Dr Marcia A. Edwards (Editorial Committee)
Marwell Zoological Society: Mr D. M. Jones (Management and Scientific Group)
Medical Research Council: Professor J. P. Hearn (Primate Breeding Survey)
Medicina: Dr A. Voller (Editorial Board)
Ministry of Agriculture, Fisheries and Food: Professor M. A. Crawford (Codex Alimentarius Technical Advisor on Fats and Oils)
National Federation of Zoological Gardens of Great Britain and Ireland: Mr V. J. A. Manton (Conservation and Breeding Committee): Mr. C. G. C. Rawlins (Council and Acting Secretary)

National Film Archive: Dr H. G. Vevers (Science Selection Committee)
Nature Conservancy Council: Professor J. P. Hearn (Scientific Authority for Animals): Mr C. G. C. Rawlins (UK Committee for International Nature Conservation)
Neuroradiology: Professor G. H. du Boulay (Chairman and Managing Editor)
Open University: Dr A. F. Dixson (Consultant, Faculty of Science); Professor J. P. Hearn (External Examiner, Department of Biology)
Paddington Technical College: Dr B. C. R. Bertram, Dr C. M. Hawkey, Mr J. A. Knight (Lecturers)
Parliamentary and Scientific Committee: Professor M. A. Crawford (Member)
Primate Society of Great Britain: Dr A. F. Dixson (Secretary); Professor J. P. Hearn (Council and Chairman, Study Group on Breeding Primates for Biomedical Research)
Radcliffe Infirmary, Oxford: Dr D. J. Boullin (Senior Scientist, MRC Department of Clinical Pharmacology)
Royal Society for the Prevention of Cruelty to Animals: Mr V. J. A. Manton (Wild Animals Advisory Committee)
Royal Society for the Protection of Birds: Mr P. J. Olney (Research Advisory Committee)
Society for the Study of Fertility: Professor J. P. Hearn Programme Secretary – until June 1981; Council)
Tropenmedizin und Parasitologie: Dr A. Voller (Editorial Board)
University of London: Professor G. H. du Boulay (Professor of Neuroradiology and Head of the Lysholm Radiological Department, National Hospital for Nervous Diseases); Dr A. F. Dixson (Course Lecturer, Zoology Department, Bedford College; Psychology Department, Birkbeck College; Zoology Department, University College); Mr R. A. Fish (Subject Sub-committee in Biological Sciences); Dr C. M. Hawkey (Hon. Lecturer in Haematology, Royal Free Hospital); Professor J. P. Hearn, (Member, Board of Studies in Zoology; Visiting Professor, Zoology Department, University College; Visiting Lecturer, WHO Course in Reproductive Physiology, Royal Postgraduate Medical School); Dr J. K. Hodges (Course Lecturer, Zoology Department, University College); Mr D. M. Jones (Member Board of Studies in Zoology; Visiting Lecturer, Medicine Department, Royal Veterinary College); Dr H. D. M. Moore (Course Lecturer, Zoology Department, University College; Visiting Lecturer, WHO Course in Reproductive Physiology, Royal Postgraduate Medical School); Dr G. R. Smith (Course Lecturer, Medicine Department, Royal Veterinary College); Dr H. G. Vevers (Honorary Research Fellow, Bedford College); Dr A. Voller (Reader in Immunology, London School of Hygiene and Tropical Medicine; Member, Board of Studies in Preventive Medicine)
University of Nottingham, School of Agriculture: Professor M. A. Crawford (Hon Professor in Applied Biochemistry and Nutrition)
University of Stockholm: Dr B. C. R. Bertram (Guest Lecturer, Zoology Department)
University of Surrey: Dr G. R. Smith (Course Lecturer)
World Health Organization: Professor J. P. Hearn (Member, Steering Committee of Task Force on Infertility Agents from Plants; Adviser, Reproductive Physiology and Applied Primate Research, WHO Special Programme); Dr J. K. Hodges (Consultant Scientist, Reproductive Physiology and Applied Primate Research, WHO Special Programme); Dr A. Voller (Member, Expert Advisory Panel on Parasitology; Member, WHO/IUIS Sub-committee on Standardization of Reagents for Enzyme Immunoassay)
World List of Scientific Periodicals: Mr R. A. Fish (Council)
World Pheasant Association: Mr P. J. Olney (Council)
World Wildlife Fund: Professor J. P. Hearn, Dr J. K. Hodges (Consultant Scientists)
Zoological Record Advisory Committee: Dr Marcia A. Edwards (Member of the joint BIOSIS/Zoological Society Committee to advise on the production of the *Zoological Record*)

General Matters

Catering Department and Zoo Restaurants Limited

The fall in Zoo attendances adversely affected the turnover of the Catering Department at both Regent's Park and Whipsnade and, with the increase in the costs of wages and salaries and of provisions, earnings from catering operations were further reduced.

Despite bad weather in December, which caused the cancellation of some bookings, the evening business of Zoo Restaurants Ltd, at both Regent's Park and Whipsnade, was slightly better than in 1980, with a total of 112 functions at Regent's Park and 28 at Whipsnade.

There were four Late Evening Openings for Members at Regent's Park and two at Whipsnade.

A major review of the Society's catering operations was carried out during the year with the aim of producing a more attractive and efficient service for the public. As a result, discussions were held with a number of prominent professional caterers with a view to transferring to one of them the management of the catering operation at Regent's Park.

Zoo Enterprises Limited

The reduced number of visitors and squeeze on consumer expenditure also affected retail trading and there was a drop in sales from the Zoo Shops of 9%. However, gross margins were slightly improved and, in spite of the pressure of wages and fixed costs, operating profit declined only 5%.

Souvenirs and other items produced for sale during the Fiftieth Anniversary year sold well at Whipsnade. At Regent's Park prints and table mats developed from the well-known Scharf illustrations of the Zoo in its early days, added to the stock of quality goods on sale in the Zoo Shop.

Ties, scarves and brooches available for sale to Members and staff of the Society were produced.

Staff

At the end of the year there were 448 full-time members of staff as follows:—

	London	*Whipsnade*
Animal Management	92	45
Construction, Maintenance, Gardening, General and Public Services	91	40
Catering and Retail Departments	56	9
Institute of Zoology	65	2
Other Scientific Departments including Publications and Library, and Education	20	—
Administrative Departments	22	6

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

GENERAL

During the year staff received pay increases in line with the general wage movements of the outside groups, mainly in the public sector, with which they are aligned. Revised pay structures were negotiated and implemented for manual, catering and retail staff and for executive and clerical staff following the completion of the job evaluation schemes started in 1980. We are grateful for the time and effort given to these tasks by Messrs B. Ashwell and G. Rouse of ACAS and by the staff who served on the working parties.

The new pay structures and gradings resulting from job evaluation were the latest in a series of major improvements in staff conditions, including pay, hours, leave and pensions which have been introduced over the last three years and which have added significantly to our costs.

Senior staff responsibilities were re-organized to take account of the retirement of Dr H. G. Vevers, Assistant Director of Science and Curator of Aquarium, at the end of November. Mr D. M. Jones, Senior Veterinary Officer, was appointed Assistant Director of Zoos from 1 June and Dr Marcia A. Edwards was appointed Assistant Director of Science (Publications and General) from 1 December. The Curator of Birds took over Dr Vevers curatorial responsibilities for the Reptile House and the Curator of Mammals those for the Aquarium and Insect House.

Once again, in the interests of economy, a number of posts were left vacant for varying periods of time.

The Manpower Services Commission sponsored eight Work Experience appointments in the animal departments at London Zoo and two places in the animal section of the Institute of Zoology under the Youth Opportunities Programme. The Society was also able to offer short periods of experience in clerical work to several teenagers undertaking office and/or business studies. The Society continued to offer training to a number of personnel from other zoos, including some on secondment from overseas.

Eight staff were successful in the written examination for the Ordinary Certificate in Zoo Animal Management; a distinction being gained by Miss M. Kelly, who was awarded a Nobby Ashby Prize. Six staff passed the written examination for the Higher Certificate, distinctions being gained by Messrs T. Moxey and C. Tack. Mr Tack was awarded a Nobby Ashby Prize.

A staff arts, crafts and photographic exhibition was mounted in the Zoo Study Centre during the first two weeks of August. It attracted several thousand visitors and much of the credit for its success must go to Senior Keeper Peter Levi, who was the main organizer and exhibitor.

AWARDS

The Society's Bronze Medal was presented to Mr D. Ball, Overseer of Reptiles, for long and meritorious service, particularly in the field of herpetology.

The completion of 25 years continuous service was recognized by the presentation of gold watches to G. Dumbleton, Senior Keeper, Aquarium, A. Fitzgerald, Senior Technician, Department of Veterinary Science, Mrs J. Crawley, Administrative Assistant, Catering Department, and Mr T. Sheehan, Foreman Painter, Works Department, Regent's Park.

APPOINTMENTS AND PROMOTIONS

Mr R. Barrow, *Overseer of Birds, Regent's Park* —
Miss Joan Crammond, *Press Officer*
Dr Marcia A. Edwards, *Assistant Director of Science (Publications and General)* —

Mr D. Ellis, *Headkeeper, Pheasantry & Ostrich Section, Regent's Park*
Mr J. P. Griffin, *Commercial Manager*
Mr D. M. Jones, *Assistant Director of Zoos*
Mr T. B. Kichenside, *Overseer of Mammals, Regent's Park*

Resignations and Retirements

Retirements included Mr D. Newson, Overseer of Birds, after over 45 years' service, Mr A. Broad, Storekeeper, Works Department, Regent's Park, after more than 36 years' service, Mr W. P. B. Sands, Toilet Attendant, Regent's Park, and Mr C. E. Ward, Works Craftsman, Whipsnade Park, both after 33 years' service, Dr H. G. Vevers, Assistant Director of Science after more than 26 years' service and Mrs M. Wailes, Secretary, Education Department, after 19 years' service.

Mr D. Ashton, Veterinary Officer, Whipsnade, and Dr R. A. Fisher, Head of the Department of Genetics, both resigned for other appointments. Neither was replaced.

Obituary

We regret to record the deaths of Mr D. Emery and Mr T. K. Lee, Catering Department, Regent's Park, and the deaths of the following pensioners: Messrs A. Barrow, A. Cole, A. Corbett, R. Hanson, W. Powell, J. Pullen, G. B. Stratton and of Mr W. Vanderson, the Society's Honorary Consultant Photographer for many years.

Publicity

Whipsnade's Fiftieth Anniversary and the two Giant Pandas dominated news and publicity about the Society in 1981. There was extensive media coverage of the celebrations and events at Whipsnade and many photocalls and reports about the visit to Washington of the male Giant Panda, 'Chia-Chia'. The artificial insemination of the female, 'Ching-Ching', also attracted notice.

There were 20 photocalls about animals at London Zoo and Whipsnade; overseas television companies also filmed at London Zoo, including NBC who made a half-hour film for transmission in North America and a Brazilian television company which filmed at the Zoo during the heavy snowfall in December.

The film made in the London Zoo Hospital in 1980 by the BBC TV programme 'Nationwide' was televised again in 1981 in a re-edited version.

Acknowledgements

The Council wishes to thank all those Fellows and others who greatly aid the work of the Society by giving their time to serve on advisory committees.

The help given by many scientists, veterinarians, organizations and firms, is also much appreciated. The Council wishes to thank the Director and staff of the British Museum (Natural History), in particular to: Miss A. G. C. Grandison, Dr E. N. Arnold, Mr Andrew Stimpson and Dr Judith Marshall, who have given invaluable help and advice on animal identification.

The Council is also grateful to the staff of British Airways for the arrangements made for the transport of the Giant Panda 'Chia-Chia' to the United States; the Centre for Overseas Pest Research for supplying locusts; Lord Coke for Evergreen Oak for browsing animals; Mr Neil Hardy for his help in obtaining Mediterranean fish and invertebrates; Friends of Highgate Cemetery for allowing collection of brambles; staff of the RSPCA, London Airport, for the care of animals in transit; Kew Gardens for their generous help; Dr H. A. Reid of the Liverpool School of Tropical Medicine for advice on snake venoms; Dr P. Ball and the staff of the Middlesex Hospital for help with emergency snake-bite treatment; Mr Bernard Betts of May and Baker for supplying various surplus insects; Mr P. Scholls, MAFF, Lowestoft, for help in supplying sea water; Mrs M. Ryan and her colleagues at Paddington College for their co-operation in organizing the Zoo Animal Management Courses; the Commanding Officer, Training Battalion, RAOC, for arranging facilities for the staff to practice the use of emergency weapons; Dr D. Warrall of the Radcliffe Infirmary, Oxford, for his advice on the treatment of snake bite; Mrs Dorothy Rand for equipment for the Clore Pavilion; the St John's Ambulance Brigade; Miss L. Vigne for voluntary research assistance given to the Curator of Mammals; volunteers from XYZ Club and elsewhere, for assistance in several animal sections; Mrs J. England for a collection of slides given to the Curator of Birds.

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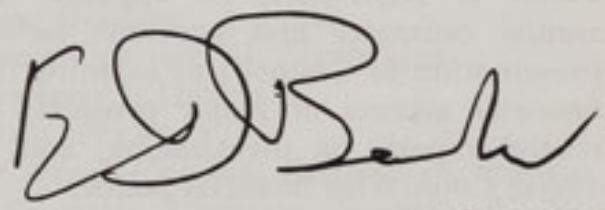

Secretary

APPENDIX 1

Committees 1981-1982

Gardens and Park Committee

Terms of Reference: To consider matters relating to the layout, appearance, animal housing an 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.

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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.

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

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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.

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International Zoo Yearbook Editorial Board

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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 advises Council on all matters relating to these awards.

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Terms of Reference: To 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.

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Lord Donaldson, OBE
The Hon. Ivor Montagu
C. J. Perrin
Sir Richard Way, KCB, CBE
Secretary: C. G. C. Rawlins, OBE, DFC

APPENDIX 2

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Science: J. P. Hearn, MSc, PhD, FIBiol
Assistant Director of Science, Curator of Aquarium, Acting Curator of Reptiles: H. Gwynne Vevers, MBE, DPhil, FLS, FIBiol* (to November)
Assistant Director of Science (Publications and General): Marcia A. Edwards, PhD, FLS* (from December)
Assistant Director of Zoos: D. M. Jones, BSc, BVetMed, MRCVS*
Architect: J. W. Toovey, AADipl(Hons), FRIBA
Deputy Architect: J. C. Wears, DipArch (Dunelm)
Catering Manager (London and Whipsnade): C. P. C. Garland
Commercial Manager: J. P. Griffin (from August)
Curator of Birds/Reptiles: P. J. S. Olney, BSc, DipEd, FLS*
Curator of Mammals/Aquarium/Insects: B. C. R. Bertram, MA, PhD FIBiol*
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; R. E. Dazely, BSc CertEd.; Gillian E. Standring, MA, CertEd
Establishment Officer: M. E. McInerney
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Librarian: R. A. Fish, FLA
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Retail Manager (London and Whipsnade): J. F. Brown

Institute of Zoology (including the Nuffield Laboratories of Comparative Medicine, the Wellcome Laboratories of Comparative Physiology, the Animal Hospital and the Curators' Research Units).
Director: J. P. Hearn, MSc, PhD, FIBiol
Administrative Assistant: Connie Nutkins
Laboratory Superintendent (Nuffield): P. R. E. Wallace, FIST
Laboratory Superintendent (Wellcome & Hospital: G. F. Nevill, HNC
GENETICS:
Head: Rachel A. Fisher, MB, BS, PhD (until August)
Research Fellows: J. G. Matthews, BVM, MRCVS, PhD (until April); D. B. Whitehouse, PhD
Research Assistant: Wendy Putt
INFECTIOUS DISEASES:
Head: G. R. Smith, PhD, MRCVS, DVSM DipBact.
Immunology Unit:
Head: A. Voller, PhD, DSc (Hon. Research Associate)
Research Assistant: D. E. Bidwell, PhD
NUTRITION:
Head: M. A. Crawford, PhD
Research Fellows: Wendy Doyle, DipDietetics; W. R. Hare, BSc; D. C. Kuhn, AB, MS (USA)
Visiting Research Graduate: S. C. Cunnane, PhD (Canada)
RADIOLOGY:
Head: G. H. du Boulay, MB, BS, FRCP, DMRD, FRCR
Hon. Research Associate: D. J. Boullin, MSc, PhD, MA
Radiographer: Victoria Aitken, DSR
REPRODUCTION:
Head: J. P. Hearn, MSc, PhD, FIBiol
Research Fellows: A. F. Dixson, PhD; J. K. Hodges, PhD; H. D. M. Moore, PhD; Susan P. M. Schofield, PhD (until December)
Research Assistants: Sally-Ann Eastman, PhD; D. B. Fleming, MIBiol, Cilla Henderson, BSc (until November); W. V. Holt, MIBiol, PhD, FIMLS; K. M. Kendrick, PhD
Visiting Research Graduate: Asha Prakash PhD (Delhi) (until September)
Postgraduate Research Student: C. R. Harlow, BSc
Visiting Research Student: E. O. Wango, BVM (University of Nairobi)
VETERINARY SCIENCE:
Senior Veterinary Officer: D. M. Jones, BSc, BVetMed, MRCVS
Veterinary Officer (London): J. A. Knight, BVetMed, MRCVS
Veterinary Officer (Whipsnade): D. G. Ashton, MA, VetMB, MRCVS (until October)
Honorary Research Associate: A. N. Worden, FRCPath
Hospital Superintendent: A. K. Fitzgerald, RANA
Haematology Unit:
Head: Christine M. Hawkey, PhD
Postgraduate Research Student: P. C. Pearce, MIBiol, MPhil

Publications:
International Zoo Yearbook:
Editor: P. J. S. Olney, BSc, DipEd, FLS*
Assistant Editors: Pat Ellis, Ruth Biegler (to March), Benedicte Sommerfelt (from April)
Journal of Zoology, Symposia, Transactions of the Zoological Society of London, Nomenclature Zoologicus
Editor: H. Gwynne Vevers, MBE, DPhil, FIBiol* (to November); Marcia A. Edwards, PhD, FLS* (from December)
Editorial Assistant: L. G. Ellis
Administrative Assistant: Unity M. M. McDonnell, MA

London Zoo
Gardens Executive: J. McCorry
Head Gardener: T. Law
Maintenance Manager: L. G. Taverner
Overseer of Birds: D. G. Newson (to September); R. Barrow (from June)
Overseers of Mammals: J. Lambden, R. B. Willis, T. B. Kichenside (from December)
Overseer of Reptiles: D. Ball, AIAT
Purchasing and Transport Foreman: N. Thornton
HEAD KEEPERS:
Aquarium: R. Dumbleton
Aquatic Birds and Birds of Prey: D. N. Wood
Bears: S. Morton
Bird House: W. G. R. Daines
Children's Zoo: P. Anscombe
Elephant and Rhino Pavilion: D. Milton
Insects: R. P. Humphrys, AIAT
Lion Terraces: E. F. Swain
Monkeys: G. Callard
Parrot House and Eastern Aviary: R. J. Watkins
Pheasantry and Ostrich House: R. Barrow (to June); D. R. Ellis (from August)
Reptiles: S. B. Savage
Small Mammals: R. R. Smith, FIAT
Ungulates: T. B. Kichenside (to December)

Whipsnade Park
Park Manager: O. C. Chamberlain
Veterinary Officer: D. G. Ashton, MA, VetMB, MRCVS* (to October)
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 Sir Peter F. Shepheard, CBE, BArch, PPRIBA, MRTPI, PPILA
Honorary Herpetologist: Professor A. d'A. Bellairs, DSc, MRCS, FLS
Honorary Veterinary Consultant: A. C. L. Brown, MRCVS
Medical Referee: J. P. Horder, CBE, FRCP PRCGP, FRCPsych
Consultant Typographers: Colin Banks, FSIA and John Miles, FSIA, FSTO

*Also members of the Institute of Zoology

Publications by Society's Staff and Research Workers

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Oriental Small-clawed Otter, mother and young. The first otter to be reared at Regent's Park this century

Boobook Owls hatched at Regent's Park in 1981

Musk Ox calf born at Whipsnade in July 1981

Pooh Bear statue, Regent's Park

Male Giant Panda 'Chia-Chia' about to leave for the National Zoo, Washington

HRH Prince Philip at the dolphin show, Whipsnade, May 18 1981

Part of the Anniversary Exhibition at Whipsnade

The Whipsnade White Lion illuminated

Whitening the Lion at Whipsnade

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Animals in the Collections

column 1	Number of animals in the Collection at 1st January 1981.
column 2	Number of animals received in 1981 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 1981.
column 4	Number of animals which died in 1981 within 30 days of birth or hatching. The figures in brackets indicate animals born or hatched during December 1980 and which died during January 1981. Stillbirths are not included.
column 5	Number of animals which died from natural causes during 1981 apart from those included in Column 4.
column 6	Number of animals disposed of in 1981 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 1981, showing the sexes where these are known, e.g. 1/3/1 indicates 1♂ 3♀ 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

Mammals		**1**	**2**	**3**	**4**	**5**	**6**	**7**
MONOTREMATA								
Tachyglossus aculeatus	Australian Echidna	1	—	—	—	—	—	1/0
Zaglossus bruijni	Bruijn's Echidna	3	—	—	—	—	—	1/2
MARSUPIALIA								
Didelphis virginiana	Virginian Opossum	2	—	—	—	2	—	—
Petaurus breviceps	Sugar Glider	26	—	2	—	—	5	12/9/2
Dactylopsila trivirgata	Striped Possum	2	—	—	—	1	—	0/1
Trichosurus vulpecula	Brush-tailed Possum	3	—	—	—	—	—	2/1
Sarcophilus harrisii	Tasmanian Devil	2	—	—	—	—	—	1/1
Vombatus ursinus	Common Wombat	4	1	—	—	—	3	1/1
Potorous tridactylus	Long-nosed Potoroo	11	—	1	—	—	4	4/3/1
Macropus parma	White-throated Wallaby	2	—	1	—	—	—	1/1/1
Macropus rufogriseus	Red-necked Wallaby	2	2	—	—	3	—	1/0
Macropus fuliginosus	Western Grey Kangaroo	3	—	—	—	—	—	1/2
Megaleia rufa	Red Kangaroo	5	—	—	—	3	2	—
Dendrolagus goodfellowi	Goodfellow's Tree Kangaroo	—	2	—	—	1	—	0/1
INSECTIVORA								
Echinops telfairi	Pygmy Hedgehog Tenrec	—	2	—	—	—	—	1/1
MACROSCELIDEA								
Elephantulus rufescens	Rufous Elephant Shrew	—	4	—	—	2	—	2/0
CHIROPTERA								
Pteropus giganteus	Indian Fruit Bat	28	—	6	—	5	2	9/6/12
MENOTYPHLA								
Tupaia belangeri	Common Tree Shrew	8	7	—	—	4	4	4/3
Lyonogale tana	Large Tree Shrew	6	5	4	—	2	2	4/7
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
PRIMATES								
Lemur catta	Ring-tailed Lemur	5	2	—	—	—	1	3/3
Lemur variegatus	Ruffed Lemur	7	1	2	—	—	2	4/2/2
Lemur fulvus	Brown Lemur	10	1	1	1	—	5	3/3
Lemur mongoz	Mongoose Lemur	1	1	—	—	—	—	1/1
Cheirogaleus medius	Fat-tailed Dwarf Lemur	2	1	—	—	—	—	2/1
Microcebus murinus	Grey Mouse Lemur	4	—	4	—	2	—	2/2/2
Loris tardigradus	Slender Loris	3	—	—	—	1	—	2/0
Nycticebus coucang	Slow Loris	8	—	1	1	—	—	4/4
Galago crassicaudatus	Thick-tailed Bushbaby	2	—	—	—	—	—	1/1
Galago senegalensis	Senegal Bushbaby	2	1	—	—	1	—	1/1
Aotus trivirgatus	Douroucouli	8	—	1	—	—	—	3/4/2
Pithecia pithecia	White-faced Saki Monkey	6	—	3	1	—	—	5/2/1
Cebus apella	Brown Capuchin	7	—	2	1	—	2	2/3/1
Saimiri sciureus	Squirrel Monkey	4	10	—	—	—	5	2/7
Callithrix jacchus	Common Marmoset	7	18	9	2	2	11	6/8/5
Callithrix argentata	Silvery Marmoset	11	1	2	—	5	3	3/3
Saguinus oedipus	Cotton-headed Tamarin	9	1	—	—	—	3	2/4/1
Saguinus illigeri	Red-mantled Tamarin	13	—	5	—	1	5	5/4/3
Leontopithecus rosalia	Golden Lion Tamarin	—	4	—	—	—	—	2/2
Callimico goeldii	Goeldi's Marmoset	1	3	—	—	—	—	2/2
Macaca nemestrina	Pig-tailed Macaque	17	—	5	3	—	—	8/8/3
Cercocebus atys	Sooty Mangabey	7	—	1	—	1	2	0/4/1
Mandrillus sphinx	Mandrill	8	—	1	1	—	2	2/4
Theropithecus gelada	Gelada Baboon	7	—	—	—	1	3	2/1
Cercopithecus pygerythrus	Vervet Monkey	10	—	1	—	—	1	5/4/1
Cercopithecus diana	Diana Monkey	2	3	—	—	—	2	1/2
Cercopithecus neglectus	De Brazza's Monkey	2	1	—	—	—	1	1/1
Cercopithecus talapoin	Talapoin Monkey	3	—	—	—	—	1	1/1
Colobus polykomos	Western Black & White Colobus Monkey	—	3	—	—	—	—	0/1/2
Hylobates lar	Lar Gibbon	5	—	—	—	—	—	3/2
Pongo pygmaeus	Orang Utan	11	—	—	—	—	2	4/5
Pan troglodytes	Chimpanzee	7	2	—	—	1	2(1)	1/5
Gorilla gorilla	Gorilla	2	—	—	—	—	—	1/1
EDENTATA								
Myrmecophaga tridactyla	Giant Anteater	2	—	—	—	—	—	1/1
Choloepus didactylus	Two-toed Sloth	1	—	—	—	—	—	0/1
Chaetophractus villosus	Hairy Armadillo	2	—	—	—	—	—	1/1
RODENTIA								
Ratufa bicolor	Malayan Giant Squirrel	1	1	—	—	—	—	1/1
Funisciurus pyrrhopus	Fire-footed Squirrel	3	—	—	—	—	—	1/2
Callosciurus finlaysoni	Finlayson's Squirrel	1	—	—	—	—	—	1/0
Callosciurus prevosti	Prevost's Squirrel	2	—	—	—	1	—	1/0
Marmota monax	Woodchuck	—	3	—	—	—	—	1/2
Cynomys ludovicianus	Prairie Marmot	4	4(4)	1	—	6	—	1/2
Tamias sibiricus	Siberian Chipmunk	5	—	—	—	1	—	1/3
Petaurista alborufus	Red & White Flying Squirrel	1	—	—	—	—	—	1/0
Glaucomys sabrinus	Northern Flying Squirrel	2	—	—	—	1	—	0/1
Castor fiber	Beaver	3	—	2	—	1	—	1/1/2
Pedetes capensis	Springhaas	2	—	—	—	—	—	1/1
Peromyscus maniculatus	White-footed Mouse	3	—	—	—	3	—	—
Phodopus sungorus	Dwarf Hamster	70	—	60	—	49	28	17/28/8
Cricetulus barabensis	Chinese Hamster	25	—	20	—	17	10	7/8/3
Mesocricetus auratus	Golden Hamster	—	2	8	—	3	—	0/0/7
Clethrionomys glareolus	Bank Vole	15	—	8	3	10	—	5/4/1
Arvicola terrestris	Water Vole	3	—	17	—	2	5	4/3/6
Gerbillus pyramidum	Greater Egyptian Gerbil	1	—	—	—	1	—	—
Meriones unguiculatus	Clawed Jird	10	—	28	—	4	5	12/17
Meriones libycus	Libyan Jird	—	2	3	—	—	—	2/3
Micromys minutus	Harvest Mouse	8	2	—	—	8	—	1/1
Apodemus sylvaticus	Field Mouse	7	—	31	4	5	2	9/18
Apodemus flavicollis	Yellow-necked Mouse	—	2	—	—	2	—	—
Grammomys dolichurus	Long-tailed Thicket Rat	9	—	5	—	10	—	2/2
Arvicanthis niloticus	Nile Rat	20	—	>160	?	19	91	0/0/70
Lemniscomys striatus	Striped Grass Mouse	1	—	—	—	1	—	—
Mastomys natalensis	Multimammate Mouse	20	8	5	—	12	8	4/9
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Acomys cahirinus	Arabian Spiny Mouse	30	6	>11	?	1	14	3/29
Phloeomys cumingi	Philippine Cloud Rat	2	3	—	—	—	—	4/1
Glis glis	Fat Dormouse	11	—	—	—	—	—	4/7
Hystrix cristata	Crested Porcupine	1	—	—	—	—	—	1/0
Hystrix indica	Indian Porcupine	1	—	—	—	—	—	0/1
Hystrix indica × *H. cristata*	Hybrid Indian × Crested Porcupine	3	—	—	—	—	—	0/0/3
Atherurus africanus	African Brush-tailed Porcupine	3	—	—	—	—	—	1/2
Trichys lipura	Long-tailed Porcupine	1	—	—	—	1	—	—
Coendou prehensilis	Brazilian Tree Porcupine	1	—	—	—	—	—	0/1
Kerodon rupestris	Rock Cavy	—	4	3	—	2	—	1/1/3
Dolichotis patagonum	Mara	5	1	4	3	1	—	2/4
Hydrochoerus hydrochaeris	Capybara	2	—	—	—	—	—	1/1
Cuniculus paca	Spotted Paca	2	1	—	—	1	—	1/1
Dasyprocta aguti	Orange-rumped Agouti	—	2	—	—	—	—	1/1
Chinchilla laniger	Chinchilla	1	2	6	2	2	—	1/3/1
Geocapromys brownii	Jamaican Hutia	1	2	2	—	1	—	1/1/2
Myocastor coypu	Coypu	4	—	—	—	—	—	1/3
Octodon degus	Degu	6	—	3	—	3	—	1/2/3
Proechimys guairae	Casiragua	16	—	6	—	8	—	5/9
CARNIVORA								
Canis lupus	Grey Wolf	2	—	—	—	—	—	2/0
Canis latrans	Coyote	2	—	—	—	—	—	1/1
Fennecus zerda	Fennec Fox	4	—	—	—	1	1	1/1
Urocyon cinereoargenteus	American Grey Fox	2	—	4	3	—	1	1/1
Lycaon pictus	Cape Hunting Dog	2	—	—	—	—	—	1/1
Selenarctos thibetanus	Asiatic Black Bear	2	—	—	—	—	—	0/2
Ursus arctos	Brown Bear	7	—	—	—	—	3	2/2
Ursus americanus	American Black Bear	2	—	—	—	—	—	1/1
Thalarctos maritimus	Polar Bear	2	—	1	1	—	—	1/1
Melursus ursinus	Sloth Bear	—	2	—	—	—	—	1/1
Ailuropoda melanoleuca	Giant Panda	2	1	—	—	—	1	1/1
Ailurus fulgens	Red Panda	—	2	—	—	—	2(1)	—
Nasua nasua	Ring-tailed Coati	3	—	1	1	—	—	1/2
Potos flavus	Kinkajou	3	1	—	—	—	—	2/2
Mustela nivalis	Weasel	—	2	—	—	—	—	0/2
Arctonyx collaris	Hog Badger	—	2	—	—	—	—	1/1
Melogale moschata	Chinese Ferret Badger	1	—	—	—	—	1	—
Amblonyx cinerea	Oriental Small-clawed Otter	2	—	3	2	—	—	1/2
Genetta tigrina	Blotched Genet	1	—	—	—	—	—	1/0
Arctogalidia trivirgata	Small-toothed Palm Civet	2	1	—	—	—	1	1/1
Paguma larvata	Masked Palm Civet	1	—	—	—	—	—	1/0
Suricata suricatta	Suricate Meerkat	—	2	—	—	1	—	1/0
Herpestes edwardsi	Indian Grey Mongoose	2	—	—	—	2	—	—
Cynictis penicillata	Yellow Mongoose	2	—	1	—	—	—	1/2
Felis caracal	Caracal Lynx	2	—	1	1	—	—	1/1
Felis serval	Serval	2	1	2	2	1	—	1/1
Felis wiedii	Margay	6	—	—	—	—	2	2/2
Felis concolor	Puma	3	—	—	—	—	—	1/2
Panthera leo	Lion	5	—	2	1	—	1	2/3
Panthera tigris	Tiger	5	—	—	—	—	—	1/4
Panthera pardus	Leopard	3	1	—	—	1	—	1/2
Panthera onca	Jaguar	3	—	—	—	—	—	1/2
Acinonyx jubatus	Cheetah	2	3	—	—	1	—	1/3
PINNIPEDIA								
Zalophus californianus	Californian Sealion	5	1	—	—	1	2	1/2
Halichoerus grypus	Grey Seal	2	—	—	—	—	—	0/2
TUBULIDENTATA								
Orycteropus afer	Aardvark	2	1	1	1	—	—	1/2
PROBOSCIDEA								
Loxodonta africana	African Elephant	1	—	—	—	—	—	0/1
Elephas maximus	Indian Elephant	1	—	—	—	—	1	—
HYRACOIDEA								
Procavia capensis	Rock Hyrax	1	5	—	—	1	—	2/3
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
PERISSODACTYLA								
Equus przewalskii	Przewalski's Wild Horse	2	—	—	—	—	—	1/1
Asinus hemionus	Onager (Turkmen form)	4	—	1	—	1	—	2/2
Hippotigris burchelli	Common Zebra	6	—	3	1	—	—	3/5
Ceratotherium simum	White Rhinoceros	2	—	—	—	—	—	1/1
Diceros bicornis	Black Rhinoceros	2	—	—	—	—	—	1/1
ARTIODACTYLA								
Sus scrofa	Wild Boar	6	—	12	3	—	9	2/4
Phacochoerus aethiopicus	Wart Hog	3	—	—	—	1	—	1/1
Tayassu tajacu	Collared Peccary	5	—	—	—	1	2	1/1
Choeropsis liberiensis	Pygmy Hippopotamus	2	—	1	1	—	—	1/1
Lama glama	Llama	7	1(1)	—	—	—	—	4/0
Lama guanicoe	Guanaco	2	—	—	—	—	—	0/2
Camelus bactrianus	Bactrian Camel	7	—	—	—	—	2(1)	2/3
Muntiacus muntjak	Indian Muntjac	3	—	—	—	2	—	0/1
Muntiacus reevesi	Reeves's Muntjac	4	—	2	—	—	—	2/4
Cervus timorensis	Timor Deer	6	—	3	2	—	—	3/4
Pudu pudu	Pudu	3	—	1	—	—	—	3/1
Rangifer tarandus	Reindeer	1	—	—	—	—	—	1/0
Okapia johnstoni	Okapi	2	1	—	—	—	1	1/1
Giraffa camelopardalis	Giraffe	7	—	—	—	—	2(1)	3/2
Tragelaphus strepsiceros	Greater Kudu	6	—	2	—	—	—	2/6
Anoa depressicornis	Anoa	1	—	—	—	—	—	1/0
Bos gaurus	Gaur	5	—	1	1	—	—	2/3
Synceros caffer	African Buffalo	—	1	1	—	—	—	0/2
Bison bison	American Bison	4	—	2	1	—	1	2/2
Kobus ellipsiprymnus	Common Waterbuck	4	—	1	—	—	3(2)	0/2
Hippotragus equinus	Roan Antelope	—	2	—	—	—	—	1/1
Hippotragus niger	Sable Antelope	1	—	—	—	—	1	—
Oryx gazella	Gemsbok	3	—	—	—	—	—	1/2
Oryx tao	Scimitar-horned Oryx	7	2(2)	3	—	2	4(2)	1/5
Addax nasomaculatus	Addax	—	2	—	—	—	—	2/0
Antilope cervicapra	Blackbuck	30	—	11	2	2	10	6/21
Capra falconeri	Markhor	8	—	2	1	2	—	3/4
Ammotragus lervia	Barbary Sheep	30	—	15	9	1	13	7/15
Ovis musimon	Mouflon	20	—	11	3	5	3	5/15
Ovis canadensis	Bighorn Sheep	2	2	1	—	—	—	2/3
DOMESTIC								
	Pigs: Gloucester Old Spot	3	—	3	3	—	1	1/1
	Vietnamese Pot-bellied	2	—	—	—	1	1	—
	Miniature	—	2	11	—	—	2	4/7
	Cattle: Friesian	6	—	1	—	—	3	1/3
	Jersey	1	—	—	—	—	—	0/1
	Goat: Common	8	—	4	—	—	6	1/5
	Golden Guernsey	7	—	2	—	—	4	2/3
	Nubian	—	1	—	—	—	—	0/1
	Sheep: Dorset Down	13	2	3	—	1	8	2/7
	Soay	—	2	1	—	—	—	0/3
	Southdown	—	1	—	—	—	1	—
	Rabbit	13	4	8	2	1	10	5/7
	Guineapig	40	2	30	6	2	34	5/25
	Donkey	2	—	—	—	—	—	1/1
	Pony: Cream	4	—	1	—	—	1	0/4
	Shetland	—	1	1	—	—	—	1/1
	Total–Mammals	991	172(7)	589	69	245	380(8)	1058

Birds

STRUTHIONIFORMES								
Struthio camelus	Ostrich	2	1	—	—	—	—	1/2
CASUARIIFORMES								
Casuarius bennetti	Bennett's Cassowary	1	—	—	—	—	—	0/1
Casuarius unappendiculatus	One-wattled Cassowary	1	—	—	—	—	—	1/0
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Dromaius novaehollandiae	Emu	2	—	—	—	—	—	1/1
APTERYGIFORMES								
Apteryx australis mantelli	North Island Brown Kiwi	2	—	—	—	—	—	1/1
SPHENISCIFORMES								
Pygoscelis papua	Gentoo Penguin	1	—	—	—	—	1	—
Eudyptes crestatus	Rockhopper Penguin	5	—	—	—	1	—	1/1/2
Spheniscus demersus	Black-footed Penguin	13	1	2	—	2	—	2/2/10
Spheniscus humboldti	Humboldt's Penguin	5	1	—	—	1	—	3/1/1
PELECANIFORMES								
Pelecanus onocrotalus	Eastern White Pelican	4	2	—	—	—	—	3/3
Pelecanus crispus	Crested Pelican	1	—	—	—	—	—	1/0
Pelecanus occidentalis	Brown Pelican	7	—	—	—	—	—	0/0/7
Morus bassanus	Gannet	2	—	—	—	—	—	0/0/2
Phalacrocorax carbo	Cormorant	5	—	—	—	—	—	2/1/2
Phalacrocorax aristotelis	Shag	3	—	—	—	—	—	2/1
CICONIIFORMES								
Nycticorax nycticorax	Night Heron	6	—	3	1	—	—	1/1/6
Cochlearius cochlearius	Boatbill	1	—	—	—	—	—	0/0/1
Ardeola ibis	Cattle Egret	10	—	—	—	1	—	2/4/3
Butorides striatus	Striated Heron	1	—	—	—	—	—	0/0/1
Ardea cinerea	Grey Heron	6	—	—	—	—	—	0/0/6
Ciconia abdimii	Abdim's Stork	11	—	2	—	—	—	4/4/5
Ciconia ciconia	White Stork	3	—	—	—	—	—	1/1/1
Ephippiorhynchus asiaticus	Black-necked Stork	2	—	—	—	—	—	1/1
Threskiornis aethiopicus	Sacred Ibis	32	—	18	2	1	17	4/3/23
Carphibis spinicollis	Straw-necked Ibis	3	—	—	—	—	—	1/1/1
Eudocimus albus	White Ibis	3	2	—	—	—	—	2/0/3
Eudocimus ruber	Scarlet Ibis	5	—	—	—	—	—	2/1/2
Platalea leucorodia	Spoonbill	1	—	—	—	—	—	0/0/1
Phoenicopterus ruber roseus	Greater Flamingo	10	—	—	—	—	—	0/0/10
Phoenicopterus ruber ruber	Rosy Flamingo	8	—	—	—	—	—	0/0/8
Phoenicopterus chilensis	Chilean Flamingo	36	—	4	1	2	3	10/7/17
Phoeniconaias minor	Lesser Flamingo	15	—	—	—	—	—	0/0/15
ANSERIFORMES								
Dendrocygna bicolor	Fulvous Whistling Duck	6	—	—	—	3	—	2/1
Dendrocygna arborea	Cuban Tree Duck	4	—	—	—	1	—	1/2
Dendrocygna autumnalis	Red-billed Whistling Duck	7	—	—	—	2	—	4/1
Anser caerulescens atlanticus	Greater Snow Goose	3	—	—	—	—	—	1/2
Anser canagicus	Emperor Goose	2	—	—	—	—	—	1/1
Branta sandvicensis	Hawaiian Goose	6	—	—	—	—	—	4/2
Branta leucopsis	Barnacle Goose	7	—	—	—	—	—	4/3
Branta bernicla crientalis	Brent Goose	9	—	—	—	—	—	6/3
Branta ruficollis	Red-breasted Goose	2	—	—	—	—	—	1/1
Cereopsis novaehollandiae	Cape Barren Goose	2	—	—	—	—	—	1/1
Tadorna tadorna	Shelduck	4	—	—	—	2	—	2/0
Aix sponsa	Carolina Duck	13	—	—	—	7	—	4/2
Aix galericulata	Mandarin Duck	10	—	—	—	5	—	4/1
Callonetta leucophrys	Ringed Teal	4	—	2	—	—	—	3/3
Chenonetta jubata	Maned Goose	—	2	—	—	—	—	1/1
Anas penelope	Wigeon	15	—	—	—	3	—	7/5
Anas sibilatrix	Chiloe Wigeon	18	—	3	—	3	—	10/6/2
Anas strepera	Gadwall	3	—	—	—	—	—	1/2
Anas crecca	Teal	7	—	—	—	2	—	3/2
Anas platyrhynchus laysanensis	Laysan Duck	3	1	—	—	2	—	1/1
Anas acuta	Pintail	11	—	—	—	4	—	5/2
Anas bahamensis	Bahama Pintail	1	1	—	—	—	—	1/1
Anas querquedula	Garganey	2	1	—	—	1	—	1/1
Anas clypeata	Shoveler	11	—	1	1	—	—	5/6
Marmaronetta angustirostris	Marbled Teal	7	—	—	—	1	—	4/2
Netta rufina	Red-crested Pochard	2	—	—	—	—	—	1/1
Aythya ferina	European Pochard	—	4	—	—	—	—	2/2
Aythya fuligula	Tufted Duck	16	—	—	—	1	1	6/8
Somateria mollissima	Eider Duck	6	—	4	—	2	—	6/2
Bucephala clangula	Goldeneye	2	—	—	—	—	—	1/1
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Mergus cucullatus	Hooded Merganser	1	—	—	—	—	—	0/1
Mergus merganser	Goosander	—	2	—	—	—	—	1/1
Oxyura jamaicensis	North American Ruddy Duck	6	—	—	—	1	—	4/1
FALCONIFORMES								
Vultur gryphus	Great Condor	2	—	—	—	—	—	1/1
Milvus migrans migrans	Black Kite	1	—	—	—	—	—	0/0/1
Milvus migrans parasitus	African Black Kite	1	—	—	—	—	—	0/0/1
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	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	1	—	—	—	—	—	0/0/1
Circaetus gallicus gallicus	Short-toed Eagle	1	—	—	—	—	—	0/1
Terathopius ecaudatus	Bateleur Eagle	2	—	—	—	—	—	1/1
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	Grey Eagle-buzzard	1	—	—	—	—	—	1/0
Buteo buteo	Buzzard	2	—	—	—	—	—	1/1
Buteo rufinus	Long-legged Buzzard	—	2	—	—	—	—	1/1
Aquila rapax	Tawny Eagle	3	—	—	—	1	—	1/1
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 plancus	Common Carrion Hawk	2	—	—	—	—	—	2/0
Polyborus plancus cheriway	Cheriway Carrion Hawk	2	—	—	—	—	—	0/0/2
Falco tinnunculus	Kestrel	2	—	—	—	—	—	1/1
Falco cenchroides	Nankeen Kestrel	1	—	—	—	—	—	0/0/1
Falco chicquera chicquera	Red-headed Merlin	1	—	—	—	—	—	0/0/1
Falco biarmicus	Lanner Falcon	1	—	—	—	1	—	—
GALLIFORMES								
Crax alector	Black Curassow	3	—	—	—	—	1	1/1
Callipepla squamata	Scaled Quail	2	—	2	—	—	—	1/1/2
Lophortyx californica	Californian Quail	3	—	1	—	2	—	1/1
Lophortyx gambelii	Gambel's Quail	2	—	20	—	1	16(8)	1/1/3
Colinus virginianus	Bobwhite Quail	2	1	—	—	1	—	1/1
Alectoris rufa	Red-legged Partridge	1	—	—	—	—	—	0/0/1
Coturnix coturnix japonica	Japanese Quail	1	—	—	—	—	—	0/1
Coturnix delegorguei	Harlequin Quail	2	1	—	—	1	—	1/1
Excalfactoria chinensis	Chinese Painted Quail	5	—	—	—	3	—	1/1
Rollulus roulroul	Crested Wood Partridge (Roul Roul)	2	—	—	—	—	—	1/1
Lophophorus impeyanus	Impeyan Pheasant	2	—	1	1	—	—	1/1
Gallus sonneratii	Sonnerat's Jungle Fowl	4	1(1)	7	—	2	5(5)	0/2/3
Lophura leucomelana leucomelana	Nepal Kalij Pheasant	3	—	—	—	—	1	1/1
Lophura leucomelana melanota	Black-backed Kalij Pheasant	1	—	—	—	—	1	—
Lophura nycthemera	Silver Pheasant	2	—	—	—	—	—	1/1
Lophura imperialis	Imperial Pheasant	5	1	—	—	—	1(1)	2/3
Lophura swinhoii	Swinhoe's Pheasant	2	—	7	—	1	6(4)	1/1
Lophura diardi	Siamese Fire-back Pheasant	2	—	—	—	—	—	1/1
Crossoptilon crossoptilon	White Eared Pheasant	2	1	—	—	1	—	1/1
Crossoptilon mantchuricum	Brown Eared Pheasant	2	—	3	—	1	2	1/1
Crossoptilon auritum	Blue Eared Pheasant	4	—	3	—	1	4(2)	1/1
Catreus wallichi	Cheer Pheasant	2	2	—	—	1	—	2/1
Syrmaticus ellioti	Elliot's Pheasant	2	—	—	—	—	—	1/1
Syrmaticus humiae	Hume's Bar-tailed Pheasant	—	2	—	—	—	—	1/1
Syrmaticus mikado	Mikado Pheasant	5	—	10	—	3	8(2)	2/2
Syrmaticus soemmerringi scintillans	Scintillating Copper Pheasant	2	—	—	—	1	—	1/0
Syrmaticus reevesi	Reeves's Pheasant	2	1	—	—	—	1	1/1
Phasianus colchicus	Common Pheasant	2	—	—	—	—	—	1/1
Chrysolophus pictus	Golden Pheasant	3	—	—	—	—	—	2/1
Polyplectron bicalcaratum	Grey Peacock Pheasant	2	—	—	—	1	—	1/0
Polyplectron emphanum	Palawan Peacock Pheasant	1	—	—	—	—	1	—
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Pavo cristatus	Common Peafowl	2	—	2	—	—	2(2)	1/1
Numida meleagris	Helmeted Guineafowl	4	—	—	—	—	—	2/2
Acryllium vulturinum	Vulturine Guineafowl	—	4	—	—	—	—	0/0/4
GRUIFORMES								
Grus antigone	Sarus Crane	3	—	1	1	1	1	0/1
Grus rubicunda	Brolga	1	—	—	—	—	—	0/1
Anthropoides virgo	Demoiselle Crane	4	—	—	—	1	—	1/1/1
Anthropoides paradisea	Stanley Crane	4	—	—	—	2	—	2/0
Balearica pavonina	West African Crowned Crane	2	—	—	—	—	—	2/0
Balearica regulorum	South African Crowned Crane	2	—	—	—	—	—	1/1
Rallus philippensis	Banded Rail	1	—	—	—	—	—	0/0/1
Aramides axillaris	Venezuelan Wood Rail	1	—	—	—	—	—	0/0/1
Aramides cajanea × *A. axillaris*	Hybrid Cayenne Wood Rail × Venezuelan Wood Rail	1	—	—	—	—	—	0/1
Porphyrula alleni	Allen's Gallinule	1	—	—	—	—	—	0/0/1
Porphyrio porphyrio poliocephalus	Grey-headed Gallinule	8	—	2	—	2	5	1/1/1
Lissotis melanogaster melanogaster	Black-bellied Bustard	1	—	—	—	—	—	0/0/1
CHARADRIIFORMES								
Haematopus ostralegus	Oystercatcher	7	—	—	—	1	—	2/2/2
Himantopus himantopus	Black-winged Stilt	1	—	—	—	—	—	0/0/1
Recurvirostra avosetta	Avocet	1	—	—	—	—	—	0/0/1
Glareola pratincola	Collared Pratincole	1	—	—	—	—	—	0/0/1
Vanellus vanellus	Lapwing	2	—	—	—	—	—	0/0/2
Vanellus spinosus	Spur-winged Plover	1	—	—	—	—	—	0/0/1
Vanellus tricolor	Banded Plover	3	—	—	—	3	—	—
Pluvialis apricaria	Golden Plover	1	—	—	—	1	—	—
Charadrius hiaticula	Ringed Plover	1	—	—	—	—	—	0/0/1
Numenius arquata	Curlew	2	—	—	—	—	—	0/0/2
Philomachus pugnax	Ruff	8	—	—	—	1	—	5/2
Thinocorus rumicivorus	Least Seedsnipe	—	4	—	—	3	—	1/0
Catharacta skua antarctica	Antarctic Skua	2	—	—	—	—	—	0/1/1
Larus cirrocephalus poiocephalus	Grey-headed Gull	16	—	20	1	3	13	3/3/13
Larus novaehollandiae	Silver Gull	4	—	—	—	1	—	1/1/1
Sterna bergii	Crested Tern	1	—	—	—	1	—	—
Larosterna inca	Inca Tern	6	—	—	—	3	—	1/0/2
Alca torda	Razorbill	1	—	—	—	—	—	0/0/1
Uria aalge	Guillemot	3	2	—	—	1	—	0/1/3
COLUMBIFORMES								
Columba livia	Rock Dove	1	—	—	—	—	—	0/0/1
Columba guinea	Speckled Pigeon	24	—	2	—	3	—	8/5/10
Columba picazuro	Picazuro Pigeon	5	—	—	—	—	—	1/1/3
Columba corensis	Naked-eyed Pigeon	1	—	—	—	1	—	—
Streptopelia turtur	Turtle Dove	1	—	—	—	1	—	—
Streptopelia decaocto roseogrisea	Pink-headed Dove	2	—	—	—	—	—	0/0/2
Streptopelia capicola	Ring-necked Dove	1	—	—	—	—	—	0/0/1
Streptopelia tranquebarica humilis	Dwarf Turtle Dove	1	—	—	—	—	—	0/0/1
Streptopelia chinensis chinensis	Chinese Necklace Dove	12	—	1	—	1	—	1/3/8
Macropygia ruficeps	Little Cuckoo Dove	1	—	—	—	—	—	0/0/1
Chalcophaps indica	Green-winged Dove	1	—	—	—	—	—	0/0/1
Phaps elegans	Brush Bronzewing	4	—	—	—	—	—	0/0/4
Ochyphaps lophotes	Crested Pigeon	—	3	—	—	2	—	1/0
Geopelia cuneata	Diamond Dove	1	1	1	—	—	—	1/1/1
Zenaida auriculata	Violet-eared Dove	4	—	—	—	—	—	0/0/4
Columbina cruziana	Golden-billed Ground Dove	—	3	—	—	1	—	1/0/1
Geotrygon versicolor	Mountain Witch Dove	4	2	—	—	3	—	1/1/1
Gallicolumba luzonica	Blood-breasted Pigeon	2	—	—	—	—	—	0/0/2
Goura cristata	Blue Crowned Pigeon	1	—	—	—	1	—	—
Ducula carola carola	Grey-breasted Fruit Pigeon	1	—	—	—	1	—	—
Ducula aenea	Green Imperial Pigeon	1	—	—	—	1	—	—
Ducula badia cuprea	Jerdon's Imperial Pigeon	6	—	1	—	—	—	1/1/5
Ducula bicolor	Pied Imperial Pigeon	1	—	—	—	—	—	0/0/1
PSITTACIFORMES								
Chalcopsitta sintillata	Yellow-streaked Lory	1	—	—	—	1	—	—
Pseudeos fuscata	Dusky Lory	2	—	2	—	—	2(2)	1/1
Trichoglossus ornatus	Ornate Lorikeet	1	—	—	—	—	—	0/0/1
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Trichoglossus euteles	Perfect Lorikeet	1	—	—	—	—	—	0/0/1
Lorius lory erythrothorax	Red-breasted Lory	1	—	—	—	—	—	0/0/1
Lorius domicellus	Purple-capped Lory	1	—	—	—	1	—	—
Lorius garrulus × *Lorius domicellus*	Scarlet Lory × Purple-capped Lory	1	—	—	—	—	—	0/0/1
Lorius garrulus flavopalliatus	Yellow-backed Lory	1	—	—	—	—	—	0/0/1
Probosciger aterrimus intermedius	Aru Islands Palm Cockatoo	1	—	—	—	—	—	0/1
Calyptorhynchus funereus	Funereal Cockatoo	1	—	—	—	—	—	0/0/1
Callocephalon fimbriatum	Gang Gang Cockatoo	1	—	—	—	—	—	1/0
Eolophus roseicapillus	Roseate Cockatoo	2	—	—	—	1	—	0/0/1
Cacatua leadbeateri	Leadbeater's Cockatoo	2	—	—	—	—	—	1/0/1
Cacatua sulphurea	Lesser Sulphur-crested Cockatoo	3	—	—	—	—	1	0/1/1
Cacatua galerita galerita	Greater Sulphur-crested Cockatoo	2	—	—	—	—	—	1/1
Cacatua moluccensis	Moluccan Cockatoo	1	—	—	—	—	—	1/0
Cacatua alba	White-crested Cockatoo	1	—	—	—	—	—	1/0
Cacatua sanguinea sanguinea	Bare-eyed Cockatoo	2	—	—	—	—	—	1/1
Cacatua tenuirostris pastinator	Western Slender-billed Cockatoo	4	—	—	—	1	—	0/0/3
Nymphicus hollandicus	Cockatiel	14	—	—	—	5	—	6/2/1
Nestor notabilis	Kea	4	—	—	—	—	—	2/2
Tanygnathus mulleri mulleri	Muller's Blue-backed Parrot	1	—	—	—	1	—	—
Eclectus roratus	Eclectus Parrot	3	—	—	—	—	1	1/1
Polytelis alexandrae	Princess of Wales Parrakeet	—	4	—	—	—	—	2/2
Platycercus eximius eximius	Eastern Rosella Parrakeet	3	—	—	—	1	—	1/1
Psephotus haematonotus	Red-rumped Parrakeet	2	—	—	—	1	—	1/0
Cyanoramphus novaezelandiae	Red-crowned Parrakeet	1	—	—	—	1	—	—
Neophema bourkii	Bourke's Parrakeet	—	2	—	—	—	—	1/1
Neophema splendida	Splendid Grass Parrakeet	—	1	—	—	—	—	1/0
Coracopsis vasa	Vasa Parrot	1	—	—	—	—	—	0/1
Psittacus erithacus	Grey Parrot	4	—	—	—	—	—	2/2
Poicephalus robustus suahelicus	Cape Parrot	1	—	—	—	1	—	—
Poicephalus gulielmi aubryanus	Aubry's Parrot	1	—	—	—	1	—	—
Poicephalus cryptoxanthus cryptoxanthus	Southern Brown-headed Parrot	2	—	—	—	—	—	0/0/2
Poicephalus senegalus	Yellow-vented Senegal Parrot	1	—	—	—	—	—	0/0/1
Poicephalus senegalus versteri	Orange-bellied Senegal Parrot	4	—	—	—	—	—	0/0/4
Poicephalus rueppellii	Ruppell's Parrot	2	1	2	1	—	—	1/1/2
Agapornis fischeri	Fischer's Lovebird	29	2	19	—	9	2	8/4/27
Loriculus vernalis	Vernal Hanging Parrot	1	3	—	—	—	—	2/2
Loriculus galgulus	Blue-crowned Hanging Parrot	2	3	—	—	3	—	2/0
Psittacula eupatria nipalensis	Alexandrine Parrakeet	2	—	—	—	—	—	1/1
Psittacula krameri krameri	African Ring-necked Parrakeet	4	—	—	—	1	—	2/1
Psittacula krameri manillensis	Indian Ring-necked Parrakeet	2	—	4	—	—	4	1/1
Psittacula cyanocephala	Plum-headed Parrakeet	5	—	—	—	1	—	2/2
Psittacula alexandri alexandri	Javan Parrakeet	1	—	—	—	—	—	0/0/1
Anodorhynchus hyacinthinus	Hyacinthine Macaw	2	—	—	—	—	—	1/1
Ara ararauna	Blue and Yellow Macaw	2	—	—	—	—	—	0/0/2
Ara macao	Scarlet Macaw	2	—	—	—	—	—	1/1
Ara chloroptera	Green-winged Macaw	3	—	—	—	—	—	2/1
Ara severa severa	Severe Macaw	2	—	—	—	—	—	1/1
Ara nobilis nobilis	Hahn's Macaw	1	—	—	—	—	—	0/0/1
Aratinga erythrogenys	Red-masked Conure	2	—	—	—	—	—	0/0/2
Aratinga solstitialis	Sun Conure	3	—	—	—	—	—	0/0/3
Rhynchopsitta pachyrhyncha	Thick-billed Parrot	2	—	—	—	—	—	0/0/2
Cyanoliseus patagonus byroni	Greater Patagonian Conure	2	—	—	—	—	—	1/1
Pyrrhura frontalis	Red-bellied Conure	—	2	—	—	—	—	1/1
Brotogeris versicolurus chiriri	Canary-winged Parrakeet	5	—	—	—	1	—	2/0/2
Brotogeris pyrrhopterus	Orange-flanked Parrakeet	2	—	—	—	—	—	0/0/2
Pionites melanocephala	Black-headed Caique	1	—	—	—	—	—	0/0/1
Pionus menstruus	Red-vented Parrot	1	—	—	—	—	—	0/0/1
Amazona albifrons	White-browed Amazon Parrot	1	—	—	—	—	—	0/0/1
Amazona agilis	Active Amazon Parrot	1	—	—	—	—	1	—
Amazona festiva	Festive Amazon Parrot	2	—	—	—	—	—	1/1
Amazona aestiva	Blue-fronted Amazon Parrot	2	—	—	—	—	—	0/0/2
Amazona ochrocephala	Yellow-fronted Amazon Parrot	—	1	—	—	—	—	0/0/1
Amazona amazonica	Orange-winged Amazon Parrot	2	1	—	—	—	—	1/1/1
Amazona farinosa	Mealy Amazon Parrot	1	—	—	—	1	—	—

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

		1	2	3	4	5	6	7
CUCULIFORMES								
Tauraco corythaix corythaix	Knysna Turaco	1	—	—	—	—	—	1/0
Tauraco corythaix persa	West African Turaco	2	1	—	—	2	—	0/0/1
Tauraco corythaix livingstonii	Livingstone's Turaco	1	—	—	—	1	—	—
Tauraco erythrolophus	Red-crested Turaco	2	—	—	—	—	—	0/0/2
Tauraco hartlaubi	Hartlaub's Turaco	4	—	—	—	—	—	0/0/4
Tauraco leucotis leucotis	White-cheeked Turaco	13	—	—	—	1	—	1/1/10
Eudynamys scolopacea chinensis	Chinese Koel	1	—	—	—	—	—	0/0/1
STRIGIFORMES								
Tyto alba	Barn Owl	2	—	—	—	—	—	1/1
Otus leucotis	White-faced Scops Owl	3	—	—	—	—	—	0/0/3
Bubo virginianus	Great Horned Eagle Owl	2	—	—	—	—	—	1/1
Bubo bubo bubo	European Eagle Owl	2	—	2	—	—	—	1/1/2
Bubo bubo omissus	Turkmenian Eagle Owl	2	—	—	—	—	—	0/0/2
Bubo bubo ascalaphus	Savigny's Eagle Owl	1	—	—	—	1	—	—
Bubo bubo bengalensis	Indian Eagle Owl	2	—	—	—	—	—	1/1
Bubo capensis mackinderi	Kenya Eagle Owl	2	—	—	—	—	—	1/1
Bubo africanus africanus	Spotted Eagle Owl	4	—	1	—	—	2	1/1/1
Bubo africanus cinerascens	Abyssinian Spotted Eagle Owl	4	—	4	—	—	2	1/1/4
Bubo poensis	Fraser's Eagle Owl	2	1	—	—	—	1	1/1
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
Pulsatrix perspicillata	Spectacled Owl	2	1	—	—	—	—	1/1/1
Nyctea scandiaca	Snowy Owl	4	—	5	2	—	2	2/2/1
Ninox novaeseelandiae	Boobook Owl	2	1	3	—	—	2	2/2
Athene noctua	Little Owl	2	—	—	—	—	—	1/1
Speotyto cunicularia	Burrowing Owl	5	—	—	—	1	1	1/2
Ciccaba woodfordii	African Wood Owl	2	—	—	—	—	—	1/1
Strix aluco sylvatica	Tawny Owl	2	—	1	—	—	—	1/1/1
Strix hylophila	Rusty Barred Owl	—	2	—	—	—	—	0/0/2
Asio flammeus	Short-eared Owl	2	—	—	—	—	—	0/0/2
Aegolius funereus	Tengmalm's Owl	1	2	—	—	—	—	0/0/3
CORACIIFORMES								
Dacelo novaeguinea	Laughing Kookaburra	2	—	—	—	—	—	2/0
Momotus momota	Blue-crowned Motmot	4	—	—	—	2	—	0/0/2
Coracias caudata	Lilac-breasted Roller	1	—	—	—	—	—	0/0/1
Coracias benghalensis	Indian Roller	1	—	—	—	—	—	0/0/1
Tockus alboterminatus	Crowned Hornbill	2	—	—	—	—	—	0/0/2
Tockus erythrorhynchus	Red-billed Hornbill	5	—	—	—	—	1	3/1
Tockus deckeni jacksoni	Jackson's Hornbill	4	—	—	—	2	—	1/1
Penelopides panini	Tarictic Hornbill	6	—	—	—	1	—	3/2
Aceros undulatus	Wreathed Hornbill	1	1	—	—	—	—	0/2
Anthracoceros malayanus	Black Hornbill	2	—	—	—	—	—	1/1
Anthracoceros coronatus convexus	Southern Pied Hornbill	1	—	—	—	—	—	0/1
Bycanistes bucinator	Trumpeter Hornbill	2	—	—	—	—	—	1/1
Bycanistes subcylindricus	Black and White Casqued Hornbill	2	—	—	—	—	—	1/1
Buceros bicornis	Great Indian Hornbill	2	—	—	—	—	—	1/1
Buceros hydrocorax	Rufous Hornbill	4	—	—	—	—	—	1/1/2
PICIFORMES								
Psilopogon pyrolophus	Fire-tufted Barbet	4	—	—	—	—	2	0/0/2
Megalaima mystacophanos	Gaudy Barbet	1	—	—	—	1	—	—
Tricholaema lacrymosum	Spotted-flanked Barbet	2	—	—	—	1	—	1/0
Tricholaema diadematum	Red-fronted Barbet	1	—	—	—	1	—	—
Lybius guifsobalito	Black-billed Barbet	2	—	—	—	—	—	0/1/1
Lybius bidentatus	Double-toothed Barbet	3	—	—	—	1	—	0/1/1
Trachyphonus erythrocephalus	Red and Yellow Barbet	1	—	—	—	—	1	—
Trachyphonus darnaudii	D'Arnaud's Barbet	1	—	—	—	—	—	0/1
Andigena laminirostris	Laminated Hill Toucan	3	—	—	—	1	—	1/1
Ramphastos vitellinus ariel	Ariel Toucan	2	—	—	—	1	—	0/0/1
Ramphastos vitellinus culminatus	Yellow-ridged Toucan	1	—	—	—	—	—	0/0/1
Ramphastos toco	Toco Toucan	2	—	—	—	2	—	—
Melanerpes candidus	White Woodpecker	2	—	—	—	—	—	1/1
Dinopium benghalense	Golden-backed Woodpecker	1	—	—	—	—	—	0/0/1
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
PASSERIFORMES								
Procnias nudicollis	Naked-throated Bellbird	1	—	—	—	—	—	1/0
Pitta guajana	Banded Pitta	1	—	—	—	—	—	0/1
Motacilla alba	Pied Wagtail	1	—	—	—	—	—	0/0/1
Pycnonotus leucogenys	White-eared Bulbul	1	—	—	—	—	—	0/0/1
Pycnonotus cafer bengalensis	Red-vented Bulbul	2	—	—	—	—	—	0/0/2
Hypsipetes madagascariensis	Black Bulbul	2	—	—	—	—	—	1/1
Chloropsis sonnerati	Greater Green Leafbird	—	2	—	—	—	—	1/1
Chloropsis aurifrons	Golden-fronted Leafbird	3	—	—	—	—	—	1/1/1
Irena puella	Fairy Bluebird	2	2	—	—	—	—	2/2
Lanius vittatus	Bay-backed Shrike	1	—	—	—	1	—	—
Bombycilla cedrorum	Cedar Waxwing	1	—	—	—	—	—	0/0/1
Copsychus malabaricus	Shama	1	—	—	—	—	—	1/0
Turdus olivaceus pelios	African Thrush	2	3	—	—	—	—	0/0/5
Turdus pilaris	Fieldfare	1	—	—	—	—	—	0/0/1
Turdoides striatus	Jungle Babbler	1	—	—	—	—	—	0/0/1
Garrulax albogularis	White-throated Jay Thrush	2	—	—	—	1	—	0/0/1
Garrulax leucolophus	White-crested Laughing Thrush	4	—	—	—	—	—	0/0/4
Garrulax pectoralis	Necklaced Laughing Thrush	2	1	—	—	—	—	0/0/3
Garrulax chinensis	Black-throated Laughing Thrush	1	3	—	—	1	—	0/0/3
Garrulax cineraceus	Moustached Laughing Thrush	1	1	—	—	—	—	0/0/2
Garrulax poecilorhynchus	Rufous Laughing Thrush	2	—	—	—	1	—	0/0/1
Garrulax mitratus S	Chestnut-capped Laughing Thrush	—	1	—	—	—	—	0/0/1
Leiothrix argentauris	Silver-eared Mesia	1	—	—	—	—	—	0/0/1
Leiothrix lutea	Pekin Robin	3	3	—	—	1	—	1/1/3
Malurus cyaneus	Superb Blue Wren	2	—	—	—	—	—	1/1
Malurus splendens	Splendid Fairy Wren	3	—	—	—	—	—	2/1
Nectarinia sp.	Sunbird	1	—	—	—	—	—	1/0
Nectarinia senegalensis	Scarlet-chested Sunbird	—	2	—	—	2	—	—
Zosterops palpebrosa	Oriental White-eye	5	3	—	—	4	—	0/0/4
Zosterops pallida	Pale White-eye	2	—	—	—	2	—	—
Meliphaga penicillata	White-plumed Honeyeater	2	—	—	—	—	2	—
Emberiza bruniceps	Red-headed Bunting	1	—	—	—	—	—	0/0/1
Sporophila minuta	Ruddy-breasted Seedeater	1	—	—	—	1	—	—
Gubernatrix cristata	Green Cardinal	1	—	—	—	—	—	0/1
Paroaria coronata	Red-crested Cardinal	3	—	—	—	1	—	1/0/1
Passerina caerulea	Blue Grosbeak	1	—	—	—	—	—	0/0/1
Passerina leclancherii	Rainbow Bunting	1	—	—	—	—	—	0/1
Tachyphonus rufus	Black Tanager	1	—	—	—	—	—	1/0
Ramphocelus nigrogularis	Masked Crimson Tanager	1	—	—	—	—	—	1/0
Ramphocelus carbo	Silver-beaked Tanager	—	1	—	—	—	—	1/0
Ramphocelus flammigerus icteronotus	Lemon-rumped Tanager	2	—	—	—	—	—	1/1
Thraupis episcopus	Blue Grey Tanager	2	—	—	—	—	—	0/0/2
Tangara schrankii	Green and Gold Tanager	1	—	—	—	1	—	—
Cyanerpes caeruleus	Purple Honeycreeper	1	—	—	—	—	—	0/1
Cyanerpes cyaneus	Red-legged Honeycreeper	1	—	—	—	—	—	0/1
Cacicus melanicterus	Mexican Cacique	2	—	—	—	—	—	1/1
Molothrus bonariensis	Shiny Cowbird	3	—	—	—	—	—	3/0
Fringilla coelebs	Chaffinch	3	—	—	—	1	—	1/1
Serinus mozambicus	Green Singing Finch	1	—	—	—	1	—	—
Carduelis chloris	Greenfinch	9	—	—	—	3	—	0/0/6
Carduelis carduelis	Goldfinch	2	—	—	—	—	—	0/0/2
Acanthis flammea	Redpoll	2	—	—	—	—	—	1/1
Acanthis cannabina	Linnet	1	—	—	—	—	—	0/0/1
Pyrrhula pyrrhula	Bullfinch	1	—	—	—	—	—	1/0
Pyrenestes ostrinus	Black-bellied Seedcracker	—	4	—	—	2	—	1/1
Estrilda caerulescens	Lavender Finch	1	—	—	—	—	—	0/0/1
Estrilda melpoda	Orange-cheeked Waxbill	—	2	—	—	—	—	0/0/2
Estrilda astrild	Common Waxbill	1	—	—	—	1	—	—
Estrilda troglodytes	Red-eared Waxbill	—	4	—	—	1	—	0/0/3
Amandava amandava	Avadavat	1	2	—	—	—	—	2/1
Amandava subflava	Golden-breasted Waxbill	—	4	—	—	1	—	1/2
Poephila guttata	Zebra Finch	1	8	—	—	6	—	0/0/3
Poephila bichenovii	Bicheno's Finch	2	—	—	—	—	—	1/1
Chloebia gouldiae	Gouldian Finch	—	3	—	—	2	—	0/1
Lonchura malabarica malabarica	Silverbill	—	4	—	—	4	—	—
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Lonchura maja	White-headed Mannikin	3	—	—	—	2	—	0/0/1
Padda oryzivora	Java Sparrow	1	—	—	—	—	—	0/1
Amadina fasciata	Cut-throat Finch	1	—	—	—	1	—	—
Passer luteus	Golden Sparrow	2	—	—	—	1	—	0/0/1
Sp. inc.	Weaver	—	20	—	—	7	—	0/0/13
Ploceus melanogaster stephanophorus	Black-billed Weaver	1	—	—	—	—	—	1/0
Ploceus velatus	Masked Weaver	2	—	—	—	1	—	1/0
Ploceus cucullatus	Spotted-backed Weaver	1	—	—	—	—	—	1/0
Quelea quelea	Red-backed Weaver	2	—	—	—	—	—	0/0/2
Euplectes orix	Red Bishop	—	1	—	—	—	—	1/0
Euplectes axillaris	Red-shouldered Whydah	—	2	—	—	2	—	—
Euplectes albonotatus	White-winged Whydah	—	2	—	—	—	—	1/1
Vidua paradisaea	Paradise Whydah	1	—	—	—	—	—	0/1
Aplonis panayensis strigata	Malayan Glossy Starling	1	—	—	—	—	—	0/0/1
Lamprotornis purpureus	Purple Glossy Starling	5	—	—	—	—	—	0/0/5
Lamprotornis chalybaeus	Green Glossy Starling	3	2	—	—	—	—	0/0/5
Cinnyricinclus sharpii	Sharpe's Starling	1	—	—	—	—	—	0/0/1
Spreo superbus	Superb Glossy Starling	5	—	—	—	—	—	1/1/3
Creatophora cinerea	Wattled Starling	21	—	—	—	—	—	8/8/5
Sturnus pagodarum	Pagoda Starling	—	1	—	—	—	—	0/0/1
Sturnus sericeus	Silky Starling	2	—	—	—	—	—	0/0/2
Sturnus vulgaris	Common Starling	1	—	—	—	—	—	1/0
Sturnus cineraceus	Grey Starling	1	—	—	—	1	—	—
Sturnus sinensis	Chinese Starling	1	—	—	—	—	—	0/0/1
Leucopsar rothschildi	Rothschild's Grackle	3	—	—	—	—	—	1/2
Acridotheres cristatellus cristatellus	Chinese Crested Mynah	1	—	—	—	—	—	0/0/1
Gracula religiosa intermedia	Nepal Hill Mynah	6	—	—	—	1	—	3/0/2
Struthidea cinerea	Grey Struthidea	2	—	—	—	—	—	0/1/1
Garrulus glandarius	Jay	3	—	—	—	1	—	0/0/2
Pica pica pica	Magpie	2	—	—	—	—	—	0/0/2
Pyrrhocorax graculus	Alpine Chough	2	—	—	—	—	—	0/0/2
Corvus monedula spermologus	Jackdaw	1	—	—	—	—	—	0/0/1
Corvus frugilegus	Rook	1	—	—	—	—	—	0/0/1
Corvus corone corone	Carrion Crow	3	—	—	—	—	—	0/0/3
Corvus corone cornix	Hooded Crow	1	—	—	—	—	—	0/0/1
Corvus corax corax	Raven	3	—	—	—	—	—	1/0/2
Corvus albicollis	White-necked Raven	2	—	—	—	—	—	0/0/2
DOMESTIC								
	Aylesbury Duck	1	—	—	—	—	—	1/0
	Muscovy Duck	1	—	—	—	—	—	1/0
	Turkey	—	1	—	—	1	—	—
	Total–Birds	1170	161(1)	166	11	215	117(26)	1154

Reptiles

TESTUDINES								
Sternotherus odoratus	Stinkpot	4	—	—	—	—	—	1/1/2
Kinosternon subrubrum	Eastern Mud Terrapin	1	—	—	—	—	—	0/0/1
Kinosternon scorpioides	Scorpion Mud Terrapin	2	—	—	—	—	—	1/0/1
Chrysemys scripta dorbignyi	South American Ornate Terrapin	—	4	—	—	—	—	2/2
Chrysemys scripta scripta	Yellow-bellied Terrapin	4	—	—	—	3	1	—
Chrysemys scripta elegans	Red-eared Terrapin	2	2	—	—	—	—	1/1/2
Mauremys caspica leprosa	Spanish Terrapin	2	—	—	—	—	—	1/1
Clemmys insculpta	Wood Terrapin	2	—	—	—	—	—	1/1
Emys orbicularis	European Pond Tortoise	6	—	—	—	2	—	3/1
Terrapene carolina	Carolina Box Terrapin	1	—	—	—	—	—	0/1
Terrapene carolina triunguis	Three-toed Box Tortoise	2	—	—	—	—	—	1/1
Geochelone sulcata	African Spurred Tortoise	1	—	—	—	—	—	1/0
Geochelone gigantea gigantea	Aldabra Giant Tortoise	7	—	—	—	—	—	3/4
Geochelone elephantopus elephantopus	South Albemarle Giant Tortoise	2	—	—	—	—	—	1/1
Geochelone elephantopus nigrita	Porter's Blackish Giant Tortoise	1	—	—	—	—	—	1/0
Geochelone carbonaria	Red-footed Tortoise	4	—	—	—	2	—	1/1
Chelonia mydas	Green Turtle	3	—	—	—	—	—	0/0/3
Eretmochelys imbricata	Hawksbill Turtle	2	—	—	—	—	—	0/0/2
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Caretta caretta	Loggerhead Turtle	1	—	—	—	—	—	0/0/1
Chelus fimbriatus	Matamata	4	—	—	—	—	1	1/2
Trionyx hurum	Peacock Soft-shelled Turtle	3	—	—	—	—	—	1/2
CROCODYLIA								
Osteolaemus tetraspis tetraspis	West African Dwarf Crocodile	7	—	—	—	1	—	0/0/6
Alligator mississippiensis	American Alligator	3	—	—	—	—	—	1/2
Alligator sinensis	Chinese Alligator	3	—	—	—	—	—	1/2
Caiman crocodilus	Spectacled Cayman	1	—	—	—	—	1	—
Caiman crocodilus yacare	Jacaré Cayman	3	—	—	—	—	3	—
SAURIA								
Pristurus crucifer	Elegant Scrub Gecko	—	1	—	—	1	—	—
Hemitheconyx caudicinctus	African Fat-tailed Gecko	1	—	—	—	1	—	—
Phyllurus platurus	Broad-tailed Rock Gecko	1	—	—	—	—	—	0/0/1
Gekko gecko	Tokay Gecko	1	1	—	—	—	—	1/1
Ptychozoon kuhli	Flying Gecko	2	3	—	—	2	—	0/0/3
Eublepharis macularius	Leopard Ground Gecko	26	—	10	—	2	25	2/4/3
Gekko sp.	Gecko	1	2	—	—	1	2	—
Anolis equestris	Knight Anole	1	—	—	—	—	—	0/0/1
Anolis richardii	Richard's Anole	10	—	—	—	1	—	0/0/9
Anolis carolinensis	Carolina Anole	1	—	—	—	—	—	1/0
Laemanctus longipes deborrei	Casque-headed Lizard	3	—	—	—	—	—	0/3
Basiliscus basiliscus	American Basilisk	2	—	—	—	—	—	1/1
Cyclura cornuta	Rhinoceros Iguana	6	—	—	—	—	—	2/4
Iguana iguana	Common Iguana	4	3	—	—	3	3	0/0/1
Dipsosaurus dorsalis	Desert Iguana	4	—	—	—	2	—	1/1
Sauromalus obesus	Chuckwalla	4	—	—	—	—	—	2/2
Sceloporus poinsetti	Crevice Spiny Lizard	1	—	—	—	—	—	1/0
Sceloporus orcutti	Granite Spiny Lizard	1	—	—	—	—	—	0/0/1
Physignathus cocincinus	Cochin China Water Dragon	5	2	—	—	—	1	1/3/2
Uromastyx acanthinurus	Bell's Dabb Lizard	5	—	—	—	2	3	—
Chamaeleo chamaeleon	Common Chameleon	—	1	—	—	1	—	—
Chamaeleo bitaeniatus	Two-banded Chameleon	1	—	—	—	1	—	—
Chamaeleo jacksoni	Jackson's Chameleon	1	—	—	—	1	—	—
Egernia striolata	Australian Tree Skink	4	—	3	—	1	—	0/0/6
Egernia cunninghami	Cunningham's Skink	1	—	—	—	1	—	—
Trachydosaurus rugosus	Shingle-back	2	—	—	—	1	—	0/0/1
Tiliqua gigas	Giant New Guinea Skink	2	—	—	—	1	—	0/0/1
Tiliqua scincoides	Eastern Blue-tongued Skink	5	—	—	—	—	—	0/0/5
Tiliqua scincoides intermedia	Northern Blue-tongued Skink	2	—	—	—	—	—	0/0/2
Mabuya brevicollis	Short-necked Skink	2	—	—	—	—	1	1/0
Mabuya quinquetaeniata	Five-lined Skink	2	1	—	—	1	1	1/0
Mabuya sp.	Skink	—	1	—	—	—	1	—
Chalcides ocellatus	Eyed Skink	2	—	—	—	—	—	0/0/2
Gerrhosaurus vallidus	Plated Rock Lizard	—	1	—	—	1	—	—
Gerrhosaurus major	Tawny Plated-lizard	4	—	—	—	—	—	0/0/4
Lacerta lepida	Ocellated Lizard	20	2	—	—	7	11	0/0/4
Podarcis lilfordi	Lilford's Wall Lizard	7	—	—	—	5	—	0/0/2
Psammodromus algirus	Algerian Sand Lizard	1	—	—	—	—	1	—
Tupinambis nigropunctatus	Black-pointed Tegu	6	—	—	—	1	2	2/1
Trogonophis wiegmanni	Wiegmann's Burrowing Lizard	—	1	—	—	1	—	—
Varanus exanthematicus	Bosc's Monitor	1	—	—	—	—	—	0/0/1
Heloderma suspectum	Gila Monster	2	—	—	—	—	—	1/1
Heloderma horridum	Mexican Beaded Lizard	1	—	—	—	—	—	1/0
Ophisaurus apodus	European Glass Lizard	—	1	—	—	—	1	—
Cordylus giganteus	Sungazer	5	—	—	—	—	—	0/0/5
Cordylus warreni breyeri	Breyer's Girdled Lizard	2	1	—	—	—	—	1/0/2
Cordylus cordylus jonesii	Jones' Armoured Lizard	—	3	—	—	—	—	0/0/3
Cordylus vittifer	Transvaal Girdled Lizard	1	—	—	—	—	1	—
Platysaurus guttatus	Red-tailed Rock Lizard	1	—	—	—	—	—	1/0
Platysaurus guttatus minor	Lesser Red-tailed Rock Lizard	2	1	—	—	—	—	1/2
SERPENTES								
Liasis fuscus	Australian Water Python	2	—	—	—	—	—	1/1
Liasis amethistinus	Amethystine Python	1	—	—	—	—	—	0/0/1
Morelia spilotus variegata	Carpet Python	1	1	—	—	—	1	0/1
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Python reticulatus	Reticulated Python	2	1	—	—	—	1	1/1
Python molurus bivittatus	Malaysian Rock Python	3	1	—	—	1	1	1/1
Python regius	Royal Python	3	7	—	—	—	6	2/2
Eunectes murinus	Anaconda	2	—	—	—	1	—	1/0
Eunectes notaeus	Yellow Anaconda	3	—	—	—	1	—	0/2
Boa constrictor	Boa Constrictor	12	—	1	—	1	3	3/3/3
Eryx conicus	Russell's Sand-boa	1	—	—	—	—	1	—
Natrix natrix	Grass Snake	—	1	—	—	—	—	0/0/1
Natrix tessellata	Dice Snake	—	1	—	—	1	—	—
Thamnophis radix	Plains Garter Snake	2	—	—	—	—	—	0/0/2
Boaedon fuliginosus	African House Snake	6	2	14	—	—	18	2/2
Elaphe guttata	Corn Snake	1	—	—	—	—	—	1/0
Elaphe obsoleta	American Rat Snake	2	—	7	—	—	5	1/1/2
Elaphe guttata emoryi	Great Plains Rat Snake	1	—	—	—	—	1	—
Elaphe obsoleta quadrivittata	Yellow Rat Snake	1	1	—	—	1	—	1/0
Elaphe scalaris	Ladder Snake	6	—	5	—	—	—	1/1/9
Coluber najadum	Dahl's Whip Snake	2	—	—	—	—	—	0/0/2
Coluber ravergieri nummifer	Ravergier's Racer	2	—	—	—	—	2	—
Pituophis melanoleucus melanoleucus	Northern Pine Snake	—	2	—	—	—	—	1/1
Hydrodynastes gigas	Boipevassu Snake	12	3	16	—	3	20	2/1/5
Lampropeltis getulus	Common Kingsnake	1	—	—	—	—	1	—
Lampropeltis getulus holbrooki	Speckled Kingsnake	2	—	8	—	—	4	1/1/4
Lampropeltis getulus splendida	Desert Kingsnake	2	—	—	—	1	—	0/0/1
Lampropeltis getulus californiae	Californian Kingsnake	1	1	—	—	1	1	—
Lampropeltis triangulum sinaloae SS	Sinaloan Milk Snake	—	3	—	—	—	—	1/2
Telescopus fallax	European Cat Snake	1	—	—	—	—	1	—
Malpolon monspessulanus	Montpellier Snake	9	—	3	—	7	—	0/0/5
Dispholidus typus	Boomslang	4	—	—	—	—	—	1/2/1
Bungarus multicinctus	Many-banded Krait	—	4	—	—	—	—	0/0/4
Walterinnesia aegyptia	Innes' Cobra	2	—	—	—	—	—	0/0/2
Naja haje	Egyptian Cobra	1	—	—	—	—	1	—
Naja melanoleuca	Black and White Cobra	3	—	—	—	1	—	2/0
Naja nigricollis	Black-necked Cobra	1	—	—	—	1	—	—
Naja naja	Indian Cobra	2	—	8	—	—	—	1/1/8
Dendroaspis angusticeps	Common Green Mamba	1	—	—	—	—	—	0/1
Dendroaspis polylepis	Black Mamba	6	1	—	—	—	3	2/2
Vipera xanthina palaestinae	Palestine Viper	6	2	—	—	1	2	2/1/2
Vipera ammodytes meridionalis	Long-nosed Viper	4	—	—	—	—	—	2/2
Bitis arietans	Puff Adder	4	—	—	—	2	—	0/2
Bitis gabonica	Gaboon Viper	1	3	—	—	—	—	2/2
Cerastes cerastes	Horned Cerastes Viper	—	4	—	—	—	4	—
Cerastes vipera	Lesser Cerastes Viper	2	—	—	—	—	—	1/1
Echis coloratus	Arabian Carpet Viper	2	—	—	—	1	1	—
Agkistrodon bilineatus	Mexican Cantil	4	—	—	—	—	—	0/0/4
Agkistrodon contortrix mokeson	Northern Copperhead	2	—	—	—	—	—	1/1
Trimeresurus popeorum	Pope's Pit Viper	4	—	—	—	1	—	0/1/2
Sistrurus miliarius	Pygmy Rattlesnake	2	—	—	—	1	—	1/0
Crotalus atrox	Western Diamond-back Rattlesnake	4	—	6	2	2	—	1/1/4
	Total–Reptiles	363	69	81	2	74	136	301

Amphibians

CAUDATA

Necturus maculosus	Mudpuppy	2	—	—	—	1	—	0/0/1
Andrias japonicus	Japanese Giant Salamander	1	—	—	—	—	—	0/0/1
Triturus cristatus	Crested Newt	10	—	—	—	—	—	0/0/10
Triturus vulgaris	Common Smooth Newt	4	—	—	—	—	—	0/0/4
Taricha granulosa	Roughskin Newt	8	—	—	—	—	—	0/0/8
Salamandra salamandra	Fire Salamander	14	—	—	—	11	—	0/0/3
Ambystoma tigrinum	Tiger Salamander	2	—	—	—	1	—	0/0/1
Ambystoma opacum	Marbled Salamander	4	—	—	—	4	—	—
Ambystoma mexicanum	Axolotl	4	—	36	—	—	—	0/0/40
Ambystoma maculatus	American Spotted Salamander	—	1	—	—	—	—	0/0/1

ANURA

Xenopus laevis	Clawed Frog	4	—	—	—	—	—	0/0/4
		1	2	3	4	5	6	7

		1	2	3	4	5	6	7
Pipa pipa	Surinam Toad	4	—	—	—	1	—	0/0/3
Discoglossus pictus	Painted Frog	—	1	—	—	—	—	1/0/0
Bombina variegata	Yellow-bellied Toad	6	—	—	—	1	—	0/0/5
Bufo viridis	Green Toad	—	6	—	—	—	—	0/0/6
Bufo regularis	Common African Square-marked Toad	4	—	—	—	4	—	—
Bufo americanus	American Toad	4	—	—	—	4	—	—
Bufo marinus	Giant Toad	6	—	—	—	3	—	0/0/3
Bufo melanostictus	Asiatic Toad	—	6	—	—	—	—	0/0/6
Hyla arborea	European Tree Frog	3	—	—	—	3	—	—
Hyla cinerea	Green Tree Frog	2	1	—	—	—	—	0/0/3
Rana esculenta	Edible Frog	3	—	—	—	3	—	—
Rana ridibunda	Marsh Frog	4	—	—	—	—	—	0/0/4
Rana temporaria	Common Frog	40	—	—	—	9	30	0/0/1
Rana catesbeiana	American Bull Frog	1	—	—	—	1	—	—
Rana pipiens	Northern Leopard Frog	6	—	—	—	5	—	0/0/1
Hylarana erythraea	Gold-lined Frog	2	—	—	—	2	—	—
Kassina senegalensis	Senegalese Striped Frog	4	—	—	—	1	—	0/0/3
	Total–Amphibians	142	15	36	—	54	30	109

WHIPSNADE PARK

Mammals

MARSUPIALIA								
Macropus rufogriseus	Red-necked Wallaby	258	—	98	—	39	33	23/30/231
PRIMATES								
Saimiri sciureus	Squirrel Monkey (Black-capped form)	21	—	6	2	—	—	4/17/4
Callithrix jacchus	Common Marmoset	2	—	—	—	—	—	1/1
Pan troglodytes	Chimpanzee	7	1(1)	1	—	—	—	3/6
RODENTIA								
Cynomys ludovicianus	Prairie Marmot	26	—	20	—	—	4(4)	0/0/42
Dolichotis patagonum	Mara	8	—	5	—	6	—	2/0/5
CETACEA								
Tursiops truncatus	Bottle-nosed Dolphin	3	—	—	—	—	—	1/2
CARNIVORA								
Canis lupus	Grey Wolf	26	—	6	—	2	8	2/4/16
Lycaon pictus	Cape Hunting Dog	3	—	—	—	—	—	1/2
Tremarctos ornatus	Spectacled Bear	2	—	—	—	—	1	0/1
Ursus arctos	Brown Bear	5	—	6	—	—	7	1/3
Ursus arctos	Brown Bear (Kodiak form)	2	—	—	—	—	—	1/1
Thalarctos maritimus	Polar Bear	2	—	—	—	—	—	1/1
Ailurus fulgens	Red Panda	1	1(1)	—	—	—	—	1/1
Nasua nasua	Ring-tailed Coati	4	—	—	—	2	—	2/0
Suricata suricatta	Suricate Meerkat	2	—	—	—	—	—	0/2
Felis lynx	Northern Lynx	4	—	—	—	—	—	1/3
Felis serval	Serval	2	—	—	—	—	—	1/1
Panthera leo	Lion	5	—	9	9	—	1	1/3
Panthera tigris	Tiger (Siberian form)	3	—	—	—	—	—	1/2
Panthera onca	Jaguar	2	—	2	2	—	—	1/1
Acinonyx jubatus	Cheetah	11	2	2	2	3	1	4/5
PINNIPEDIA								
Otaria byronia	Southern Sealion	2	—	—	—	—	—	0/2
Phoca vitulina	Common Seal	1	—	—	—	—	—	0/1
PROBOSCIDEA								
Elephas maximus	Indian Elephant	1	—	—	—	—	—	0/1
Loxodonta africana	African Elephant	3	—	—	—	1	—	1/1
PERISSODACTYLA								
Equus przewalskii	Przewalski's Horse	16	2	7	3	—	5	5/12
Asinus hemionus	Onager (Persian form)	6	—	2	—	1	1	2/4
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Hippotigris zebra	Mountain Zebra	4	—	—	—	3	—	0/1
Hippotigris burchelli	Common Zebra	8	—	1	—	—	—	2/7
Rhinoceros unicornis	Indian Rhinoceros	2	—	—	—	—	—	1/1
Diceros bicornis	Black Rhinoceros	3	—	—	—	—	1	1/1
Ceratotherium simum	White Rhinoceros	18	—	2	—	—	6	2/14
ARTIODACTYLA								
Sus scrofa	Wild Boar	2	—	—	—	—	—	1/1
Tayassu tajacu	Collared Peccary	13	—	2	—	2	—	5/5/3
Hippopotamus amphibius	Hippopotamus	3	—	—	—	—	—	2/1
Choeropsis liberiensis	Pygmy Hippopotamus	6	—	—	—	—	—	2/4
Lama glama	Llama	14	—	7	3	1	2(1)	3/12
Lama guanicoe	Guanaco	20	—	8	—	1	9	2/16
Camelus bactrianus	Bactrian Camel	18	1(1)	3	—	3	—	3/16
Camelus dromedarius	Arabian Camel	7	—	—	—	—	—	0/7
Muntiacus reevesi	Reeves's Muntjac	33	2	10	—	3	2	12/18/10
Dama dama	Fallow Deer	55	—	19	2	—	14	3/12/43
Axis axis	Axis Deer	29	—	10	5	3	1	2/9/19
Axis porcinus	Hog Deer	23	—	10	6	3	—	6/9/9
Cervus duvauceli	Barasingha	17	—	4	2	3	—	8/7/1
Cervus nippon	Sika Deer (Ryukyu × Japanese form)	8	—	4	1	—	—	3/3/5
Cervus nippon	Sika Deer (Formosan form)	31	—	11	4	—	7	9/10/12
Elaphurus davidianus	Père David's Deer	58	—	17	3	4	24	10/23/11
Alces alces	Moose	5	—	—	—	2	—	1/2
Rangifer tarandus	Reindeer	8	—	5	3	—	—	3/7
Hydropotes inermis	Chinese Water Deer	45	—	60	—	—	28	0/0/77
Giraffa camelopardalis	Giraffe	3	1(1)	—	—	1	—	1/2
Tragelaphus spekei	Sitatunga	13	—	6	2	3	—	6/8
Boselaphus tragocamelus	Nilgai	18	—	16	2	5	4	8/15
Bos grunniens	Yak	10	—	2	—	—	—	5/6/1
Syncerus caffer	African Buffalo (Dwarf Forest form)	—	3	—	—	—	—	3/0
Syncerus caffer	Cape Buffalo	3	—	—	—	2	1	—
Bison bonasus	European Bison	16	—	5	2	2	7	1/9
Bison bison	American Bison	9	—	4	1	1	—	4/6/1
Kobus ellipsiprymnus	Common Waterbuck	3	2(2)	—	—	2	1	1/1
Hippotragus equinus	Roan Antelope	2	—	—	—	—	—	2/0
Oryx tao	Scimitar-horned Oryx	9	2(2)	—	—	—	5(2)	2/4
Damaliscus dorcas	Blesbok	5	—	—	—	1	—	1/3
Connochaetes taurinus	Brindled Gnu	4	—	2	1	1	—	1/3
Antilope cervicapra	Blackbuck	14	1	—	—	—	4	11/0
Gazella thomsoni	Thomson's Gazelle	21	—	—	—	2	—	6/4/9
Ovibos moschatus	Musk Ox	4	—	3	1	1	—	1/4
Ovis musimon	Mouflon	43	—	20	6	8	27	4/17/1
DOMESTIC								
	Ponies	17	—	1	—	1	—	10/7
	Pygmy Donkey	2	—	—	—	—	—	1/1
	Vietnamese Pot-bellied Pig	2	—	—	—	1	1	—
	Windsor White Goat	12	—	9	—	1	—	6/14
Total–Mammals		1068	18(8)	405	62	114	205(7)	1110

Birds

STRUTHIONIFORMES								
Struthio camelus	Ostrich	5	—	—	—	1	—	2/2
RHEIFORMES								
Rhea americana	Common Rhea	4	—	2	1	1	—	3/1
CASUARIIFORMES								
Casuarius casuarius	Australian Cassowary	3	—	1	—	—	—	3/1
Dromaius novaehollandiae	Emu	9	—	13	3	3	5	2/4/5
SPHENISCIFORMES								
Aptenodytes patagonica	King Penguin	12	—	1	1	—	—	1/4/7
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Eudyptes crestatus	Rockhopper Penguin	6	—	2	1	—	—	1/1/5
Spheniscus humboldti	Humboldt's Penguin	50	—	16	5	2	24	12/12/11
CICONIIFORMES								
Ciconia ciconia	White Stork	2	4	—	—	—	—	0/0/6
Phoenicopterus ruber roseus	Greater Flamingo	7	—	—	—	—	—	0/0/7
Phoenicopterus ruber ruber	Rosy Flamingo	69	—	9	2	4	—	17/17/38
Phoenicopterus chilensis	Chilean Flamingo	54	—	—	—	1	—	12/12/29
ANSERIFORMES								
Dendrocygna bicolor	Fulvous Whistling Duck	1	—	—	—	—	—	1/0
Cygnus atratus	Black Swan	17	—	4	—	4	—	5/5/7
Cygnus melanocoryphus	Black-necked Swan	1	1	—	—	1	—	1/0
Cygnus cygnus	Whooper Swan	2	—	—	—	—	—	1/1
Coscoroba coscoroba	Coscoroba Swan	3	—	—	—	1	—	1/1
Anser cygnoides	Chinese Goose	1	—	—	—	—	—	1/0
Anser anser	Greylag Goose	11	—	—	—	—	—	4/5/2
Anser indicus	Bar-headed Goose	34	—	8	3	1	—	6/6/26
Anser caerulescens caerulescens	Lesser Snow Goose	7	—	3	—	—	—	2/2/6
Anser caerulescens atlanticus	Greater Snow Goose	16	—	—	—	—	—	4/4/8
Anser canagicus	Emperor Goose	14	—	—	—	2	—	4/3/5
Branta sandvicensis	Hawaiian Goose	4	—	—	—	—	—	2/2
Branta canadensis	Canada Goose	22	—	21	2	—	24	3/1/13
Branta leucopsis	Barnacle Goose	6	9	—	—	—	—	3/3/9
Branta ruficollis	Red-breasted Goose	25	—	1	—	2	—	15/8/1
Cereopsis novaehollandiae	Cape Barren Goose	12	—	10	4	1	—	7/4/6
Alopochen aegyptiacus	Egyptian Goose	6	—	4	—	—	2	2/2/4
Tadorna cana	South African Shelduck	8	—	—	—	—	—	5/3
Tadorna variegata	New Zealand Shelduck	2	—	—	—	—	—	1/1
Tadorna tadorna	Shelduck	7	—	—	—	—	—	3/4
Plectropterus gambensis	Spur-winged Goose	2	—	—	—	—	—	1/1
Aix sponsa	Carolina Duck	10	4	—	—	1	—	8/1/4
Aix galericulata	Mandarin Duck	21	—	—	—	2	—	12/7
Chenonetta jubata	Maned Goose	4	—	—	—	—	—	1/1/2
Anas penelope	Wigeon	4	4	—	—	—	—	2/4/2
Anas sibilatrix	Chiloe Wigeon	30	—	—	—	2	—	3/3/22
Anas falcata	Falcated Teal	5	2	—	—	1	—	2/4
Anas strepera	Gadwall	3	—	—	—	—	—	1/2
Anas formosa	Baikal Teal	5	—	—	—	—	—	1/1/3
Anas superciliosa	New Zealand Grey Duck	1	—	—	—	1	—	—
Anas specularioides	Crested Duck	18	—	—	—	1	—	2/3/12
Anas acuta	Pintail	4	1	—	—	2	—	1/2
Anas bahamensis	Bahama Pintail	2	—	—	—	—	—	1/1
Anas querquedula	Garganey	1	1	—	—	—	—	1/1
Anas clypeata	Shoveler	5	2	—	—	2	—	2/3
Netta rufina	Red-crested Pochard	4	—	1	1	—	—	2/2
Aythya ferina	Pochard	6	—	—	—	—	—	3/3
Aythya fuligula	Tufted Duck	6	—	—	—	1	—	3/2
Aythya marila	Scaup	3	—	—	—	1	—	0/2
Somateria mollissima	Eider Duck	9	—	2	—	—	2	3/4/2
Bucephala islandica	Barrow's Goldeneye	3	—	—	—	—	—	1/2
FALCONIFORMES								
Gyps africanus	African White-backed Vulture	1	—	—	—	—	—	1/0
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	3	—	—	—	—	—	1/2
GALLIFORMES								
Meleagris gallopavo	North American Turkey	28	—	4	—	3	2	0/0/27
Lophortyx gambelii	Gambel's Quail	—	8(8)	—	—	—	—	4/4
Francolinus erckelii	Erckel's Francolin	1	—	—	—	1	—	—
Lophophorus impeyanus	Impeyan Pheasant	13	—	—	—	—	3	6/4
Gallus sonneratii	Sonnerat's Jungle Fowl	9	7(5)	6	—	3	1(1)	5/4/9
Lophura nycthemera	Silver Pheasant	5	—	—	—	—	—	2/3
Lophura imperialis	Imperial Pheasant	1	1(1)	—	—	—	—	1/1
Lophura swinhoii	Swinhoe's Pheasant	—	4(4)	—	—	—	—	2/2
Crossoptilon mantchuricum	Brown Eared Pheasant	5	—	2	—	—	—	2/2/3
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Crossoptilon auritum	Blue Eared Pheasant	—	2(2)	—	—	—	—	1/1
Catreus wallichi	Cheer Pheasant	5	—	—	—	—	—	1/1/3
Syrmaticus mikado	Mikado Pheasant	1	2(2)	—	—	—	—	1/2
Syrmaticus soemmerringi scintillans	Scintillating Copper Pheasant	1	1	—	—	—	—	1/1
Syrmaticus reevesi	Reeves's Pheasant	1	—	—	—	—	1	—
Chrysolophus pictus	Golden Pheasant	7	—	8	—	1	—	8/5/1
Chrysolophus amherstiae	Lady Amherst's Pheasant	4	—	—	—	—	—	2/2
Pavo cristatus	Common Peafowl	58	2(2)	90	—	12	11	0/0/127
Numida meleagris	Helmeted Guineafowl	22	—	8	—	1	—	0/0/29
GRUIFORMES								
Grus grus	Common Crane	3	—	—	—	—	—	0/0/3
Grus grus lilfordi	Lilford's Crane	1	—	—	—	—	—	0/0/1
Grus monacha	Hooded Crane	1	—	—	—	—	—	1/0
Grus canadensis	Sandhill Crane	1	2	—	—	—	—	1/2
Grus japonensis	Red Crowned Crane	5	—	—	—	—	—	2/2/1
Grus vipio	White-naped Crane	6	—	1	1	—	—	3/3
Grus antigone	Sarus Crane	2	—	—	—	—	—	0/2
Grus rubicunda	Brolga	2	—	—	—	—	—	1/1
Bugeranus carunculatus	Wattled Crane	4	—	—	—	—	—	2/2
Anthropoides virgo	Demoiselle Crane	7	6	—	—	1	2	1/1/8
Anthropoides paradisea	Stanley Crane	4	—	—	—	—	—	2/2
Balearica pavonina	West African Crowned Crane	6	—	—	—	—	—	0/0/6
Balearica regulorum	South African Crowned Crane	14	—	—	—	—	—	1/1/12
Choriotis kori	Kori Bustard	5	—	—	—	—	—	1/4
COLUMBIFORMES								
Goura victoria	Victoria Crowned Pigeon	2	—	—	—	1	—	1/0
PSITTACIFORMES								
Pseudeos fuscata	Dusky Lory	—	2(2)	—	—	—	—	1/1
Trichoglossus haematodus	Swainson's Lorikeet	4	—	—	—	—	—	0/0/4
Eolophus roseicapillus	Roseate Cockatoo	4	—	—	—	1	—	0/0/3
Cacatua leadbeateri	Leadbeater's Cockatoo	2	—	—	—	—	1	1/0
Cacatua sulphurea	Lesser Sulphur-crested Cockatoo	1	—	—	—	—	—	0/1
Cacatua galerita	Greater Sulphur-crested Cockatoo	3	—	—	—	—	—	0/0/3
Cacatua moluccensis	Moluccan Cockatoo	2	—	—	—	2	—	—
Cacatua sanguinea	Bare-eyed Cockatoo	5	—	—	—	—	—	1/1/3
Nymphicus hollandicus	Cockatiel	10	—	—	—	1	—	1/1/7
Alisterus scapularis	King Parrot	2	—	—	—	1	—	0/1
Platycercus eximius cecilae	Golden-mantled Rosella	2	—	—	—	—	—	0/0/2
Platycercus eximius	Eastern Rosella Parrakeet	1	—	—	—	—	—	0/0/1
Psephotus haematonotus	Red-rumped Parrakeet	11	—	—	—	1	—	2/2/6
Psittacus erithacus	Grey Parrot	2	—	—	—	—	—	0/0/2
Psittacula eupatria nipalensis	Alexandrine Parrakeet	2	—	—	—	1	—	1/0
Psittacula krameri manillensis	Indian Ring-necked Parrakeet	9	—	—	—	—	—	2/1/6
Ara ararauna	Blue and Yellow Macaw	2	—	—	—	—	—	1/0/1
Ara macao	Scarlet Macaw	4	—	—	—	—	—	2/2
Ara chloroptera	Green-winged Macaw	6	—	—	—	—	—	2/3/1
Amazona aestiva	Blue-fronted Amazon Parrot	1	—	—	—	—	—	0/0/1
Amazona amazonica	Orange-winged Amazon Parrot	1	—	—	—	—	—	0/0/1
STRIGIFORMES								
Tyto alba	Barn Owl	1	2	—	—	—	—	2/1
Nyctea scandiaca	Snowy Owl	2	—	2	2	—	—	1/1
Strix aluco sylvatica	Tawny Owl	—	2	—	—	—	—	1/1
CORACIIFORMES								
Dacelo novaeguineae	Laughing Kookaburra	2	—	—	—	—	—	1/1
PASSERIFORMES								
Serinus mozambicus	Green Singing Finch	1	—	—	—	—	—	1/0
Estrilda melpoda	Orange-cheeked Waxbill	—	4	—	—	—	—	2/2
Estrilda troglodytes	Red-eared Waxbill	1	—	—	—	—	—	0/0/1
Estrilda astrild	Common Waxbill	1	—	—	—	1	—	—
Amandava subflava	Golden-breasted Waxbill	3	2	—	—	1	—	1/3
		1	**2**	**3**	**4**	**5**	**6**	**7**

		1	2	3	4	5	6	7
Gracula religiosa	Hill Mynah	2	—	—	—	—	—	0/0/2
Urocissa erythrorhyncha occipitalis	Red-billed Blue Pie	1	1	—	—	—	—	0/0/2
	Total–Birds	888	76(26)	219	26	70	78(1)	1009

Reptiles

SAURIA

Tiliqua gerradii	Pink-tongued Skink	1	—	—	—	—	—	0/0/1

SERPENTES

Python molurus	Indian Python	1	—	—	—	—	—	0/0/1
Python regius	Royal Python	5	—	—	—	—	—	0/0/5
	Total–Reptiles	7	—	—	—	—	—	7

		1	2	3	4	5	6	7

Summary

		1	2	3	4	5	6	7	Number of Species (excluding domestic)
Regent's Park	Mammals	991	172(7)	589	69	245	380(8)	1058	162
	Birds	1170	161(1)	166	11	215	117(26)	1154	358
	Reptiles	363	69	81	2	74	136	301	92
	Amphibians	142	15	36	—	54	30	109	21
	Total	2666	417(8)	872	82	588	663(34)	2622	633
	Estimated number of fishes and invertebrates in the Collection at 31 December 1981:								
	Fishes					1498		177 Species	
	Invertebrates (excluding locusts, ants and bees)					4450		135 Species	
Whipsnade Park	Mammals	1068	18(8)	405	62	114	205(7)	1110	65
	Birds	888	76(26)	219	26	70	78(1)	1009	113
	Reptiles	7	—	—	—	—	—	7	3
	Total	1963	94(34)	624	88	184	283(8)	2126	181
	Grand Total— Zoological Society of London	4629	511(42)	1496	170	772	946(42)	4748	695*

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

List of Donors of Animals to the Society

Regent's Park

ADKINS, MRS: 1 Guinea Pig
BAKER, MRS B.: 1 Plated Rock Lizard
BARTON, MR: 1 Skink sp.
BAXTER, MR R. N.: Stick insect culture, 5 Praying Mantis ootheca
BENNETT, MR F.: 1 Boenacki Grouper, 2 Panther Fish
BIDDULPH, MR J. A.: 1 Nubian Goat
BIRD, MR M.: 1 Indian Rock Python, 1 Reticulated Python
BRISTOL, CLIFTON & WEST OF ENGLAND ZOOLOGICAL SOCIETY: 2 Goodfellow's Tree Kangaroo
BURTON, MR J.: 2 Weasel
CHESSINGTON ZOO LTD.: 2 Sloth Bear
CORBETT, MRS L.: 1 Millipede
CUSTOMS, EXCISE, H.M.: 1 Spectacled Owl, 1 Orange-winged Amazon Parrot, 1 Yellow-fronted Amazon Parrot, 1 Gecko, sp. inc.
DENHAM, MR K.: 3 Pekin Robins, 2 Fairy Bluebirds, 2 Greater Green Leafbirds, 1 Silver-beaked Tanager, 1 Chestnut-capped Laughing Thrush, 3 Indian White-eyes, 1 Pagoda Starling, 1 Green Glossy Starling, 2 Bourke's Parrakeets, 3 Vernal Hanging Parrots, 1 Blue-crowned Hanging Parrot, 2 Red-bellied Conures, 4 Silverbills, 2 Black-throated Laughing Thrushes, 1 Red Bishop, 1 Gold-billed Ground Dove
DEPARTMENT OF THE ENVIRONMENT: 2 Eastern White Pelicans
EAVIS, MR R. S.: 2 *Leporinus* sp., 1 Striped Anostomus, 2 Pangasius Catfish
EDWARDS, MRS A.: 1 Remora
EVARDSON, MR N.: 1 Lung Fish
FOWLER, MR T.: 1 Catfish
FULLER, MR A.: 1 *Hyla* sp.
GALLAGHER, MR M. D.: 1 Elegant Scrub Gecko
GERRETT, MR: 3 Gouldian Finches
GIBBONS, MR R.: 1 Cochin China Water Dragon
GREGG, MASTER R.: 1 Cochin China Water Dragon
GUERNSEY AQUARIUM: 5 Edible Crab, 18 Cornish Sucker, 8 Green Starfish, 18 Grey Mullet, 2 Wrasse, 18 Beadlet Anemone, 20 Prawn, 8 Hermit Crab
HAMBOLI, MR G.: 4 South American Ornate Terrapins
HASELDENE, MR J. M.: 1 Pacu
HATJIANTONI, MR T.: 2 Black Axolotls, 1 Reed Fish
HEARD, MR R. G.: 1 Common Iguana
HEINST, MRS M.: 1 Guinea Pig
HISCOCK, MR T.: Stick Insects
HORSBURGH, MR J.: 1 Turkey (domestic)
JEWELL, MR A.: 1 Huntsman Spider & young
JONES, DR J. E. T.: 2 Miniature Pig
JUDD, MR S. L.: 1 Fischer's Lovebird
JUPP, MR J. R.: 3 Desert Scorpions *Nebo* sp., 2 Desert Scorpions *Androctonus* sp.
KELLY, MR M. J.: 2 *Leptobarbus hoeveni*
KITCHEN, MR B.: 1 Emperor Snapper, 2 Panther Fish, 1 Boenacki Grouper
LIVINGSTONE, MR K.: 6 Asiatic Toads
METROPOLITAN POLICE: 1 Dice Snake, 1 Grass Snake, 1 Californian King Snake
MORGAN, MS W.: 1 Fischer's Lovebird
MOUNTENEY, MRS: 1 Sucking Catfish
NATIONAL MUSEUM OF NATURAL HISTORY WASHINGTON, USA: 12 Chafer Beetles and larvae
NATIONAL ZOOLOGICAL GARDENS OF SOUTH AFRICA: 3 Cheetah
NATIONAL ZOOLOGICAL PARK, WASHINGTON: 4 Rock Cavy, 4 Rufous Elephant Shrew
NEWMARK, MESSRS J. & G.: 1 Long-horned Beetle, 2 Chafer Beetles, 3 Rhinoceros Beetles, 3 Millipedes
POWELL, MR: 3 Common Clowns, 1 Red Wrasse, 1 Silver Fish, 2 Yellow-tailed Blue Damsels
POWELL, MRS J.: 2 Orange-cheeked Waxbills
RABY, MR R.: 1 Dwarf-clawed Scorpion
RAYNER, MR A. H.: 1 Red-legged Tarantula
RENNIE, MR J.: 2 Guillemots
ROBINSON, MISS H.: 1 Koi Carp
RSPCA: 3 Land Crabs, 30 Land Snails, 1 Fire Salamander, 2 Lobsters, 1 Gecko, sp. inc., 1 Sheltopusik
SAYER, MR M. J.: 1 Common Chameleon
SENIOR, MR J.: 8 Zebra Finches, 1 Diamond Dove
SERPELL, MR J.: 6 Spiny Mouse
SHALDON ZOO: 1 Moustached Laughing Thrush, 1 Green Glossy Starling
STULA, MR D.: 1 Warren's Armoured Lizard
WEBSTER, MR G.: 1 Five-lined Skink, 1 Transvaal Rock Lizard, 3 Jones' Armoured Lizards

Whipsnade Park

CHESTER ZOO: 2 Sonnerat's Jungle Fowl
HOLMES, MR B. G.: 1 Tortoise
MUIR, MR D.: 1 Barn Owl
SIMS, MR K. J.: 1 Red-billed Blue Pie

APPENDIX 6

Donations to The Zoological Record Fund

As the responsibility for the production of the *Zoological Record* has now been taken over by BIOSIS (*Biological Abstracts/BioSciences Information Service*, Philadelphia), donations to the Society's Zoological Record Fund have ceased.

The Council wishes to thank all those individuals and institutions who have generously contributed to the Fund in the past.

Meetings during 1982

Scientific Meetings at 5.00 pm

Tuesday, 9 February
Tuesday, 9 March
Tuesday, 13 April
Tuesday, 11 May
Tuesday, 8 June
Tuesday, 12 October
Tuesday, 9 November
Tuesday, 14 December

Symposium

Thursday and Friday, 11 and 12 November: 'Physiological strategies in lactation' to be organized by Professor M. Peaker, Dr R. G. Vernon and Dr C. H. Knight.

Financial Accounts

Scientific and Educational Activities–INCOME AND EXPENDITURE FOR THE YEAR ENDED 31st DECEMBER 1981

	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 1980
EXPENDITURE	£	£	£	£	£	£	£	£	£	£	£	£
Salaries	126,716	199,985	329,808	656,509	63,943	41,520	16,510	22,019	81,275	11,265	893,041	882,820
Paper and printing	—	—	—	—	3,243	—	35,748	17,879	203,892	—	260,762	196,553
Other direct materials and services	19,327	39,479	68,451	127,257	2,127	22,669	—	(841)	43,603	7,972	202,787	200,235
Equipment	1,381	13,866	18,109	33,356	—	—	—	—	—	—	33,356	52,010
Overheads	4,318	4,922	6,686	15,926	3,010	—	1,613	—	—	—	20,549	44,445
	151,742	258,252	423,054	833,048	72,323	64,189	53,871	39,057	328,770	19,237	1,410,495	1,376,063
INCOME												
Fees received	5,508	—	—	5,508	—	—	—	—	—	—	5,508	4,260
Scientific Fund: Investment Income	—	38,022	—	38,022	—	—	—	—	—	—	38,022	33,215
Grants: specific research projects	—	101,442	154,330	255,772	—	—	—	—	—	—	255,772	233,971
Wolfson Foundation grant	—	—	50,000	50,000	—	—	—	—	—	—	50,000	50,000
A.B.R.C. Contribution	27,900	48,100	79,000	155,000	—	—	—	—	—	—	155,000	134,250
Donations	—	—	1,104	1,104	—	—	—	—	—	—	1,104	3,314
Education visits and club fees	—	—	—	—	64,658	—	—	—	—	—	64,658	52,821
Sale of publications	—	—	—	—	—	—	78,103	19,916	295,521	—	393,540	509,659
	33,408	187,564	284,434	505,406	64,658	—	78,103	19,916	295,521	—	963,604	1,021,490
EXPENDITURE MET BY SOCIETY	—	—	—	—	—	—	(24,232)*	19,141†	33,249†	—	28,158	(55,651)
	118,334	70,688	138,620	327,642	7,665	64,189	—	—	—	19,237	418,733	410,224
	151,742	258,252	423,054	833,048	72,323	64,189	53,871	39,057	328,770	19,237	1,410,495	1,376,063

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 (Surplus) transferred to Publication Funds.

Income and Expenditure Account for the year ended 31st December 1981

1980		INCOME	1981	
£	£	*General*	£	£
70,214		Members' subscriptions and entrance fees	97,342	
(10,481)		*Less* cost of Journal	(10,981)	
46,117		Interest and dividends (after allocations to Funds)	53,191	
11,020		Net income from De Arroyave Fund (note 10)	11,489	
57		Income from Davis Fund (note 11)	57	
65,569		Journal, Transactions and Symposia	78,103	
31,516		International Zoo Yearbook	19,916	
412,574		Zoological Record and Nomenclator	295,521	
(44,848)		Publications Funds – transfer of excess of receipts over expenditure	—	
	581,738			544,638
		Institute of Zoology (see page 49 for detailed income)		
247,215		Nuffield Laboratories	284,434	
183,025		Wellcome Laboratories	187,564	
	430,240			471,998
		Regent's Park		
2,408,645		Admission of visitors to Gardens and Aquarium	2,270,678	
161,874		Catering and Retail services – net (note 12)	46,651	
1,297		Animals	318	
42,257		Education scheme and Young Zoologists' Club (note 16)	51,726	
26,318		All other receipts	65,299	
	2,640,391			2,434,672
		Whipsnade Park		
501,706		Admission of visitors to Park	549,294	
58,687		Admission of cars to Park	63,846	
17,203		Catering and Retail services – net (note 12)	13,525	
10,564		Education scheme and Young Zoologists' Club (note 16)	12,932	
14,906		Animals	6,518	
6,430		All other receipts	6,885	
	609,496			653,000
	665,604	Deficit for year		1,152,402
	£4,927,469			£5,256,710

1980		EXPENDITURE	1981	
£	£	*General*	£	£
15,042		Interest on overdraft	147,012	
82,003		Administration	63,020	
57,052		Library	64,189	
54,766		Journal, Transactions and Symposia	53,871	
34,740		International Zoo Yearbook	39,057	
364,502		Zoological Record and Nomenclator	328,770	
—		Publications Funds – transfer of excess of expenditure over receipts	(52,389)	
	608,105			643,530
		Institute of Zoology (see page 49 for detailed expenditure)		
403,400		Nuffield Laboratories	423,054	
248,138		Wellcome Laboratories	258,252	
24,692		General Scientific	19,237	
(65,113)		Regent's Park and Whipsnade – cost of research services (note 13)	(70,688)	
	611,117			629,855
		Regent's Park		
924,186		Zoological Gardens – salaries and wages	968,486	
131,243		Pensions	133,969	
45,000		Staff Canteen subsidy	47,468	
40,886		Rates and insurance	48,950	
181,030		Provisions	187,269	
365,112		Fuel, light, water, transport	356,373	
52,402		Miscellaneous	45,255	
13,981		Purchase of animals	8,380	
328,433		Works	341,656	
115,000		Allotment to Major Repairs and Renewals Fund (note 7)	115,000	
63,224		Gardening	71,324	
80,811		Veterinary services (note 14)	94,667	
52,090		Research services (note 13)	56,550	
47,191		Education scheme & Young Zoologists' Club (note 16)	57,858	
59,408		Advertising	98,321	
255,266		Administration	285,729	
190,615		Whipsnade – share of costs of breeding and conservation work (note 15)	213,214	
	2,945,788			3,130,469
		Whipsnade Park		
371,907		Whipsnade Park – salaries and wages	417,731	
51,039		Pensions	60,395	
11,700		Staff Canteen subsidy	13,000	
10,539		Rates	13,769	
112,807		Provisions	113,227	
90,880		Fuel, light, water, transport	102,553	
34,710		Miscellaneous	40,532	
4,600		Purchase of animals	3,410	
111,766		Works	119,517	
29,261		Farm, gardens and forestry	32,703	
20,203		Veterinary services (note 14)	23,667	
13,023		Research services (note 13)	14,138	
11,798		Education scheme & Young Zoologists' Club (note 16)	14,465	
44,643		Advertising	60,788	
34,198		Regent's Park – administrative services	36,175	
(190,615)		Regent's Park – share of costs of breeding and conservation work (note 15)	(213,214)	
	762,459			852,856
	£4,927,469			£5,256,710

Balance Sheet at 31st December 1981

1980			1981	
£	£		£	£
	601,430	Sundry creditors and receipts in advance		408,266
	331,324	Bank Overdraft		1,609,150
	91	Heer Bequest		91
	8,068	Fantham Bequest (note 1)		7,907
	371,183	Scientific Fund (note 2)		368,057
	24,577	Composition Fund		26,123
	1,986	Staff Benevolent Fund (note 4)		2,049
		Reserves		
328,216		General Reserve (note 6)	352,897	
316,657		Major Repairs and Renewals Fund (note 7)	425,236	
100,000		Pensions Contributions Reserve	100,000	
744,873			878,133	
(665,604)		Less: Accumulated Deficit	(1,818,006)	
79,269			(939,873)	
(79,795)		Less: Publications Funds (Note 3)	(132,184)	
	(526)			(1,072,057)
	£1,338,133			£1,349,586

For the notes which form part of these accounts see page 54.

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 1981, 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.

FRASER KEEN *Chartered Accountants*
4, London Wall Buildings, London, EC2M 5NT
24th February 1982

1980			1981	
£	£		£	£
113,213		Freehold Property at cost, less sales (note 9)	113,213	
(113,213)		Less General Purposes Account (Depreciation Reserve) (note 5)	(113,213)	
—	—		—	—
		Stocks (note 8)		
1,000		Scientific publications (nominal valuation)	1,000	
39,788		Guides, books, etc.	—	
51,871		Catering Departments – provisions, etc.	45,600	
	92,659			46,600
	234,778	Sundry debtors and payments in advance		257,378
	998,742	Investments and deposits at cost (market value £1,124,222)		1,031,249
	3,624	Bank Balances—Current and Deposit Accounts		6,059
	8,330	Cash in hand		8,300
	£1,338,133			£1,349,586

BUXTON
Treasurer

Notes on the Accounts

31st December 1981

1. Fantham Bequest

	£	£
Balance at 1st January		8,068
Investment income		315
		8,383
Less:		
Loss on sale of investments		(476)
Balance at 31st December		7,907

2. Scientific Fund

Balance at 1st January		371,183
Loss on sale of investments		(3,126)
Balance at 31st December		368,057

3. Publications Fund

Balances at 1st January:		
Zoological Record Fund	(45,924)	
Neave Lloyd Fund	(32,348)	
International Zoo Yearbook	(1,523)	
		(79,795)
Sales and Donations		315,437
		235,642
Less:		
Publication and distribution costs		(367,826)
Balances at 31st December:		
Zoological Record Fund	(67,433)	
Neave Lloyd Fund	(44,087)	
International Zoo Yearbook	(20,664)	
		(132,184)

4. Staff Benevolent Fund

Balance at 1st January	1,500	
Ashby Memorial Fund	486	
		1,986
Allocation of investment income		136
		2,122
Less: Grants		(73)
Balance at 31st December	1,575	
Ashby Memorial Fund	474	
		2,049

5. General Purposes Account (Depreciation Reserve)

Balance at 31st December	113,213

6. General Reserve

Balance at 1st January	328,216
Fees of Deceased Compounders	370
Profit on sale of investments	24,311
Balance at 31st December	352,897

7. Major Repairs and Renewals Fund

Balance at 1st January	316,657
Allocation of investment income	15,833
From Income and Expenditure account	115,000
Donations	23,897
	471,387
Less expenditure	(46,151)
Balance at 31st December	425,236

8. Stocks

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

9. Freehold property is shown at original cost.

10. De Arroyave Fund

The capital of the fund is held by the Official Custodian for Charities. The income from the fund was £11,506.

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

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

	Regent's Park	Whipsnade Park	
Zoo Restaurants	35,198	6,852	42,050
Zoo Enterprises	86,478	28,324	114,802
	121,676	35,176	156,852
Less loss on catering services	75,025	21,651	96,676
	46,651	13,525	60,176

13. Research Services

The net cost of the Institute of Zoology which is of direct benefit to animal management has been allocated proportionately to the two Zoos.

14. Veterinary Services

The net cost of the services provided by the Department of Veterinary Science has been allocated proportionately to the two Zoos.

15. Breeding and Conservation Work at Whipsnade

A proportion of the breeding and conservation work at Whipsnade has been allocated to Regent's Park.

16. Education Scheme and Young Zoologists' Club

Income and expenditure are allocated to the two Zoos.