THE ZOOLOGICAL SOCIETY OF LONDON

ANNUAL REPORT 1991–1992

This Report covers the period from 1 April 1991 to 31 March 1992. Animals in the Collection, however, will continue to be recorded on a calendar year basis.

The Society's three main areas of activity, the animal collections, the Institute of Zoology and the Learned Society, remain indivisible. Within this Annual Report, references to London Zoo and Whipsnade Wild Animal Park may therefore encompass activities which involve the resources both of the Society and of Zoo Operations Limited.

Published by

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MISSION STATEMENT

To promote the worldwide conservation of animal species and their habitats by stimulating public awareness and concern through the presentation of living collections, by relevant research and by direct action in the field.

MISSION AIMS

1. To foster public awareness of the variety and diversity of the living world through imaginative exhibits featuring live animals in appropriate environments.
2. To maintain and breed species with a high conservation and education value and to link this to a comprehensive programme of learning for all age groups, but particularly for children of school age.
3. To increase our understanding of the biology of rare animal species, concentrating on veterinary research, reproduction, genetics, ethology and ecology.
4. To initiate and run practical conservation programmes chosen in accordance with accepted international criteria for effective and high priority conservation.
5. To promote the understanding of conservation issues and their relationship to the development of the world's poorest countries and to promote the application of sound scientific principles to wildlife management.
6. To ensure that the highest standards of husbandry and welfare are employed wherever we care for animals and that techniques to improve further the husbandry of these species are studied and communicated to others.
7. To co-operate with other responsible societies and organisations promoting conservation on a worldwide basis.
8. To disseminate new knowledge in Zoology and field conservation through publications, symposia, scientific meetings and maintenance of the library.
9. To make awards of prizes and medals for distinguished work in Zoology and Conservation.

ILLUSTRATIONS
Cover: From the Notebooks of Samuel Tickell, October 1856. Held in the Society's Library.
Photographs: Michael Lyster, Peter H. Denton
Graphics: Education Department

EDITORIAL: Peter H. Denton and Marcia A. Edwards

REPORT OF THE COUNCIL

The Council has pleasure in presenting its 163rd Annual Report to the Annual General Meeting of the Society to be held on 30th September 1992 at 3.00 pm in the Society's Meeting Room at Regent's Park.

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PATRON: HER MAJESTY THE QUEEN

COUNCIL 1991–1992

President: Professor N A Mitchison, DPhil, FRS (to 29.2.1992)
Field Marshal Sir John Chapple, GCB, CBE (from 1.3.1992)
Treasurer: The Rt Hon Lord Peyton of Yeovil (to 10.7.1991)
P Holwell, BSc(Econ), FCA (from 11.7.1991)
Secretary: Sir Barry Cross, CBE, MA, PhD, ScD, FIBiol, FRS
J Barrington-Johnson, *Vice President*
Professor P P G Bateson, MA, PhD, ScD, FRS
Professor D J Bellamy PhD, FLS, FIBiol
Professor B B Boycott, FIBiol, FRS (to 23.1.1992)
J C Edwards, MA
Professor R L Gardner, MA, PhD, FRS, *Vice President*
P Hardy, MP
Professor M P Hassell, MA, DPhil, DSc, FRS
Professor P A Jewell, BSc(Agric), MA, PhD, FIBiol, CBiol, *Vice President*
Professor J R Krebs, DPhil, FRS
Professor A M Lucas (from 19.3.1992)
The Rt Hon The Lord Marsh Kt
N S E Martin, FBIM, FIIM (from 11.5.1992)
The Hon Sir William McAlpine
C J Perrin, MA
A J F Smith, MA
The Hon Sir Ronald Waterhouse LLD, *Vice President*
R J Wheater, OBE, FIBiol, FRSA, FRSE
Councillor D P Weeks, BA
Professor A J Zuckerman, MD, DSc, FRCP, FRCPath

HONORARY FELLOWS

DATE OF ELECTION	
1977	HRH The Prince Philip, Duke of Edinburgh, KC, KT
1991	HM The Emperor Akihito of Japan
1952	Professor Sven Otto Hörstadius Zoologiska Institutionen, Uppsala, Sweden
1974	Dr Roger Tory Peterson Route 4, Box 131, Neck Road, Old Lyme, Connecticut, USA
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
1975	Professor Jean Dorst Museum National d'Histoire Naturelle (Mammifères et Oiseaux), 55 rue de Buffon, Paris 53, France
1978	Professor José C M Carvalho Museu Nacional, Quinta da Boa Vista, Rio de Janeiro, Brazil 20940
1984	Professor Ernst Mayr Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, USA
1984	Professor Lord Zuckerman, OM, KCB, FRS University of East Anglia, Earlham Hall, Norwich
1988	Professor Dr Milton Thiago de Mello Instituto de Ciencias Biologicas, Universidad de Brasilia, Brasilia, Brazil DF70.910
1990	Professor Knut Schmidt-Nielsen Department of Zoology, Duke University, Durham, NC 27706, USA
1990	Professor John Z Young Emeritus Professor of Anatomy, University College London, Gower Street, London WC1
1992	Professor Edward O Wilson Museum of Comparative Zoology, Harvard University, 26 Oxford Street, Cambridge, Mass 02138-2902, USA

MESSAGE FROM THE PRESIDENT
FIELD MARSHAL SIR JOHN CHAPPLE

In introducing the Annual Report for 1991/92, I do not wish to dwell on the difficulties which have faced the Society during that year, and which continue today.

You will have received a number of reports, newsletters and letters from the Secretary and from me to keep you informed of what these difficulties are. I would like to make only two points in this regard. First, I would wish to record the hard work and dedication of Council members in trying to steer the Society through these turbulent times. From the time that I attended my first Council meeting earlier this year, I have had nothing but the highest regard for their commitment to the best interests of the Society and for the way in which they have addressed their responsibilities as trustees and guardians of all the Society's activities. Secondly, I would like to pay tribute to the staff who work for the Society. They have been required to carry out their tasks in a period of substantial reduction and against a background of an uncertain future. We all owe them a debt of gratitude.

You will see from this Annual Report how important is the work of all the Society's activities. In the post-Rio Summit world, we, along with very few other national institutions, are actually doing something about the issues – and not just talking about them. Yet this message is not reaching a wider audience and the Society's work is not well understood, is undervalued and largely unsung. So we do need to do more to publicize the achievements of the Society and there is plenty to draw on in this report. This is something in which we can all participate. Please help your Society to get this message across to a wider audience.

John Chapple

PRESIDENT

REVIEW OF THE YEAR

INTRODUCTION

Finance dominated the deliberations of Council and a threat of the closure of London Zoo attracted the considerable attention of the media. In July, Lord Peyton felt unable as Treasurer to remain associated with Council policy and resigned along with four other members.

Field Marshal Sir John Chapple assumed the Presidency on 1 March. Whipsnade celebrated its Diamond Jubilee and the triennial report of the Institute of Zoology was published. Two Giant Pandas were received at London Zoo on breeding loan.

'SAVE OUR ZOO'

The year started with the press obtaining confidential information questioning the long term viability of London Zoo. This begat the 'Save our Zoo' campaign. The May Bank Holiday Monday attracted 25,000 visitors and donations to the 'Save our Zoo' campaign throughout the year amounted to £2.5 million with £300,000 received in actual cash. Acting on advice from the auditors and lawyers, Council, meeting on 9 July resolved to close London Zoo in September 1992. In approving the motion, Council recognised the decision could be reversed if a viable plan emerged. The furore created by the 'Save our Zoo' campaign resulted in the Select Committee on the Environment reporting in favour of ZSL retaining a presence in Regent's Park but shifting the emphasis from a representative menagerie to a conservation-orientated collection. In a determined effort to maintain a presence at London Zoo and secure the viability of the Society as a whole, Council embarked in July on a major cost cutting exercise. Some £1.7 million was cut from the budget with 90 posts being declared redundant. This led to a balanced budget being struck which in turn allowed the President to announce in March that London Zoo would remain open.

Professor David Bellamy, Council Member and well known conservationist lent his support to the 'Save our Zoo' campaign in typically flamboyant style.

THE MEMBERSHIP

Two Fellows' Days were arranged. The first, to coincide with the Whipsnade Diamond Jubilee celebrations, was attended by 100 Fellows and the second was held at London on the occasion of the Annual General Meeting. In both cases, a full programme had been devised to illustrate the diversity and relevance of the Society's work.

His Excellency The Ambassador of Japan visited London Zoo on 27 November in order to receive from the Secretary a citation electing His Majesty Emperor Akihito of Japan to Honorary Fellowship of the Society, in recognition of His Majesty's work in the field of taxonomic ichthyology.

A newsletter for Fellows, to be published three times a year, had an inaugural issue in early March. In addition, the Secretary continued to keep Fellows informed on strategic issues through a series of 'Dear Fellow' letters. The list of Fellows was published in late February and a copy was sent to every Fellow. Economies in production were achieved by using in-house, desk-top publishing facilities.

At the end of the subscription year (31 December 1991) there were 2,195 Fellows and 2,643 Associates, including 135 Student Associates.

OBITUARIES

The Council records with deep regret the deaths of Professor George Evelyn Hutchinson, Honorary Fellow; Professor N I Kalabukhov, Corresponding Member; Sir Terence Morrison-Scott, Life Fellow and former Treasurer and Vice President; Dr Charles Gordon Smith, Life Scientific Fellow, former Vice President and former Dean of the London School of Hygiene and Tropical Medicine; Mr Martin Senior, Scientific Fellow and Honorary Veterinary Surgeon, Whipsnade; Professor L E Halstead, Scientific Fellow, vertebrate palaeontologist, philosopher and popular writer on geological themes; Mr Peter Williams, Life Scientific Fellow; Irene, Lady Moynihan, Life Fellow; Lieut-Colonel Eric Sebag-Montefiore, Life Fellow for 88 years; Colonel John Codrington, Life Fellow for 85 years; Mr Gerald Priestland, Associate, writer and broadcaster.

ANNUAL GENERAL MEETING

The Annual General Meeting was held on 25 September 1991 with the President, Professor N A Mitchison, in the Chair.

The Treasurer, Lord Peyton, retired a few months before his term of office expired. Lord Armstrong of Ilminster, Lord Clinton-Davis, Sir Alcon Copisarow, Lord McAlpine of West Green (Ordinary Fellows) and Lord Walton of Detchant (Scientific Fellow) also retired from Council at their own wish. In accordance with Article 10 of the Charter and Byelaw 25, the following Fellows retired as Ordinary Members of the Council: Mrs Philippa Herbert, Mr J M Knowles and Mr C J S Marler (Ordinary Fellows); Professor R McNeill Alexander and Professor A W Cuthbert (Scientific Fellows).

In accordance with Article 11 of the Charter and Byelaw 26, Mr P Holwell was elected Treasurer and the following Fellows were elected Members of Council: Field Marshal Sir John Chapple, Mr P Hardy, MP and The Hon Sir Ronald Waterhouse (Ordinary Fellows); Professor M P Hassell and Professor J R Krebs (Scientific Fellows). By virtue of Article 5 (e) of the Charter, Councillor D P Weeks, Leader of Westminster City Council and an Ordinary Fellow, was nominated to serve on Council.

In accordance with Article 12 of the Charter and Byelaw 26, the following Fellows were appointed by Council to fill the Casual Vacancies created by the above resignations: Mr J C Edwards, The Rt Hon The Lord Marsh, Mr C J Perrin, Mr R J Wheater (Ordinary Fellows) and Professor D J Bellamy (Scientific Fellow).

The President presented the following awards for contributions to zoology:

The Prince Philip Prize (for an account of practical work involving some aspect of animal biology, by a pupil under 19 years old of a school in the United Kingdom) to *Mr Michael H P Shapland*, of Elizabeth

College, Guernsey, for his essay 'An investigation into the existence of a dominance hierarchy within a flock of ten sheep'.

The Thomas Henry Huxley Award (for original work submitted as a doctoral thesis) to *Dr N D Hopwood* of the University of Cambridge, for his thesis 'Molecular markers of mesoderm induction in *Xenopus laevis*'; and to *Dr A F Read* of the University of Oxford, for his thesis 'Comparative analyses of reproductive tactics'.

The Zoological Society of London Frink Medal for British Zoologists (for significant and original contributions by professional zoologists to the development of zoology in its wider implications) to *Professor W D Hamilton, FRS*, of the University of Oxford, for distinguished contributions to evolutionary biology.

In addition to the Society's awards, cheques generously donated by the Marsh Christian Trust were presented to the Prince Philip Prize winner's school, and to the two recipients of the Thomas Henry Huxley Award.

The President also announced that **The Scientific Medal** (for distinguished work in zoology by persons under 40 years of age) had been awarded to *Dr C P Ellington*, of the University of Cambridge, for outstanding contributions to the mechanics and physiology of insect flight, and **The Stamford Raffles Award** (awarded to an amateur zoologist for distinguished contributions to zoology) to *Dr D L Harrison*, for distinguished contributions to the study of mammals; these were to be presented at the Society's November Scientific Meeting.

AMENDMENTS TO THE REGULATIONS

The amendments to the Regulations consequent to the increase in annual subscriptions agreed at the Annual General Meeting held on 25 September 1991, are given in Appendix 6.

THE SPECIAL GENERAL MEETINGS

A group of Fellows at the Annual General Meeting expressed concern at the general direction being taken by the Society. Two informal meetings for Fellows were held in November to enable Council to explain moves aimed at increasing its accountability and set the current crisis in an historical context. However, 103 Fellows remained unconvinced and submitted on 20 November a formal requisition for a Special General Meeting. In addition and to allow a vote of confidence in Council to be obtained, Council called for both a postal ballot of the entire Fellowship and for a Special General Meeting of its own. The result of the postal ballot, in a 40% poll, was 659 votes for the Council resolution and 191 against. Both Special Meetings were held on 6 January. Three hundred and twenty-five Fellows attended. The meetings, under the able chairmanship of Sir Ronald Waterhouse, debated for three and a half hours issues relating to the viability of the Society and the competence of Council and its executives. The resulting votes reflected a lack of confidence in past performance of Council but after a short presentation of the future plans, a clear mandate was obtained for Council to undertake whatever tasks necessary to secure the future of the Society. The Special General Meetings cost the Society £30,000. Minutes of the Special General Meetings have been deposited in the library and are available to Fellows.

HER MAJESTY'S GOVERNMENT

Regular meetings were held throughout the year with Ministers, and officials discussed the Zoo with the Department of Employment, Department of the Environment, Department of Education and Science and the Number 10 Policy Unit. Some eighty briefings were given by ZSL officials to Members of Parliament of all parties. The Privy Council and Charity Commission were kept informed of developments throughout the year. Whilst Her Majesty's Government admitted to no formal sponsorship role, other than the £1.4 million core funding to the Institute of Zoology, the Society throughout its negotiations had stressed the educational significance of the Zoo and its role in the National Curriculum, in addition to the Zoo being an integral part of the cultural life of London.

The Government reiterated that a new lease would be offered in 1995, subject to the Society proving viable, and any area of the present Zoo declared surplus to requirements by the Society would be taken back by the Government, the cost of any restoration work being borne by the Government. Neither would the

Angela Horsman, Director of Marketing, explains visitor circulation policies to members of the Conservative Backbench Tourism Committee. From left to right: Andrew Forbes, then Chief Operating Officer; David Gilroy-Bevan MP, Chairman; Mr Simon Coombs MP and Lord Auckland

Viscount Ullswater, Minister for Tourism, visited London Zoo in January and appears to be in deep conversation with 'Dilberta', a female Asian elephant. (Brian Harman, Keeper-in-Charge, is hidden by the pachyderm)

covenants in the lease regarding the building maintenance be enforced.

AWARD FOR CONSERVATION BIOLOGY

A new award was set up in the course of the year – **The Zoological Society of London Marsh Award for Conservation Biology**. This is the first new award to be established for more than 30 years. It was felt that the time had come to extend the range of the Society's awards for zoology so as to reflect the increasing emphasis on conservation in the aims and work of the Society. Thanks to the generosity of the Marsh Christian Trust, who agreed to donate an annual sum to be awarded together with a certificate from the Society, the new award was announced in the spring of 1992. It is given for contributions of fundamental science to the conservation of animal species and habitats. The first award, which will be presented at the Annual General Meeting in September, has been made to a very distinguished recipient: Professor R M May, FRS, of the University of Oxford, for his seminal studies in population biology and ecology, which by explaining the fluctuation of animal populations and the effects of various environmental factors, have provided practical conservation with a sound theoretical basis.

COUNCIL AND COMMITTEES

Council met on seven occasions and the average attendance was 68%. The President, Professor Avrion Mitchison, resigned on 29 February owing to overseas commitments. The Society was however, extremely fortunate in securing as his successor Field Marshal Sir John Chapple, a Fellow for over 40 years and recently retired as Chief of the General Staff.

The Core Group, the think tank established on the recommendation of McKinsey & Co., met on 25 occasions at first under the chairmanship of Sir Alfred Shepperd, then of Peter Holwell. The Core Group disbanded in January to be replaced with a Management Committee comprising the Treasurer as Chairman, the Secretary, three serving Council members and two ex Vice-Presidents. Executives attended as required.

David Stanbury resigned as Chairman of the Education Committee after many years' association with the Society.

Andy Grant left at the end of September on termination of his contract. On attending his final meeting of Council, the President referred to Mr Grant's commitment in dealing with the accumulated problems of the Zoo and made particular reference to the increased income generated from Zoo visitors which was almost entirely due to Mr Grant's initiatives. David Jones was appointed General Director of the Society in May with Andrew Forbes as Chief Operating Officer. However, Council soon became aware of the need for dedicated senior management at Whipsnade and Andrew Forbes was appointed Chief Executive, Whipsnade.

PERSONNEL

At the 31 March 1992 there were 92 full time staff employed by the Society and 242 by Zoo Operations Limited.

The summer months were sadly dominated by the need to reduce operating costs which led to an extensive redundancy programme at both London Zoo and Whipsnade. A total of 90 posts were declared redundant but through a series of measures negotiated with the Trade Unions, including a freeze on recuitment, a voluntary redundancy programme and re-deployment exercise, it was possible to reduce the number of compulsory redundancies by 30.

Reflecting the need to reduce costs further, Council on 23 January resolved to abolish the posts of General Director and the Director of Administration, the intention being, however, to retain both incumbents to supervise the overseas programme and act as Clerk to the Council respectively.

In addition to the long established procedures for communicating new developments and important issues to staff such as monthly Team Briefings and meetings of the Joint Consultative Committee, a series of general meetings for all staff were held, supplemented by memoranda from the General Director on specific issues.

Changes at a senior level included the promotion of Carol Boroughs to Head of Personnel; Cathy Robinson to Marketing Manager, Whipsnade; Lewis Killorn to Visitor Operations Manager, Whipsnade; Claire Robinson to Senior Education Officer, London, and Graham Roden to General Services Manager, London. Yvonne Ubels was formally appointed to the staff of ZOL as Retail Manager. The Institute of Zoology welcomed Dr Stephen Albon as Head of the Ecology Group and Dr Robert Wayne as Head of the Conservation Biology Group.

Awards

The completion of 25 years' service was recognised by the presentation of gold clocks or watches to Mrs Daphne Green, William James, Frank Wheeler and Miss Susan Lacey. The Society's Silver Medal was awarded to Owen Chamberlain in recognition of his long and meritorious service over 40 years. In the examinations for the City & Guilds Certificate in Zoo Animal Management five candidates were successful. Mrs Linda Da Volls was awarded the Nobby Ashby Prize having gained a double distinction pass in the City & Guilds Zoo Animal Management course.

Departures and Retirements

Departures and retirements (years of service in brackets) included J Barnard (18) Drivers Mate; E Bass (19) Toilet Attendant; A Billington (30) Head Keeper; Miss J Burgess (16) Animal Records Clerk/Secretary; O Chamberlain (40) Projects Manager; Mrs C Datlen (31) Animal Records Clerk; J Datlen (37) Overseer; R

Dillingham (21) Senior Keeper; W Griffiths (17) Head of Information and Design; M Hart (22) Senior Laboratory Technician; Dr C Hawkey (26) Research Fellow; R Hignell (22) Gardener; A James (27) Head Keeper; T Kichenside (34) Overseer; Miss S Lacey (24) Personnel Officer; P Levi (28) Senior Keeper; D Linfield (23) Security Gatekeeper; M Lyster (27) Photographer; M McInerney (22) Personnel Manager; A Maskell (27) Head Keeper; M O'Donnell (15) Part-time Cleaner; P Olney (22) Curator of Birds; D Robertson (21) Printer; J Robinson (28) Senior Keeper; P Rodway (21) Head Keeper; B Savage (32) Assistant Visitor Operations Manager; D Shipham (16) Driver; K Short (17) Senior Keeper; R Smith (26) Purchasing and Transport Manager; Miss M Tobias (26) Publications Department; R Tofield (22) Craftsman; D Watson (25) Transport Foreman; C Wears (31) Architect; C Wheatley (41) Assistant Head Gardener; D Wood (38) Head Keeper; S Worby (19) Senior Receptionist; J Wright (21) Estate Worker.

These valued members of staff will be sorely missed, their expertise and first-hand knowledge hard to replace.

Obituaries

We regret to record the deaths of the following pensioners: J C T Alldis, Mrs B E Bailey, H Callaghan, J Gillard, Miss E Hanson, F G Kiff, Mrs F B Lynch, W N Pickford, A E Scrivener, J C Simmons, P R Slade.

ACKNOWLEDGEMENTS

As usual Council wishes to thank those Fellows who serve on the advisory committees, and all those individuals and organisations whose support greatly aids the work of the Society.

LONDON ZOO

Visitors during the year: 1,074,871

THE COLLECTION

The year has been another of considerable activity in the Animal Management department. The need to cut costs dramatically during the summer unfortunately resulted in an unavoidable reduction in the numbers of staff. The management of the department was reorganised under a single curator with three collection managers and 10 sections, each with a keeper-in-charge. This simplified structure reflected the lower number of staff needed to look after fewer animals. The reduction in stock provided an opportunity to create larger spaces for those animals remaining and much of the winter was spent removing dividing partitions between enclosures and landscaping.

Cooperative management of species, nationally and internationally, remains a chief preoccupation. As well as maintaining the international studbooks for Giant Pandas and Mongoose Lemurs, the staff are also European coordinators for Sumatran Tigers and Golden Lion Tamarins, and national coordinators and/or studbook keepers for Gibbons (all species), Sulawesi Crested Macaques, Douroucouli, Slender and Slow Loris, White-faced Saki Monkeys, South American Small Cats, Asian Short-clawed Otters, Californian Sealions, White-faced Scops Owls, Rothschild's Mynahs, Partula snails and Wart-biter Crickets.

On the Cotton Terraces female Anoa and Giraffe were born. Chapman's Zebra now share enlarged paddocks with the Giraffe as used to be the case with Grant's Zebra in times past. Tapirs, Gaur and Sable Antelope were sent on deposit to enable enclosures to be enlarged. In the Sobell Pavilion for Apes and Monkeys, the arrival of Giant Pandas, 'Bao Bao' and 'Ming Ming', was the major event of the year. 'Ming Ming' is important as the first Giant Panda to be sent out of China on breeding loan, as opposed to short term exhibition loans, and this augurs well for future international co-operation in breeding this highly endangered and beautiful animal. The International Studbook for Giant Pandas continues to be maintained in cooperation with Chinese colleagues from the Ministries of Forestry and Construction, and with Dr Devra Kleiman of the National Zoo in Washington.

The arrival of 'Ming Ming', the female Giant Panda, attracted considerable media attention. The Rt Hon Sir Edward Heath MP is seen opening the new Panda enclosure, made possible through the generous sponsorship of Panda Drinks Ltd

Unfortunately our male Giant Panda 'Chia Chia', died in Mexico but not before siring one cub, 'Xin Xin', last year. He left two viable offspring (one in Mexico, one in Madrid) so justifying the decision to send him to Mexico on breeding loan. In the Sobell Pavilions a new female Hamlyn's Owl-faced Monkey was received on loan from Mulhouse Zoo in France and the pair of hybrid, non-breeding Spider Monkeys were exchanged for a pair of pure-bred Red-faced Black Spider Monkeys.

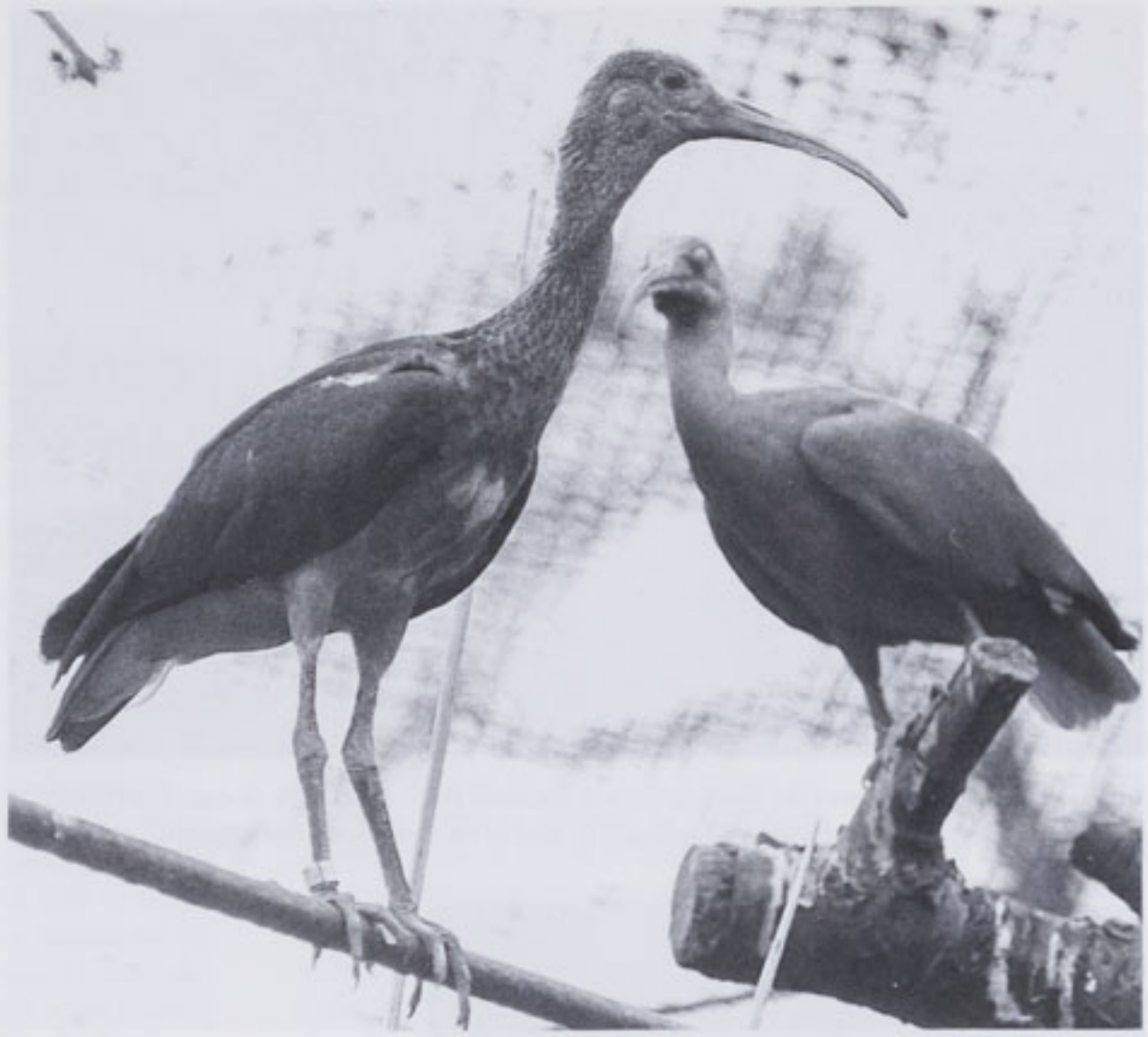
The two pairs of Asiatic Lions in the New Lion Terraces, which were received last year from Sakkarbag Zoo, have now started 'play mating', and the young males have begun to establish a dominance pattern. We look forward to future cooperation with other collections who have recently received this very rare big cat. Embryos from both female Sumatran Tigers are in freezer storage. The pedigree of these females is not proven but the embryos were sired by the Zoo's pure-bred Sumatran Tiger male. It is hoped that by the use of *in vitro* fertilisation techniques these animals may be able to contribute to the Sumatran Tiger gene pool. This work is being carried out in co-operation with Dr Harry Moore of the Institute of Zoology. London Zoo manages the EEP (European Endangered Species Programme) for Sumatran Tigers. The Sealion Pool was the subject of a major refurbishment. A new drainage system was installed and the overall appearance of this very popular exhibit has been greatly improved.

A female Asian Elephant 'Thi Hi Way' was sent on deposit to Chester and was successfully mated by their male 'Chang' in December. The oldest female Elephant at the Zoo, 'Dilberta', will also soon be sent to Chester for mating with 'Chang'. She will then return to London and if she is pregnant, her calf will be born in two years time. Black Rhinos, 'June' and 'Basha', were both sent to Port Lympne leaving the young pair 'Jos' from Czechoslovakia and 'Rosie', our hand-reared female; they have been showing signs of sexual interest in each other.

In the Clore Pavilion for Small Mammals, phase one of the improvements and renovation was completed in the basement. In the new bat cave, the five pairs of Rodriguez Fruit Bats have started breeding: London Zoo acted as the halfway house for the redistribution of 10 pairs to zoos in the UK and US, coordinated by Jersey Wildlife Preservation Trust.

Spring sunshine accentuates the graceful lines of Decimus Burton's Giraffe House. The Okapi and Giraffe paddocks, refurbished and enlarged as part of the Zoo changes programme, are shown

Goeldi's Monkey (left) and Brush-tailed Porcupine (below) in the Clore Pavilion



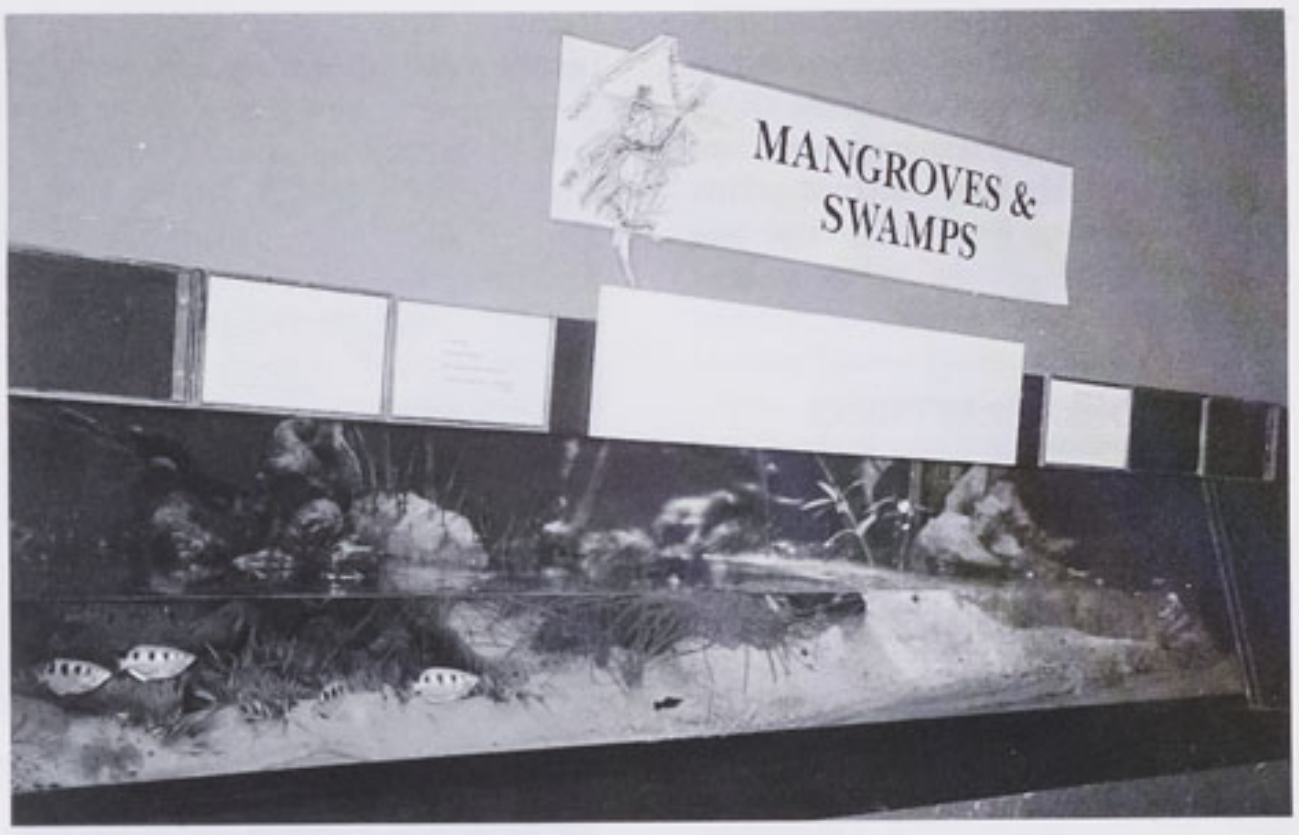
Scarlet Ibis and young, the first bred at London Zoo

Young Zorilla

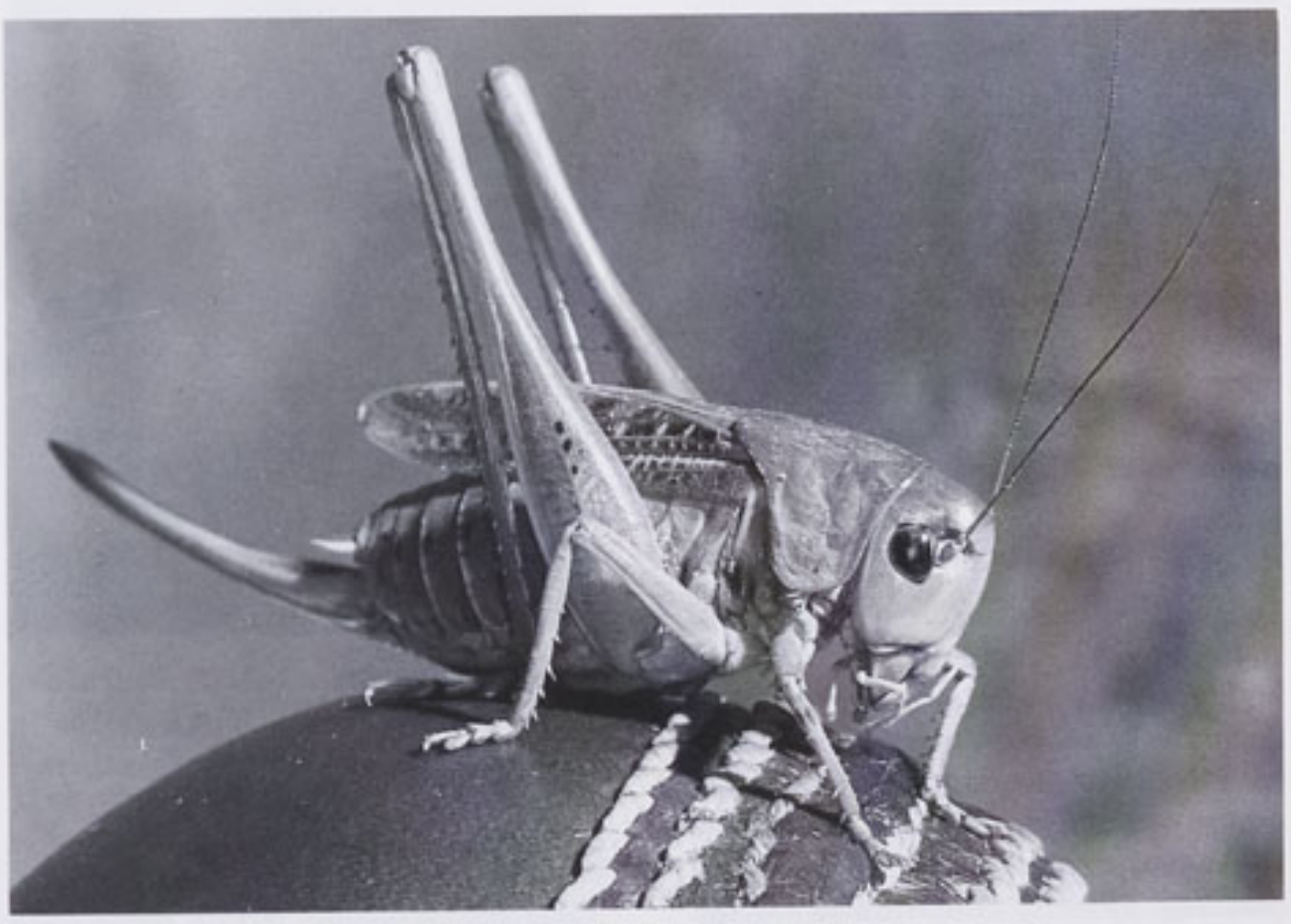
Another new exhibit in the basement contains Zorillas which have settled in well and have now produced two sets of twins. The Leadbeater's Possums continue to be prolific and we are now sending a selection of the offspring back to Australia for reintegration into the Australian captive breeding programme for this extremely rare, small marsupial, thought extinct and rediscovered in 1961. Other births included Brush-tailed Porcupines, Goeldi's Monkeys and Pygmy Marmosets. New arrivals were Hairy Armadillos and Cape Crested Porcupines (to replace the aging pair of hybrids).

In the newly amalgamated bird department, the collection has been rationalised both to cut costs and to focus more closely on conservation of particular species. Species continue to be sent on deposit to other collections and several aviaries have been combined to create more space, particularly in the Pheasantries and outside the Bird House. The colony of Black-footed Penguins continues to grow, 18 chicks being hatched during 1991. A Scarlet Ibis was successfully parent-reared; this is the first time this species has bred at London Zoo. Other interesting hatchings included a Slender-billed Cockatoo, Turkmenian Eagle Owls, Kenyan Eagle Owls, Boobook Owls, a White-faced Scops Owl and a Barn Owl. A Snowy Owl chick was also hatched but did not survive; it was, however, the fifty-seventh chick to be sired by 'Eros', who has been in the Zoo for over 40 years after being picked up off the Azores by HMS Eros in 1950. The colony of Quaker Parakeets raised nine young. Species artificially incubated and reared included White Eared Pheasant, Temminck's Tragopan and Impeyan Pheasant. Four male Chilean Flamingos were acquired on breeding loan to help balance the sex ratio of the group. A pair of Cape Parrots and a pair of Fairy Lorikeets were acquired on breeding loan.

The Aquarium remains one of the most popular parts of the Zoo. A wide variety of fishes continues to be exhibited and the breeding success of the Lake Victoria Cichlids has been maintained. The Aquarium has long been the subject of scrutiny by Environmental Health Officers and during the winter their concerns were addressed by a series of measures designed to extend its life and allow for significant improvements in the future. These included asbestos removal, preparation of a rewiring plan and resealing the roof.



Innovative use of existing tanks has resulted in a new display in the Aquarium on Mangroves and Swamps



Wart-biter Cricket, an endangered species successfully reared in the Invertebrate House

In the Reptile House a new enclosure for the Burmese Pythons was built, incorporating an extremely realistic artificial buttress tree constructed in-house. A Gila Monster was hatched, one of two eggs incubated and this brings to four the number bred at the Zoo. Exchanges are to be made with Glasgow Zoo, who have the other main group in the UK. The old Beaver Pond in the middle gardens is being converted into a reptiliary, a move that should please those visitors who remember the old reptiliary near the main gate.

The breeding successes for endangered species continue unabated in the Invertebrate House. These included hatchings of the Wart-biter Cricket, second generation hatchings of the Italian Ground Beetle and continued breeding of various Partula snail species. New exhibits included tanks for Stick Insects, Damsel-Flies, Bird-eating Spiders and Jewel Wasps.

In conclusion, in spite of a year that was difficult by any measure, the Collection of animals at London Zoo, and the ways in which these are exhibited, still compare

favourably with major collections elsewhere. An opportunity was provided to be more selective and to choose those species that are of particular conservation and captive breeding interest. This trend, underway for some years, will continue.

OPERATIONS DEPARTMENT

General Services Division

The General Services Division resulted from an amalgamation in August of the five former units: Works, Gardens, Architects, Purchasing and Transport and Information and Design. Substantial economies were achieved in the consequent simplified management structure. The manager of the new department is Graham Roden, who is supported by supervisors of three divisions, Gardens, Maintenance and Transport. The effectiveness of the new cohesive unit was tested during the 'Zoo Changes' project, undertaken over the winter months. This increased the size of enclosures for many animals, including a major re-design of the Cotton Terrace paddocks. The task was accomplished ahead of schedule and within budget. The Sealion Pool was refurbished, primarily to improve drainage, and subsidence on the canal bank was rectified.

Gardens

The Gardens Section, although reduced in staff numbers, continued to maintain high standards and priority was given to designing flower beds requiring minimum maintenance. The hanging baskets and jardiniere provided at the Main Entrance received wide acclaim and the tropical planting, formerly concentrated on the 'Gorilla Bed' was transferred to a larger bed adjacent to the Lifewatch Centre. This allowed the 'Gorilla Bed' to be planted with shrubs and a grass verge created. A reduction in the planting area of summer bedding plants reduced maintenance costs, yet careful choice of the more decorative shrubs maintained the attractiveness of such prominent locations. The formal flowerbeds in the Members' Enclosure were softened by being divided into two smaller beds and complemented by a grass verge. Attention was also given to the shrubberies lining the Zoo perimeter fence on the Outer Circle, Prince Albert Road and the Broadwalk.

Retail

Despite a difficult trading year, gross income increased by 6% over the previous year. The average spend per visitor increased by 16% to £1.36. The London Zoo Gift Shop continued to act as a model for other leisure attractions and the range of merchandise reflected the wide socio-economic origins of visitors. A standard licensing agreement for products printed with images from the Society's archive was produced and three royalty agreements have so far been concluded.

Assistant Retail Manager Mo Powell models the range of T-shirts now available in the Zoo Shop featuring prints reproduced from the Society's own collection of Elliot's monograph of the Felidae

Zoo Hospitality

The announced closure of the Zoo adversely affected banqueting sales, especially during the Christmas period. However, this was offset by an increase in spend per visitor and improvement in banqueting business once the future of the Zoo had been announced. The Coffee Shop, the main catering outlet in the Zoo and open throughout the year, was refurbished with the opportunity being taken to incorporate the very latest requirements of the licensing authorities regarding fire prevention and evacuation procedure. The 1992 edition of the Guinness Book of Records was launched at the Zoo with close participation o Zoo Hospitality and the fifth birthda programme of the Clothes Show wa recorded by the BBC in the Raffles Suite.

Information and Design

As part of the cost reduction programm the unit was disbanded in Augus although an in-house capacity to produc standard signs was retained. An extensiv audit of the Zoo graphics was undertake and a new standard label was designe (in collaboration with the Curatorial an Education Departments) for eventual in stallation throughout the gardens. Th use of modern acrylic-based materials using computer-aided design techniques resulted in a consistency of approach i colour and economy of scale. The poo graphics generally have been one of th most consistent criticisms of the Zoo i recent years and the latest programm which is intended to be fully implemente by 1994, will at last address this mos important issue.

Visitor Operations

Responsibility for the Main Office recep tion, switchboard and events programm was transferred to the Visitor Operation Department, allowing more effective us of manpower. The Main Office was close at weekends with reception, lost property and group sales transferred to the Mai Gate. A new contract for public tele phones was negotiated which resulte in the supply, rental, installation and ser vicing of all units at no cost to the Society A review of the animal escape drill wa undertaken which resulted in the intro duction of some procedural changes. A comprehensive training programme fo the firearms team was initiated with th active participation of the Metropolita Police. To comply with the requirement of the Environmental Protection Ac 1990, an application to register the Zo was submitted to the local authority. Th extent of any remedial work to the inci nerator has yet to be established and wil depend on a series of emission tests under taken by specialist contractors on behal of the local authority.

The London Fire Brigade inspected th Main Office in July and duly issued a fir certificate. A daily programme of anima encounters, feeding and close contac sessions ran throughout the year with additional activities during the summe season. The Pink Panther (late Spring

Presenter Sandy Harris explains to a small audience the instinctive behaviour of a Ruffed Lemur following an 'Animals in Action' show

Bank Holiday) and the Living Nativity (Christmas) attracted wide interest. A new programme called 'Animals in Action' was introduced into the main amphitheatre. This featured animals chosen to demonstrate aspects of their natural behaviour and a Ruffed Lemur, Green Winged Macaw, Kookaburra and Barn Owl were the first four participants, alongside the Spiders, Camels, Llamas and Reindeer for the complementary 'Meet the Animals' sessions. The animal events team participated widely in many guest appearances both in and out of the Zoo and proved to be a valuable aid to the public relations department.

MARKETING

1991 was a very mixed year for London Zoo. The 'Zoo closure' crisis broke in early April and whilst this had a very positive effect on attendance initially, as the season developed, the uncertainty over the Zoo's future became a barrier to attendance with many people assuming, incorrectly, that the Zoo had either closed or was about to, and so would not be worth a visit as it would be run down and uninspiring.

The advertising plan for 1991 was to concentrate on the arrival of 'Ming Ming', the Giant Panda. However, her arrival was delayed until October so alternative advertising was used during the season. A radio campaign launched the season promoting a special Easter event sponsored by Tomy Toys with subsequent radio supporting the appeal 'fun days' over the May bank holidays with Elephant Bathtime and the Moonlight World featured during the school holidays.

In May, the Zoo received a commendation for the 1990 advertising campaign from the Duke of Westminster as part of the London Tourist Board and Convention Bureau's President's Marketing Awards.

A new consumer leaflet was produced using innovative design and copy based on the unique experience of close encounters at London Zoo. A promotional leaflet was also produced in six languages (French, German, Spanish, Italian, Arabic and Russian) containing basic information on the location of the Zoo, its opening hours and key attractions. The leaflets were distributed throughout the market catchment area to hotels, tourist outlets, libraries and at each of the terminals at Heathrow Airport, as well as at consumer fairs and exhibitions.

The targeting of the travel trade and groups through a dedicated marketing campaign continued. Coach operators were again offered familiarisation visits, free parking offers, publicity and incentive schemes. Special days were held for scouts and guides with 1,250 guides and 760 scouts attending in June and 6,200 guides and scouts attending in September, despite adverse weather conditions. 7,000 taxi drivers identified as major ambassadors of the Zoo, and their families, attended a special fund-raising day in April. The Society of the Golden Keys, whose membership is made up of hotel hall porters, also offered its support.

Key exhibitions and workshops, such as the World Travel Market, MOOT, and the English language schools workshop were all attended and the Zoo was represented at MITCAR in Paris for the first time.

The conference facility of the Society's meeting rooms was re-launched for 1991. A new information pack was produced, and the facilities were actively promoted with mailings sent to past users, in addition to those organisations on the London Tourist Board enquiries list.

The programme of market research into levels of visitor satisfaction was continued. Over the three surveys held in March, June and August, on average 84% said their visit represented very good or good value for money, 82% said their visit was as good as or better than expected, and 85% said they would recommend a visit to a friend.

The BBC's 'First Sight' and Thames Television's 'London Programme' both ran documentaries on the Zoo closure crisis. The 'Save our Zoo' campaign was covered by local, national and international media, with highlights including reporting on the Mayday special event, the delivery of the zoo petition to 10 Downing Street and the Pink Panther fun-day. 'The Daily Mirror' was particularly supportive, launching its own 'Save the Animals' appeal.

Lifewatch magazine continued to be published for members and adopters and included advertising for the first time.

EDUCATION

In August the staff complement of the London Education department was reduced from nine posts to four.

School Programmes

'Hands-on' sessions continue to be the most popular sessions for Primary schools and 'Putting Animals into Groups', the most popular secondary programme. New material introduced this year includes a secondary pack on adaptations to feeding, an activity bag for very young children and families, packs containing pre-visit activities, post-visit activities and a Zoo trail. A similar topic pack on senses will be ready for the summer season.

Many secondary schools brought their English classes to hear about the role of zoos as part of their language work, discussing controversial issues such as 'Keeping Animals in Captivity'.

Attendances during the summer term were good, but fell during Autumn and Spring terms. A questionnaire was sent to 100 named teachers who had brought

Prince Harry visited the Zoo along with other class mates, during the course of which he was captivated by an Indigo Snake, shown here with Matthew Fagg and Claire Robinson

groups in Autumn 1990, but who did not return in Autumn 1991. The results showed that they were very satisfied with the educational sessions and material they received at the Zoo, but that the cost of travel and the time taken travelling were important factors affecting repeat visits.

Learning Opportunities for Visitors

Guided tours on endangered species and historical buildings were given by volunteers to pre-booked groups at London and these will be extended to the general visitor during the coming summer season. Maps and mini-guides are being produced in several foreign languages for visitors from abroad.

At London, April will see the launch of our first adult evening class – a 10 week course entitled 'Animal Ecology and Conservation'. It is designed for people with no formal background in the biological sciences and will include tours of the collection.

Public Information Service

The Education Department received over 3,700 letters from the public, and school children in particular, requesting information. A survey of these letters has been made over a period of six months to enab us to write a selection of informatio sheets on the most popular topics e 'Keeping Animals in Captivity', 'Hous keeping at London Zoo', 'Careers Zoology' and 'Rainforests'.

Keeper Training Course

Despite the reduction in staff, there is greater number of Keepers being traine London has 12 Keepers in their first yea and 10 completing their second year the City and Guild's course in Anima Management. However, it has not bee possible to arrange trips to Whipsnad and other zoos as part of the course, as would have left animal sections severel understaffed.

Volunteers

Volunteer staff continue to support th Society in a wide range of activitie chiefly in areas of information, educatio and customer care. Special events London benefiting from volunteer in volvement included 'Mayday' Save Ou Zoo event, Special Needs day and Ta

Molly Dineen (camera) and Phil Streather (sound recordist) spent six months at London Zoo recording both visitor orientated events and the deliberations of Council. A series of four documentaries, based on London Zoo, are to be shown by the BBC in the autumn

Drivers day. For the first time, volunteers worked over the winter period helping at Santa's Grotto and the Living Nativity and in answering letters from the public. A Volunteer Agreement is being introduced to improve the organisation of the scheme.

Alison Binns, one of our volunteers, presented to the Zoo a beautiful hand-felted wall hanging that she had designed and made herself. Called 'The Flooded Forest', it depicts animals living in the rain forest of South America and can be seen in the Clore Pavilion.

Plans for the Future

The London Education department has drawn up initial plans for a proposed new Children and Family Centre which is to incorporate a restructured Children's Zoo and a Pet Care Centre, as well as many exciting new activities and learning opportunities.

PUBLIC RELATIONS

The Select Committee for the Environment, as part of its study into the Zoo, visited Regent's Park and the Institute of Zoology. The Education Committee of the City of Westminster saw something of the imaginative Discovery Centre and learned the relevance of the Zoo to the National Curriculum. Local amenity groups continued to take a close interest in the Society's affairs and cordial meetings were held at the Zoo with the Regent's Park and Primrose Hill Area Advisory Committees. The Director of Administration addressed the AGM of the St John's Wood Society and Camden Council chose the Zoo as a venue to launch its leisure card scheme for Camden residents. Capital Radio managed a Coca-Cola sponsored 'Carnival with the Animals' as part of the Capital Radio music festival in July. The evening of music included the orchestra of the Royal College of Music with the proceeds kindly donated to the 'Save our Zoo' campaign. Mr Bryan Gould, MP, the Shadow Secretary of State for the Environment, visited the Zoo in connection with the 'Save our Zoo' campaign.

A film unit was resident in the Zoo from mid-summer through to March recording both the significant constitutional events and also the day-to-day work of animal husbandry and administrative support. The fly-on-the-wall type of documentary is scheduled to be televised by the BBC in the Autumn.

WHIPSNADE WILD ANIMAL PARK

Visitors during the year: 469,821
Cars brought into the Park: 54,475

GENERAL

The year was dominated by the celebration of the Diamond Jubilee. On 23 May, the actual anniversary of the opening, His Royal Highness The Prince Edward visited the Park and later opened the new Tiger exhibit. The previous day, a special 'Fellows' Day' had been arranged when a hundred Fellows attended the opening both of 'Passage thru' Asia' and an exhibition of the history of Whipsnade. They also saw many of the other recent improvements in the Park.

Prince Edward visited Whipsnade in connection with the Park's Diamond Jubilee celebrations in May. He is shown unveiling a plaque adjacent to the new 'Tiger Falls'. Looking on is Curator Richard Kock

A special Steam Weekend was held at Whipsnade in May. Special guests included from right to left: Dennis Tunnicliffe, Managing Director of London Underground and Chris Green, Director of Network South East. Mrs Mitzi Green is standing next to her husband and on her right is Mrs Susan Tunnicliffe, former Head of Education, ZSL. Looking on is (left) Peter Denton, Director of Administration, indulging for the weekend. Driver Dick Stanghan is in the background

NEW DEVELOPMENTS

'Tiger Falls', the largest and most significant development at Whipsnade for many years and sited in the old Wolf Wood area, includes a walk-through path for visitors affording commanding views of the Park. The family of Siberian Tigers soon established itself in the three and a half acre exhibit where they are free to choose between bathing in the rock pool beneath the waterfall or relaxing in the woodland area. 'Passage thru' Asia' incorporates an area of previously unproductive land to the south east of the Park. The area is a reserve for Asian hoofed animals, where visitors either in their cars or as passengers on the steam train, may see them at close quarters. The Chimpanzee Centre is an example of innovative use of electric fencing in an area adjacent to existing chimps' quarters. It allows the animals much greater freedom than they previously had and at the same time improves the public's opportunity to study these much loved creatures.

The Children's Farm, referred to in last year's report, has specialised in stocking domestic animals which would have been a familiar feature of farms between the wars but sadly many now owe their existence solely to the excellent work of the Rare Breeds Survival Trust, of which the Society was a founder member. The Farm won three national awards for design and construction. BP provided the complete developmental costs of the 'Bear Trail Maze', where visitors learn of the diverse habitats and varying species of bears in an entertaining manner. Allied Lyons sponsored the conversion of an old cottage into 'The Spotted Pig' public house. The Leicestershire Cooperative Society sponsored the development of 'Dash About Think About', an educational activity for visitors and in particular children, to learn about the diverse skills of animals.

THE COLLECTION

Breeding successes of note include a Pygmy Hippo, eight Bactrian Camels, Yak, Giraffe – the first for 16 years, two Congo Buffalo, twelve Scimitar Horned Oryx, a Siberian Tiger, Red Panda, three Paradise Cranes, a Ruppell's Vulture, 16 Humboldt's Penguins and two White-faced Scops Owls. New arrivals to the Park included two Ruffed Lemurs for the 'Meet the Animals' sessions and two Cheetahs from South Africa. A Bald Eagle, a Bengal Eagle Owl and a Saker Falcon were introduced into the bird flying demonstration.

Departures included the sole Wart Ho to Germany to join a breeding grou Various species of conservation intere were sent to other collections as part o co-operative programmes; these include Red Panda, Cheetah, Grevy's Zebra Przewalski's Horse, Asiatic Wild As White Rhino, Pygmy Hippos, Humboldt Penguins, Sandhill Cranes, White-nape Cranes, Wattled Cranes, Stanley Crane Roseate Cockatoo. Consolidation of th Collection continues with attempts t integrate species where possible, such a White Rhino with Roan Antelope an Sitatunga. The organisation of th

Siberian Tiger

Three 'Defender' Land Rovers were most generously loaned to the Society by Land Rover Ltd. The vehicles, based at Whipsnade, were used extensively as part of the veterinary Wildlife Training Course. The vehicles are shown amongst the White Rhino herd at Whipsnade

Collection into regions was completed and the new exhibits are maturing with enhanced conditions for some of the species such as Chimpanzees. Several conservation projects made good progress this year. The Great Bustards were released into a new ten acre pen, designed to simulate the habitat to which the birds would need to adapt if reintroduced into the English countryside. Progress has been made in understanding the basic physiology and seasonality of these birds. A comparison will be made with their greater degree of freedom in the larger pen.

MARKETING

Whipsnade continued the 'Out of Bedfordshire' advertising campaign, launched in 1990, so building on the awareness already developed. Television was retained as the primary medium as it reached the maximum number of both trial and repeat visitors.

In order to extend Whipsnade's advertising presence, a 48-sheet poster campaign ran in June and July to bridge the biggest gap in the Whipsnade television campaign. Over one hundred key poster sites were secured on major route ways to the M1 in north London boroughs and within close proximity of Whipsnade.

Also of importance was the new Channel 4 children's series 'Boom!' which was partly filmed at Whipsnade and co-presented by Jane Pardoe, one of Whipsnade's own staff. Texas Instruments adopted an elephant in the Park which was linked to an on-pack promotion of a new 'Peek-a-Zoo' children's game. Other successful promotions included Whipsnade being featured in the Barclaycard profiles catalogue, which had a circulation of two million. A new eyecatching, full colour events guide and map was produced to launch the Diamond Jubilee year, sponsored in part by Amway and Kodak. The new Whipsnade guide book was relaunched in June. This major publication was the first to introduce the new corporate identity and followed the 'Out of Bedfordshire' theme for its front cover.

A higher profile locally has been obtained by Whipsnade's adoption of a midibus based in Hemel Hempstead, decked out in the Whipsnade corporate colours

A corporate hospitality leaflet was produced and mailed out to local businesses, and a new scheme, 'Business Friends of Whipsnade' which encouraged local companies and organisations to support the Park and share in its success, was launched in May.

EDUCATION

The number of school children visiting the Park as part of an organised party increased by 68% over the previous year. This has justified the provision of additional classroom space and, much against the trend, the staff complement has been increased to cater for these higher numbers. Kodak sponsored a Field Studies Centre which links formal teaching with additional under-cover visitor facilities during holiday periods within the new Wildlife Pond Project, itself the subject of sponsorship from Texas Instruments.

GRAPHICS

New graphics were only partially introduced owing to budgetary constraints but they should be finished during the current year. The graphic requirements at Whipsnade are unique. A centralised information board system was adopted within each of the regions or main paddock systems. This enabled a storyboard approach to allow visitors to see the animals in the context of their habitat. Traditional single board graphics with species and geographical information for the more knowledgeable zoologists are also planned.

Tiger Falls opening

INSTITUTE OF ZOOLOGY

ZSL LONDON ZOO ZSL WHIPSNADE ZOO

Following the successful Press Launch at Whipsnade of the Post Graduate Veterinary Training Course, the students introduced the Press to 'Gizmo', the hand-reared Red Panda. Also in the picture are (from left to right): Barkley Hastings, Professor Lance Lanyon, Tony Stevens and Sir Barry Cross

VETERINARY ACTIVITIES

Considerable media interest was focuse
on the Post Graduate Veterinary Trainin
Course in Wildlife Management and a
a special press day, the Park wa
honoured to receive the diplomatic rep
resentatives of Mexico, India, Ethiopi
the Philippines and Taiwan, reflecting th
truly international nature of the cours
Richard Kock received a high profile fo
his vital role in the 'Into the Blue' projec
which introduced dolphins from Britis
dolphinaria into a sanctuary in th
Caribbean.

DEVELOPMENT

The division conceived, launched and developed the 'Save our Zoo' campaign. Highlights included Fun Days on the May Bank Holidays; in particular a May Day promotion which resulted in one of the highest attendances on a single day in recent years. Some £2 million was raised in cash and kind and a petition of 600,000 signatures was presented to 10 Downing Street.

As the new plans for London Zoo emerge over the next few months, then the potential sponsors, donors and commercial partners will be approached anew in an endeavour to translate their interest into investment for the future.

Despite the natural focus on London Zoo, substantial progress has been made in securing sponsorship and funding for initiatives at Whipsnade Wild Animal Park, totalling in excess of £600,000. Developments to benefit include the BP Bear Trail, the BOC Flamingo Exhibit and the Leicestershire Co-Operative Society's 'Dash About, Think About'. Further projects are now being developed in response to interest from funders. The Business Friends of Whipsnade Wild Animal Park, a membership scheme for the local business community was launched. A fund raising strategy for Whipsnade was developed which allows it to stand alone within the Society's portfolio of activities and to attract funders in its own right.

CONSERVATION AND CONSULTANCY DIVISION

The Conservation Office continues to develop and maintain an active overseas programme focusing primarily on the Middle East and Africa. The King Khalid Wildlife Research Centre in Saudi Arabia, which the Society runs on behalf of the National Commission for Wildlife Conservation and Development, expanded its activities with the reintroduction of two species of Gazelle, Idmi and Rheem.

In Kenya, the Society continued to second Dr R A Brett to the Wildlife Service as National Rhino Co-ordinator. A Five-Year Management Plan is to be produced shortly which will specify strategic priorities for this highly endangered species. Also in Kenya, the Laikipia Elephant Project entered its second year, with Dr Chris Thouless as the executant collecting extensive information on the movement patterns and ecology of one of the country's largest Elephant populations. Although the experimental satellite tracking element of the project, generously funded by Bunzl plc, has proven to be inappropriate under local conditions, the project, undertaken on behalf of the Kenya Wildlife Service in conjunction with the World Wide Fund for Nature, will be completed at the end of 1992 using conventional radio tracking.

Elsewhere, a vehicle kindly donated by Range Rover North America was sent to Ethiopia as part of the Society's programme of wildlife conservation assistance in that country. The vehicle is being used by staff of Wildlife Conservation International in the collaborative work on a management plan for Awash National Park. Support for conservation efforts for Mountain Nyala in the Kuni Muktar Reserve and Abyssinian Wolf (also known as the Simien Jackal), both endangered endemic species, was also supplied over the year. A formal memorandum of co-operation between the Society and the Ethiopian Wildlife Conservation Organisation was agreed as a preliminary to a formal co-operative programme in Ethiopia.

Our commitment to reintroduction programmes for Arabian and Scimitar-horned Oryx remains firm and in November the Niger Faunal Restoration Group was established to promote the implementation of a project for Addax and Oryx in Niger. Local political uncertainties in the Sahara led to the postponement of the proposed activities but it is hoped that these will be resolved soon.

Collaborative projects in Kenya will continue with the secondment of Richard Kock, Curator/Veterinarian at Whipsnade, to the Wildlife Service Veterinary Unit. Additionally, the Society will continue as the contracting partner with the Overseas Development Administration on Stage II of the fencing of the Aberdares National Park.

Participation in the Government's conservation programme in Saudi will expand as further reintroduction projects are established, particularly in the southern part of the Kingdom.

In October, Dr Chris Thouless, a Fellow of the Society, received the Queen's Gallantry Medal for the rescue of Alexandra Dixon during an elephant attack in northern Kenya. In co-operation with WWF and the Kenya Wildlife Service, the Society was participating in a study of elephants on the Laikipia Plateau. As part of this study radio collars are put on immobilised elephants but on one occasion things went wrong. Miss Dixon was badly gored and hurled by the herd matriarch but otherwise escaped unharmed thanks to the bravery of Dr Thouless who distracted the elephant by beating it with his hands. Without his courage, Miss Dixon would undoubtedly have been killed.

RESEARCH

THE INSTITUTE OF ZOOLOGY

With the establishment of the Ecology Research Group, the reorganisation of the Society's scientific work, begun three years ago and referred to in last year's Annual Report, is now complete. An indication of the success of the new structure is the rapidity with which collaborative links between the research groups have been established. It is also satisfying to record the fund-raising successes of the Ecology and Conservation Genetics Groups, with over £100,000 having been raised by these new groups from external sources during the last year.

Although we attempt here to describe most of the research projects carried out by Institute staff, space permits only a very brief mention of many of them. A fuller description may be found of much of the Society's work in the Scientific Report, *Science for Conservation*, published in 1991 and covering the period 1988–1990.

ECOLOGY

As human populations expand nature reserves become increasingly important in conservation, but competition between species may lead to undesirable population trends. In the Serengeti, increasing Hyena and Lion populations are responsible for high mortality rates in Cheetah offspring. To what extent do Cheetah avoid hunting and denning in areas with high densities of these larger predators? Investigation will throw light on competition theory and on the management of nature reserves in relation to conservation.

Studies of the intrinsic and extrinsic factors influencing reproduction and survival of the African Hunting Dog, which is endangered, are important in assessing the risk of extinction. A study in Zimbabwe is concentrating on how social factors influence demography. In most packs breeding is confined to one pair and the young help to rear subsequent litters. Females may disperse, but their subsequent reproductive success, though important, is poorly understood. Historical patterns of dispersal, which will be reconstructed in collaboration with the Conservation Genetics Group, will clarify the theoretical debate about the relative significance of genetic and demographic factors in conserving populations.

The best known species of Ants have a single breeding female (queen), but some species have several. What ecological factors promote the evolution of societies with multiple queens despite apparent reproductive competition? With the polygynous Ant, *Leptothorax acervorum*, this can be investigated in the field in East Anglia and in controlled laboratory environments.

In the Soay Sheep on St Kilda, individuals heterozygous at the polymorphic protein, adenosine deaminase, have lower helminth burdens and higher survival rates during population crashes. However, the genotype with the selective advantage may vary in different die-offs and current research is investigating whether there is a stable heterozygous advantage or an evolutionary race between host and parasite.

The amount of heritable variation in natural populations under direction selection is the underlying basis for a study of sexual selection in House Sparrows on Lundy. If females choose mates on the basis of their bib size is this a genuine indicator of male fitness that is heritable?

Conservation Genetics

The Group was reorganised and new projects were initiated in basic science and applied research. The general goal of the Group is to improve understanding of evolutionary processes such as speciation, extinction, inbreeding and genetic drift and to apply molecular genetic techniques to biological conservation.

POPULATION GENETICS

Aims are to determine how genetic variation is structured in natural populations and to identify the mechanisms that affect its maintenance and decay. A collaborative study began on genetic variability in Cameroon rainforest birds as a function of habitat type. Over 1,000 birds of four species were sampled, representing populations on the edge and in the undisturbed centre of the rainforest. Edge populations may be an important source of genetic diversity but are ignored in many conservation schemes. Also in progress are population genetic surveys of Grey Seals and Mediterranean Monk Seals, and collaborative studies with several European institutions on genetic variation in five endangered mammalian species.

Collaboration with behavioural ecologists enables genetic fingerprinting techniques to be used in investigating the association between behaviour and repr ductive success. Thus 'fingerprinting' being used to examine large numbers Baboons studied elsewhere for over years, and to trace paternity in Badge from 14 setts. Mating in Badgers is rare observed and the paternity of offspring a given sett is largely unknown.

Laboratory studies to investigate th consequence of loss of genetic variabil in bottle-necked populations of an Africa Satyrine Butterfly continued. The breed ing was completed and phenotypic an molecular analysis will soon begin. Plan to assess the importance of outbreedin depression in a mammalian species a being developed.

Systematics

Collaborative studies on the systematics Northern Phocid Seals began. A bett understanding of speciation and relatio ships in these animals may be importan in conservation. Financial support wa obtained for work on the systematics Bustards, and for a study of relationship between Bushbaby species in Tanzania Bushbabies have been isolated in fores fragments throughout much of the Plei tocene Epoch and have recently speciated Their ranges are now beginning to merg in hybrid zones as forested areas expand A genetical study of this phenomenon ma assist in the conservation of Tanzanian Bushbaby species, many of which ar highly endangered.

REPRODUCTIVE BIOLOGY

Endocrinology

Studies of the role of insulin-like growth factors (IGFs) during ovarian follicular development in the Marmoset monkey were advanced by cloning part of the gene encoding IGF-1. A Marmoset homologous probe will clarify cellular localisation and hormonal regulation of ovarian IGF-1 gene expression. Immunoreactive inhibin increased during the luteal phase and early pregnancy. Work on the type and cellular localisation of the inhibin being produced may elucidate its role in early pregnancy. Because prostaglandin ($PGF_{2\alpha}$) activates protein kinase C in Rats, Marmosets and Man, we conclude that $PGF_{2\alpha}$-induced inhibition of progesterone is mediated by protein kinase C, in an isoform whose identity is now under investigation.

The establishment of pregnancy in ruminants depends on the secretion of an interferon (IFN) by the embryonic

trophoblast. This antiluteolytic protein has been identified as a Type I IFN by amino acid and cDNA sequencing, and it bears a similarity to the adult IFN-ωs. Trophoblast IFN exerts its antiluteolytic activity by inhibition of the uterine oxytocin receptor. Isolation of a bovine trophoblast IFN gene showed that the promoter region was similar, but not identical, to that of IFN-ω. Type I IFNs are induced by viral infection; however, although trophoblast IFN has antiviral activity, the similarities between the viral response elements within the first 120 base pairs of the promoters of trophoblast IFN and IFN-ω were not sufficient to predict virus inducibility of trophoblast IFN. When a fragment of trophoblast IFN gene promoter (bases −450 to +26) was linked to a bacterial reporter gene and transfected into a eukaryotic cell line, expression of the reporter gene was 4–6% that of the control reporter plasmid, and could not be induced by poly (I) (C), which mimics induction by double stranded RNA viruses.

An assay for urinary pregnanediol was developed for monitoring reproductive cycles in the Asian Elephant. The identification of oestrogen products in urine will assist in the prediction of ovulation. In the Scimitar-horned Oryx measurement of 20α-dihydroprogesterone in faecal extracts showed promise as an indicator of ovarian events. The hormonal analysis of excretory products will facilitate captive breeding programmes.

Gamete Biology and Early Embryonic Development

A new finding in the field of sperm development and fertilisation was the localisation of specific gene expression at the beginning of spermatogenesis in the Rat. The gene was unique and its expression may play a role in germ cell development. Lectin and monoclonal antibody were used in isolating post-meiotic germ cells at various stages of development.

A serine protease inhibitor of sperm acrosomal origin was identified. This enzyme may serve to regulate the acrosome reaction of sperm-egg binding in mammals. *In-vitro* fertilisation in a marsupial, the Grey Short-tailed Opossum, led to the discovery that the mode of fertilisation resembled that of eutherian mammals.

Use of the cryomicroscope and fluorescent probes revealed that spermatozoa can remain intact during cooling and freezing but undergo plasma membrane damage during thawing. The kinetics of this event during the first 5–10 seconds after thawing are being investigated. Mouse spermatozoa were successfully cryopreserved. Sperm motility, as assessed by a computerised system, is being correlated with the results of artificial insemination in Pigs.

The majority (90%) of preovulatory oocytes from Marmosets could be fertilised *in vitro*. Embryos formed from oocytes incubated for 10 hours before insemination cleaved faster and developed further than those from oocytes incubated for 5 or 24 hours. Marmoset oocytes parthenogenetically activated by ethanol exposure developed to the 16-cell stage, demonstrating that considerable preimplantation development can occur without a paternal contribution. Micromanipulation techniques are being developed to produce androgenetic and gynogenetic Marmoset embryos.

The X and Y chromosomes were detected simultaneously in single cells from 4- to 8-cell human embryos by means of fluorescent *in situ* hybridization. This offers a potentially reliable method of diagnosing severe genetic disease.

Physiological Ecology

The role of environmental signals in the seasonal timing of reproduction and embryonic diapause, and the local control of ovarian quiescence were studied in the Bennett's Wallaby.

Red Deer and Père David's Deer were superovulated, artificially inseminated and the embryos transferred to synchronised Red Deer. Such technology is valuable in conservation breeding. In Red Deer, investigations of the role of social status in regulating hormonal changes at ovulation may assist in explaining natural skews in sex ratio. Variation in functional genes (such as those controlling growth hormone and reproductive hormones) in relation to phenotypic variation in wild populations is being investigated. Further studies include the mechanisms whereby prolactin regulates seasonal pelage growth and the genetic regulation of circadian biology in Syrian Hamsters.

COMPARATIVE MEDICINE

Applied Immunology

As part of the programme to develop simple tests for malaria, a collaborative study in Chantaburi, Thailand, showed that infection in blood donors could easily be detected. The tests used are also being tried out in the field in Tanzania.

A study was made of the immunological responses in human ocular infection with *Toxocara*, a helminth parasite acquired from Dogs.

Further work was carried out on tests for leishmaniasis, a tropical disease that infects Dogs, wild animals and Man.

Microbiology

Necrobacillosis, a disease of wild and domesticated animals, arises from faecal contamination of small wounds. Recent studies showed that the causative bacterium, *Fusobacterium necrophorum* (FN), was excreted in the faeces of only a small proportion of animals and that its infectivity was greatly enhanced by other faecal bacteria. A suspicion that digestive disturbance encourages the excretion of FN was strengthened by experiments in which the gut microflora of Mice was modified by the oral administration of antibiotics. This led to intestinal multiplication of small numbers of FN given by mouth, and to prolonged faecal excretion.

Necrobacillosis also occurs in Man, but pathogenicity experiments showed that human strains of FN were heterogeneous and differed from virulent animal strains.

Work on botulism included experiments on factors that influence the production of *Clostridium botulinum* toxin in carrion, ingestion of which is a major cause of the disease in animals. Field work strongly suggested that refuse disposal sites (landfills) are an important source of toxins for Gulls, in which heavy mortality from type C botulism occurs in the UK. These birds, with their scavenging habits, probably play a role in the dispersal of *C. botulinum*. Type C spores were much more prevalent on landfills than in the general environment. The spores, together with the rotting organic matter present in refuse, undoubtedly lead to toxin production and to botulism in the ever-present Gulls.

VETERINARY SCIENCE

Clinicial Studies

The range of disease encountered was wide. A third case of spongiform encephalopathy in Greater Kudu occurred this year, the symptoms being sudden in onset. Trichomoniasis was diagnosed in two

fledgling Red Kites imported for re-introduction. Lesions were found after the detection of a high white cell count, and treatment was successful.

Ultrasound was used to investigate uterine changes during the oestrous cycle of an Asian Elephant and to monitor the oestrous cycle of a hand-reared Scimitar-horned Oryx as part of a project to develop artificial insemination techniques.

The mechanisms responsible for species variation in limb bone growth rates were studied by comparing the morphology and growth kinetics of tibial growth plates in several mammalian species.

Pathology

One of two Koalas at Regent's Park died from disseminated lymphoma, a disease noted as a cause of death in Koalas elsewhere. A possible viral aetiology is being investigated. A 27-year old male Orang Utan with spinal scoliosis was found at necropsy to have focal encephalopathy.

A visit was made to the island of Skomer to investigate 'puffinosis', a disease that kills large numbers of young Manx Shearwaters each year. A health survey of Red Deer was made on the island of Rhum.

A collaborative project on disease in marine mammals began in 1990. Among the animals examined were 31 Harbour Porpoises, 17 Common Dolphins, two Long-finned Pilot Whales, two Euphrosyne Dolphins, six Grey Seals and four Harbour Seals. Parasite infestations, mainly of the lungs, liver and stomach, were common but rarely appeared to cause serious disease. Bacterial infections of the lungs, associated with inflammatory changes, were also common.

Veterinary Information Systems

The LYNX programme contains a database of normal haematological and serum biochemical reference data for over 500 animal species. Further novel computer applications include a system for analysing aggregated disease data, and the development of algorithms for estimating epidemiological parameters in disease investigations in, for example, marine mammals.

Veterinary Training Course

This six-month, twice yearly course is designed for veterinarians working in wildlife management, medicine and conservation. The first course ran from July to December 1991. The students have come from Mexico, India, Ethiopia, the Philippines and elsewhere. The curriculum includes capture and translocation techniques, anaesthesia, clinical work (particularly at Whipsnade), wildlife ecology, management, and conservation strategies. Field work on the island of Rhum and in Zimbabwe has embraced disease investigation and control, assessment of body condition, wildlife census techniques, and habitat and forage analysis.

SCIENTIFIC MEETINGS, SYMPOSIA AND SEMINARS

Average attendance at the eight Scientific Meetings held during the year rose by over 30%. Attendance rates vary considerably according to the academic pressures of the time of year, the weather and, particularly, the topic of the meeting, but it is hoped that the trend shows members to be more aware of Society activities and more ready to take part in them, and that it will continue. Suggestions from members of subjects that they would like to hear discussed at these meetings will be very welcome.

The main topic of the April meeting was 'Animal hybridization and species structure'. Subsequent meetings were held on 'Animals at low temperatures', 'Gorilla studies', 'Global warming and the carbon pump', 'Dinosaurs past and present', 'Badgers: aspects of behaviour and ecology', 'Chimpanzees' and 'BSE'. Brief Reviews of the subjects of some of the meetings continue to be published in the *Journal of Zoology*. The Society would like to express its thanks to all the speakers who took part in the year's programme.

One symposium was held during the year, in association with the Mammal Society. This was 'Mammals as predators', organized by Dr N Dunstone and Dr M Gorman, and held on 22 and 23 November 1991. It was a popular meeting, attended by nearly 300 people. The proceedings will be published in the series *Symposia of the Zoological Society of London*.

Scientific seminars continue to be held during the academic terms for Institute of Zoology staff and invited guests. The Institute is grateful to all contributors to this seminar series.

PUBLICATIONS

Journal of Zoology

Twelve parts of the *Journal of Zoology* were published during the year, from Volume 223 Part 4 to volume 226 Part 3. These contained a total of 154 papers. Fewer than half of these papers were submitted from within the United Kingdom; the rest came from 21 other countries throughout the world, attesting to the *Journal's* international reputation for quality of content and production. Its standards are maintained by rigorous review of all papers submitted, which results in a rejection rate of over 40%. Review of so many papers is an enormous task, and the Editor and Council are extremely grateful to all the referees who give their time and expertise to make such assessment possible.

The profitability of the *Journal*, which in last year's Annual Report was distorted by the change in the method of accounting for sales income from a cash-received to an accruals basis, can this year be more clearly seen. Subscription levels have not so far been significantly eroded by recession, although the impact of economies imposed on librarians in the United States by budget cuts may not yet be apparent.

Symposia

Two volumes in the series *Symposia of the Zoological Society of London* were published by Oxford University Press during the year: No. 62, 'Beyond captive breeding: re-introducing endangered mammals to the wild', edited by Dr J H W Gipps, and No. 63, 'The environmental impact of burrowing animals and animal burrows', edited by P S Meadows & A Meadows.

Academic Press, who for many years published the *Symposia* series jointly with the Society, kindly gave permission for surplus stock of these early volumes to be offered to Society members at a greatly reduced rate. The offer ran with some success in the autumn of 1991, and may be renewed at a later date.

Zoological Record

Volume 127, which covers literature received during the period July 1990 to June 1991, was published in December 1991 and contains 79,993 citations. These citations were obtained from 6,494 serials and 1,278 books, both representing an increase on previous volumes.

Indexing for Volume 128 is in progress and at the end of 1991 some 35,150

citations had been included. A significant step forward was taken from the start of this volume when some indexers began to use a slightly modified version of the data entry system for online indexing. This experiment has worked well: the staff concerned are enthusiastic, indexing rates achieved are as good as those under the manual system and there has been an overall gain in productivity.

A new hierarchy of subject and taxonomic categories was introduced for Volume 128. This new vocabulary reflects current research and opinion and takes account of the requirements of online searching.

A review of serial and book coverage has alleviated the difficulty experienced in obtaining suitable material for indexing. As a result 776 new serial titles have been added to the list of those scanned and 151 publishers have agreed to send review copies of books for indexing. Despite these increases, the actual number of published papers within *ZR* scope remained fairly constant.

Cooperation between BIOSIS and the Society has continued on the production of the next volume of the *Nomenclator Zoologicus*. Details of new genera included in Volumes 115 to 126 of *Zoological Record* were extracted during the year and a draft list produced for editing by the Society.

The Society has also been aware of discussions taking place between BIOSIS and the International Commission on Zoological Nomenclature, on the development of a *List of Available Generic Names in Zoology*, based on the printed volumes of the *Nomenclator Zoologicus* and the later machine-readable version of *Zoological Record*. Some interest has been shown in the publication of this *List* on CD-Rom; ICZN also plan to use it as the basis for a *List of Generic Names in Zoology in Use*, paralleling similar activities in microbiology and botany, all under the auspices of IUBS.

The Council of the Society joins with the Board of Trustees of BIOSIS in expressing thanks to the Director General for Science, Technology and Industry at the British Library Document Supply Centre, Boston Spa, and to the Director of the British Museum (Natural History) for the assistance and support offered to the staff of the *Zoological Record*.

International Zoo Yearbook

Volume 30 of the *International Zoo Yearbook* was published in December 1991. The 21 papers in Section 1, 'Invertebrates', covered a broad view of work on terrestrial invertebrates in zoos and in the field. It has aroused considerable interest and is valuable reading not only for those exhibiting species in this diffuse group but also for anyone interested in the conservation of animals. With 13 papers in 'New developments in the zoo world', the list of Zoos and Aquaria of the world and two years' data on breeding in zoos and the 1989 and 1990 censuses of rare animals in captivity, this was a larger than usual volume which has been received with enthusiasm.

Section 1 of Volume 31, currently in preparation, will deal with 'Australasian fauna'. Contributions from Australia and New Zealand, which have been commissioned with the help of John DeJose, Director of Perth Zoo, provide an interesting commentary on the work being done to protect the unique fauna of this region. The section 'New developments in the zoo world' will be more extensive than in Volume 31, and will include an interesting series of papers on primates, particularly gorillas.

The reference section includes the list of vertebrates bred in 1990, the census of rare species in captivity at 1 January, 1991 and the summary of international studbooks and world registers.

The editor, P J S Olney, continues his work as co-ordinator of international studbooks, which grow steadily in both numbers and importance. As well as a comprehensive library of international studbooks the *Yearbook* office now houses an increasing number of regional studbooks, especially from Great Britain and the USA.

LIBRARY

The Library continued to provide a full service to members of the Society and staff of the Society, the Institute of Zoology and Zoo Operations Limited. The number of members of the public applying for Reference Tickets continued to increase and over 200 new Ticket Holders were enrolled. This contributed to the extensive use of the Library throughout the year. Apart from Reference Tickets the Library also supplied photocopies to members of the public and answered telephone enquiries. To help deal with these an Information Unit manned by volunteers was set up in the Library.

The generous donation of £20,000 made by the Clothworkers' Foundation in the previous year permitted the establishment of an Endowment Fund which will supply an income for the Library. Money received from the sale of duplicate books from the Library has been added to this Fund.

Modernisation of the Library's services proceeded with the acquisition of two computers and the computerisation of the Periodicals Catalogue. A start was also made on the computerisation of the Book Catalogue. When this process is complete it will be possible to supply printed versions of the Periodicals Catalogue and special subject lists from the Book Catalogue.

The current financial stringency has made even more important the generosity of those who have donated books to the Library. The donors this year include: Mr S Adams, Dr E Barlow, Dr J L Cloudsley-Thompson, Mr B Coleman, Professor S B Day, Dr A Desmond, Mr B Fullick, Professor K Inokuchi, Ms G Kalsi, Mr J Maisey, Mr D S Martin, Miss F L Perry, Mr C G C Rawlins, Mr I S St Paul, Dr E Trewavas, Mr E C Zimmerman, Zoological Research Department (TISTR), Japanese Society for the Promotion of Science, and Studio Editions Ltd.

SECRETARY

FELLOWS' MEETINGS

Two meetings were held on 12 and 13 November 1991, chaired by the Treasurer, Peter Holwell, and attended by 178 Fellows. Their purpose was to explore how best to improve the accountability of Council and the Officers. During the course of the meetings, David Jones, on behalf of Council, presented a paper setting out in an historical context the reasons for the Society's current financial crisis. This paper is reproduced below.

ZSL: A REVIEW OF PERFORMANCE, 1951–1991

1. Introduction

I want to give you a summary of the main historical events over the last 40 years which are relevant to the present situation and I will highlight some of the messages that come through strongly from that.

2. Attendances

Attendances (Figure 1) have fluctuated considerably over the 40 year period since 1950. In the post war years, there was very little choice in the way of entertainment particularly for families. Few people in London had cars and public transport had not developed to the point where people regularly left London just for a day out. Attendances peaked at London in the early 50s, fell somewhat and were then maintained throughout the 60s largely by a major exhibit reconstruction programme which included the re-building of about half the area of the Regent's Park site. In the meantime, Whipsnade was still something of a novelty. Its attendances grew as more and more people became mobile and so the financially strong period of the Society stretched through the 50s and 60s. Then, a combination of factors including increased competition in the leisure market, reduced investment in new facilities at London and almost no reinvestment in Whipsnade began to take its toll. During the early part of this period it was Council policy to keep admission prices down as far as possible because it was felt that our functions were akin to those of the museums and other free public facilities in and around the capital.

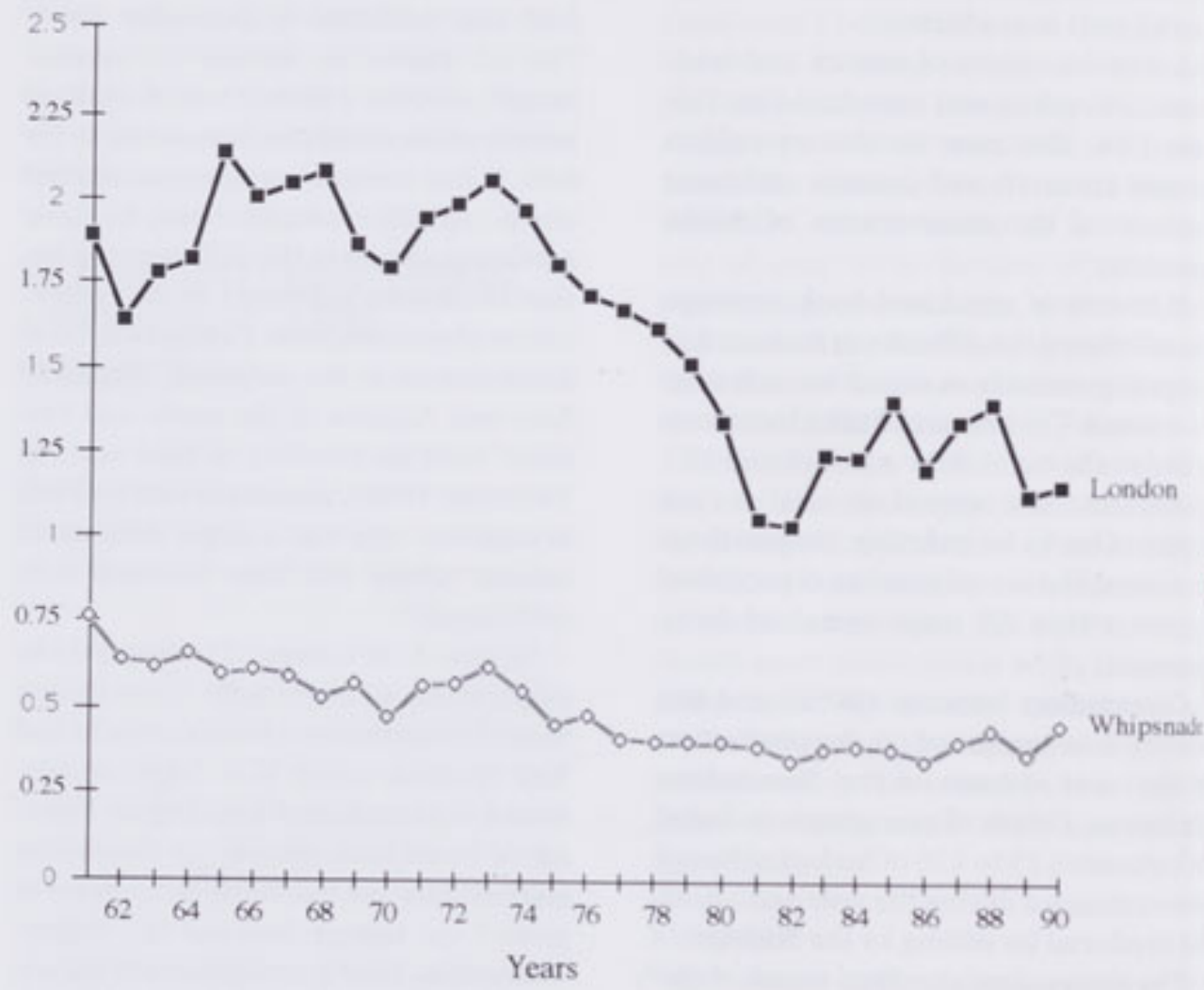


Figure 1 Attendance figures 1961–1991: in millions.

3. Financial Dependability

Figure 2 summarises the financial picture for the whole of the Society and shows that during this earlier period finances were reasonably stable with some years of surplus and some of deficit. However, in the late 70s following a period of relatively high inflation coupled with increasing

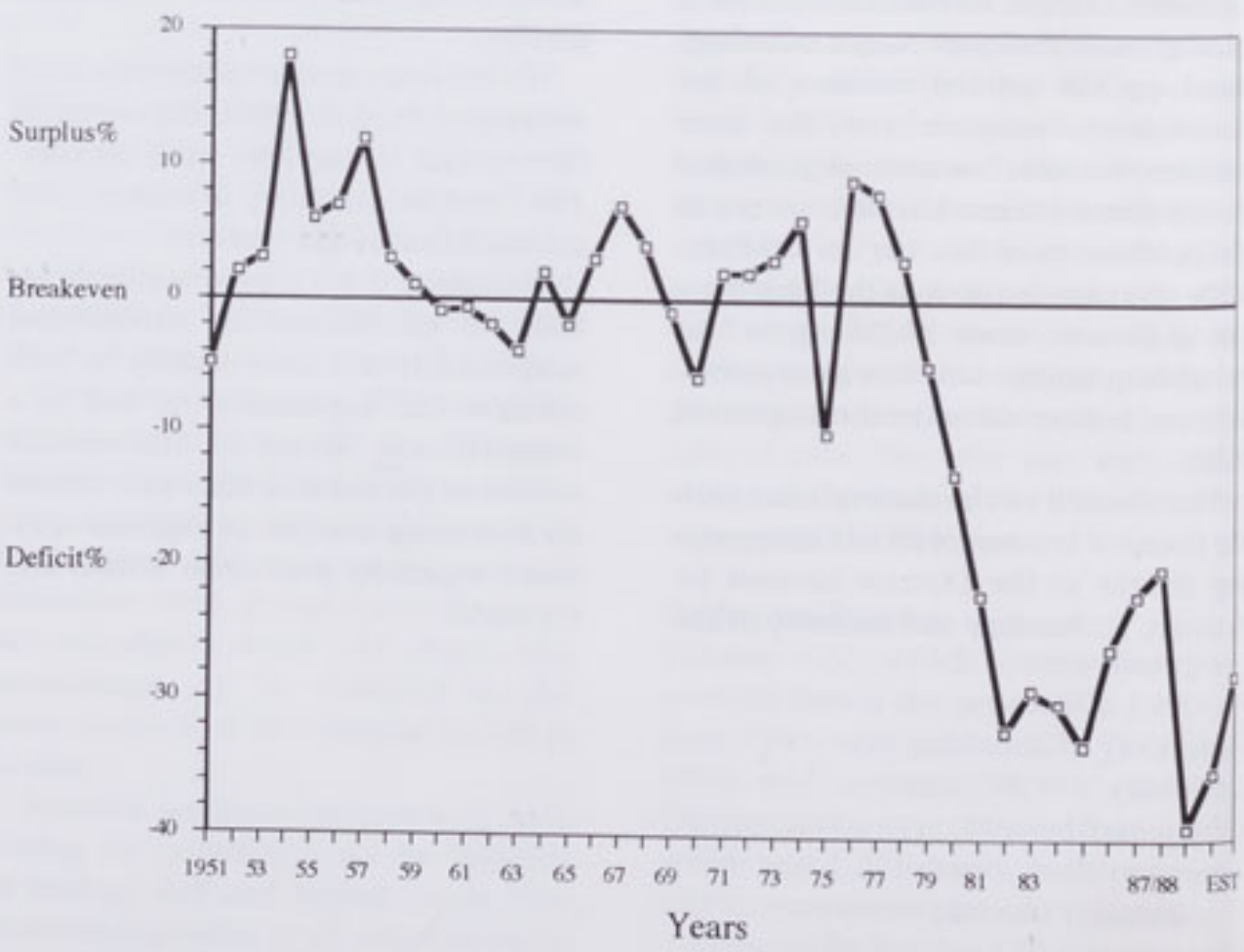


Figure 2 Surplus/Deficit of the Society as a percentage of total costs.

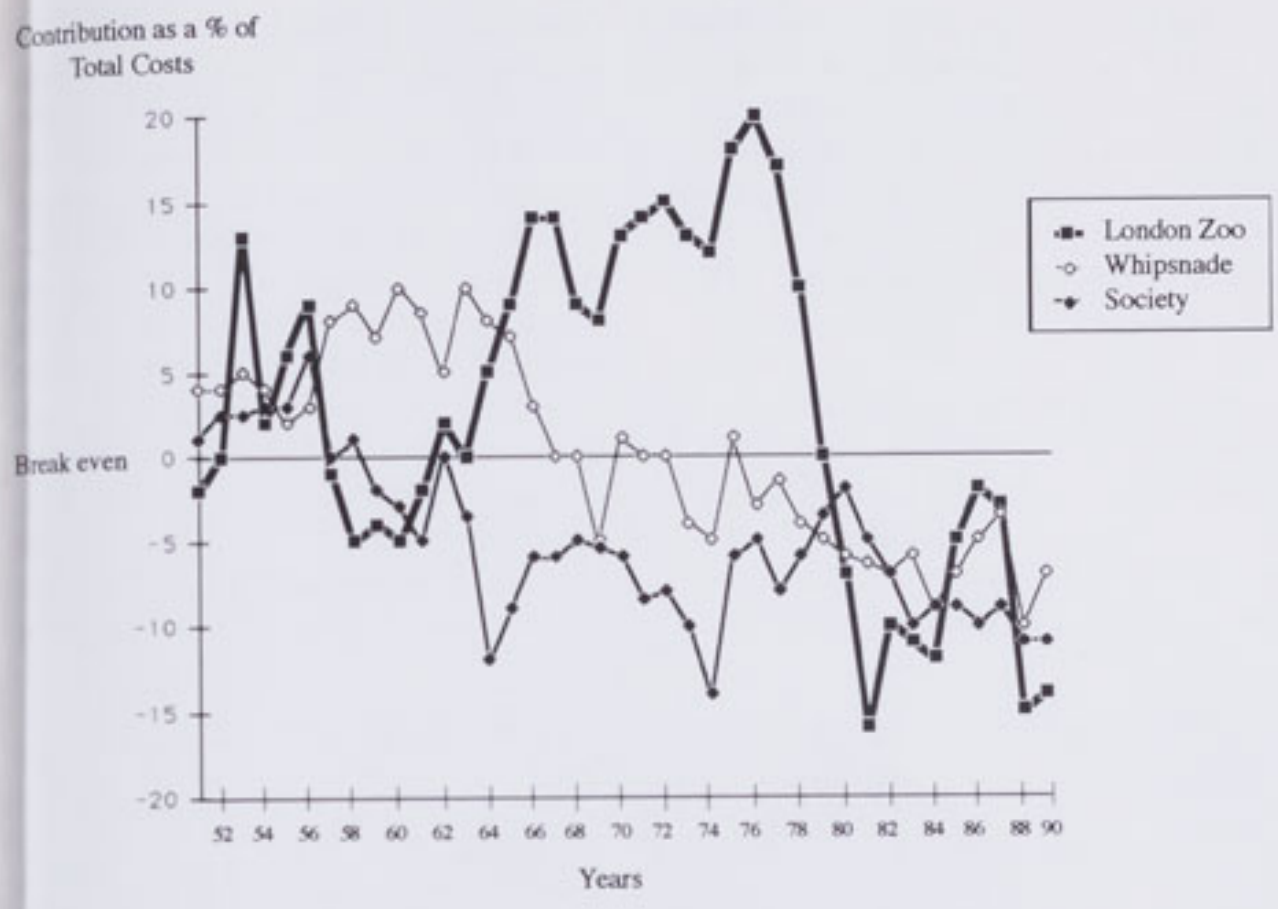


Figure 3 Net contribution of the Divisions of the Society.

labour costs the overall situation began to decline dramatically. Hidden within this summary picture are some important points relating to the way in which different sections of the Society were affecting that picture (Figure 3). London Zoo's performance from the early 60s to the mid 70s generated considerable cash surpluses. However, the decision in the 1950s to develop the scientific facilities meant that these also had to be supported. The result was that the cash generated during this period at London was used largely for the development and running of what was to become the Institute. It also of course supported other activities of the Learned Society such as the Library. At the same time it was accepted that Whipsnade as essentially the breeding farm of the Society was not likely to pay its way and no particular attention was given at that time to improving its financial position. The over-all result was that the profits at London paid throughout that period for the deficit at Whipsnade and for the development of the scientific activities. This would not have been a problem if capital investment in new exhibits had continued at London with the money coming from other sources. However, for various reasons, privately donated money dried up and the governments of the time which had been very sympathetic towards providing capital sums during the development period of the 60s, were not so forthcoming in the 70s.

4. Re-assessment of Priorities

The total financial picture for the Society then took a dramatic downturn with two very bad years in 1981 and 82 (the last recessionary period) when attendances at London fell to a little over 1 million annually. At this point, the first of a series of external reviews of the Society's activities took place, in response to a request by Lord Zuckerman to Government for help. In 1981 Lord Chorley from Coopers and Lybrand together with the Society's Secretary, John Phillips and Martin Holdgate, as chief scientist, Department of the Environment, reviewed all the Society's activities and concluded that major new capital investment was required at both sites and that, pending more detailed discussions with the Society, the Government should assist.

As you might expect, many of the recommendations made in 1981 were not very different to those being made later in 1987. The need for greater income generation from the Gates; the need for improved marketing; better public facilities; better labelling and graphics, a plea to maintain integration of all the Society's activities, and, above all, the point made repeatedly that if London was to be the showcase of the British zoo world comparable to the best in other capital cities around Europe, then it should be treated in the same way as the other great public institutions – the museums and Kew.

5. The 1988 Settlement

In 1981 the problem was that the capital required to continue the rebuilding programme was not forthcoming. The Government provided just sufficient to make up the difference between what we generated at the Gates and in the grounds and what the operation cost to run. Even after a relatively severe cost-cutting exercise at that time, potential savings from that were not made available for reinvestment in the site. Government simply wanted costs kept down to a minimum in order, understandably, that their own subsidy should be as small as possible. There was little room for manoeuvre. Even requests for emergency repairs had to be considered separately and the whole situation was kept under more-or-less continuous review with the onus firmly on the Society to keep all costs down to the minimum possible figure. Change, on the London site, even in reducing the levels of activity has considerable cost implications. It was, therefore, very clear by the mid-eighties that we were really getting nowhere, simply standing still. That led to Lord Peyton, following on from Lord Zuckerman's retirement, approaching Government with a view to trying to obtain a more satisfactory long term solution. This in turn led to the 1987 discussions and the appointment of Peat Marwick paid for by the DOE, to review thoroughly the income generating side of the Society's activities. Their principal remit was not to look at the Society strategically but more to advise on how attendances, gate income and spend in the shops and catering could be increased. These discussions led to the one-off grant of £10 million, with Nicholas Ridley, the Secretary of State at the time, wanting a quick solution that would essentially 'get the Society off his hands'.

The granting of the £10 million was dependent on the new management, brought in as part of the recommendation, putting forward a business plan including a programme for development which the Government approved. The idea was that £4 million of the £10 million would be used to provide a further subsidy over the ensuing three years, and the remaining £6 million would be used alongside money raised by the Development Trust and through a lease of the Whipsnade site to an independent operator to generate sufficient capital for the first phase of development of the new plan which was to be the Mappin Terraces and the

Aquarium. The Fellowship voted in 1988 overwhelmingly in favour of these proposals.

6. What Went Wrong?

All the more straightforward recommendations that the consultants came up with have been carried out, notably the complete refurbishment of catering and retail at both sites, together with considerable enhancement of most of the other public facilities. Many improvements in animal accommodation and exhibition have also taken place, most notably at Whipsnade. However, the planned major capital redevelopment programme was not possible because Council were unable to find a compatible partner for Whipsnade and, just at the point when the Development Trust was prepared to take off in its fund-raising capacity, the current recession began to bite. The large scale plans were set aside and funds that were available invested as far as possible in improvements in the existing facilities.

7. The McKinsey Study

It was clear in late 1989 that the post Peat Marwick plans were not going to work. Lord Peyton, as Treasurer of the Society, went back to Chris Patten, the then Secretary of State at the Department of the Environment, immediately this was obvious and asked for a review of the Government's decision based on the then current circumstances. At that point Council felt it important to undertake a complete strategic review of the whole of the Society's operation, not just of the commercial side. This move was supported by Government. With that in mind McKinsey & Company offered to lead such a study and did so *pro bono publico*. Those discussions which were held during the latter half of last year involved not only Council but also many of the Fellows as committee members. This led amongst other things to the production of a clear Mission Statement for the whole Society, accompanied by a series of Mission Aims which acknowledged the diversity of its many components and activities but which linked them in a single vision. Amongst McKinsey's recommendations was the formation of the Core Group, a small dedicated panel of people to include representatives from Council, the Board and the Executives, to do two things: Firstly, to reduce the operating costs of both sites and to try to bring them to financial breakeven as quickly as possible; and secondly, to look at all possible options for the development of both sites in accordance with the Society's interests and the Mission Aims. It was the doubts expressed by some Council members as to the practicality of achieving such cost savings, which led to the 'Save our Zoo' campaign.

8. The Source of Capital Funds

I now want to give you a few brief facts and figures about capital fund raising and the commercial performance over the last few years. First, by comparison I just want to highlight the way in which capital was raised for the earlier development peri of about 15 years between 1961 an 1976 (Figure 4). It is popularly thoug that almost all that money came from pr vate donations, hence the many name buildings that we have around the Zo However, the reality was that althoug the generosity at that time was memo able, these sums only accounted for a litt over 20% of the capital spent, with som of the rest coming from income but th vast majority of it, 60%, coming fro Government grants. The point I mak here is that whenever we have been abl to expand and develop, Government inpu

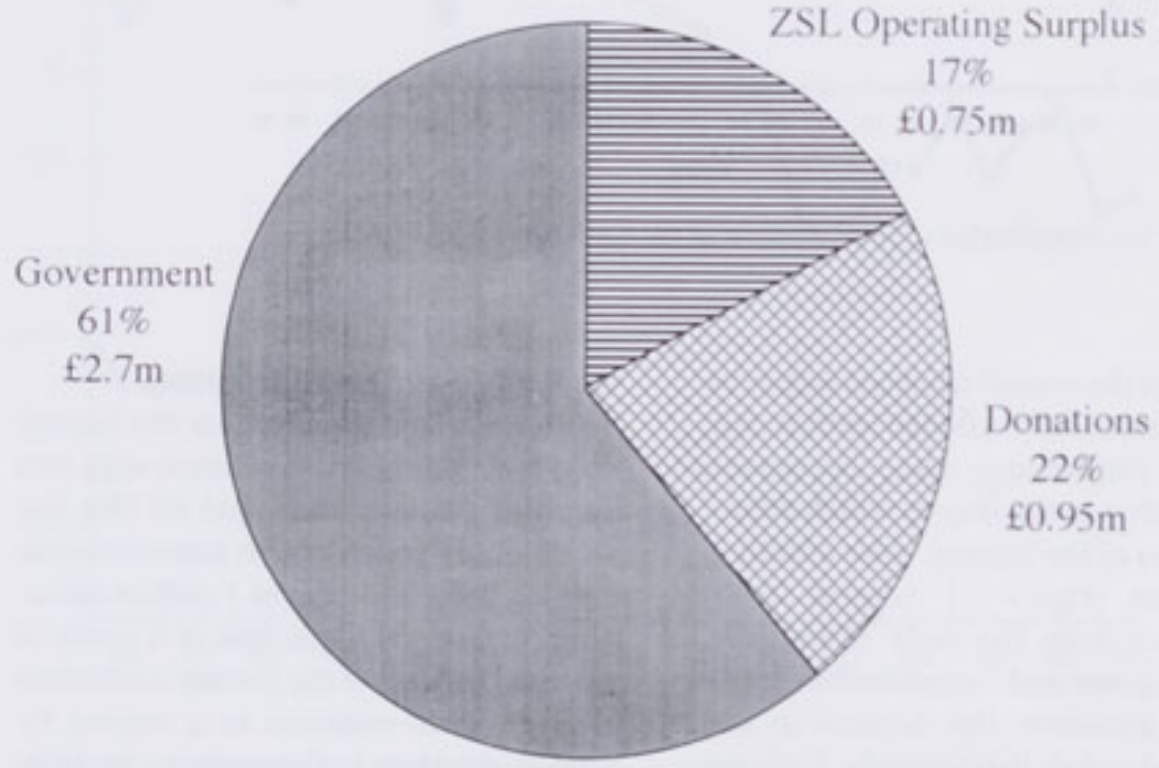


Figure 4 Capital expenditure 1961–1976: £4.4 million. NOTE Capital expenditure 1977–1983 £nil.

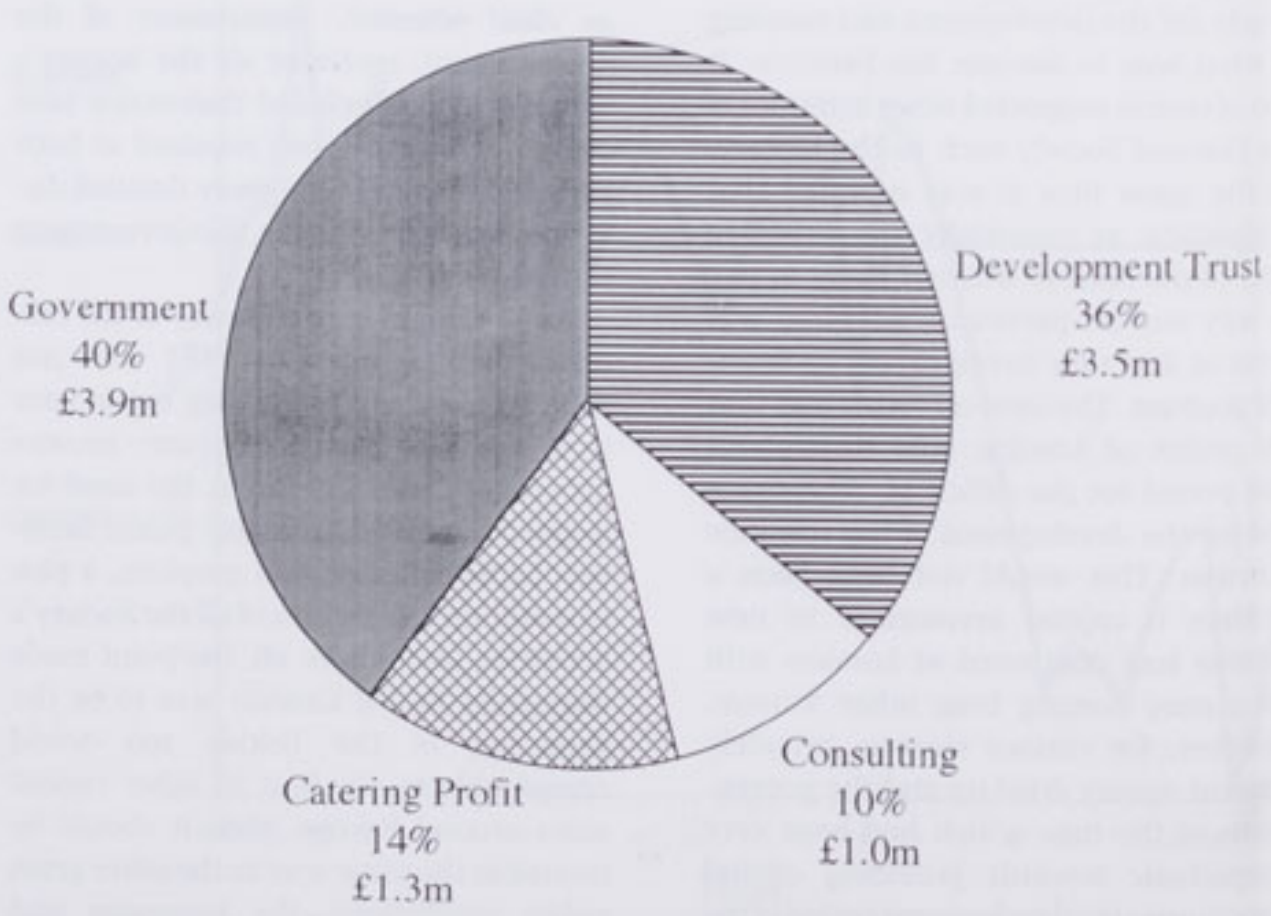


Figure 5 Capital expenditure 1984–1990: £9.7 million. Where did the money come from?

has been critical. If we look at the more recent expenditure of capital from 1984 to 1990 (Figure 5), and most of this took place during the last 3 to 4 years, we see a rather different picture. In this particular case, as you would expect, Government are still prominent at 40% with some of that being income from the endowment of £10 million. However, what is notable is the income from three other sources. The Development Trust, and later the Development department, have in fact raised £3.5 million during the period, much of that during the last three years. Our consulting activities in the Middle East raised over £1 million in net profit, almost all of which was invested in animal accommodation at Whipsnade. The other important feature is the contribution made recently through catering profits, much of which was ploughed back into those facilities in order to bring them up to a satisfactory standard.

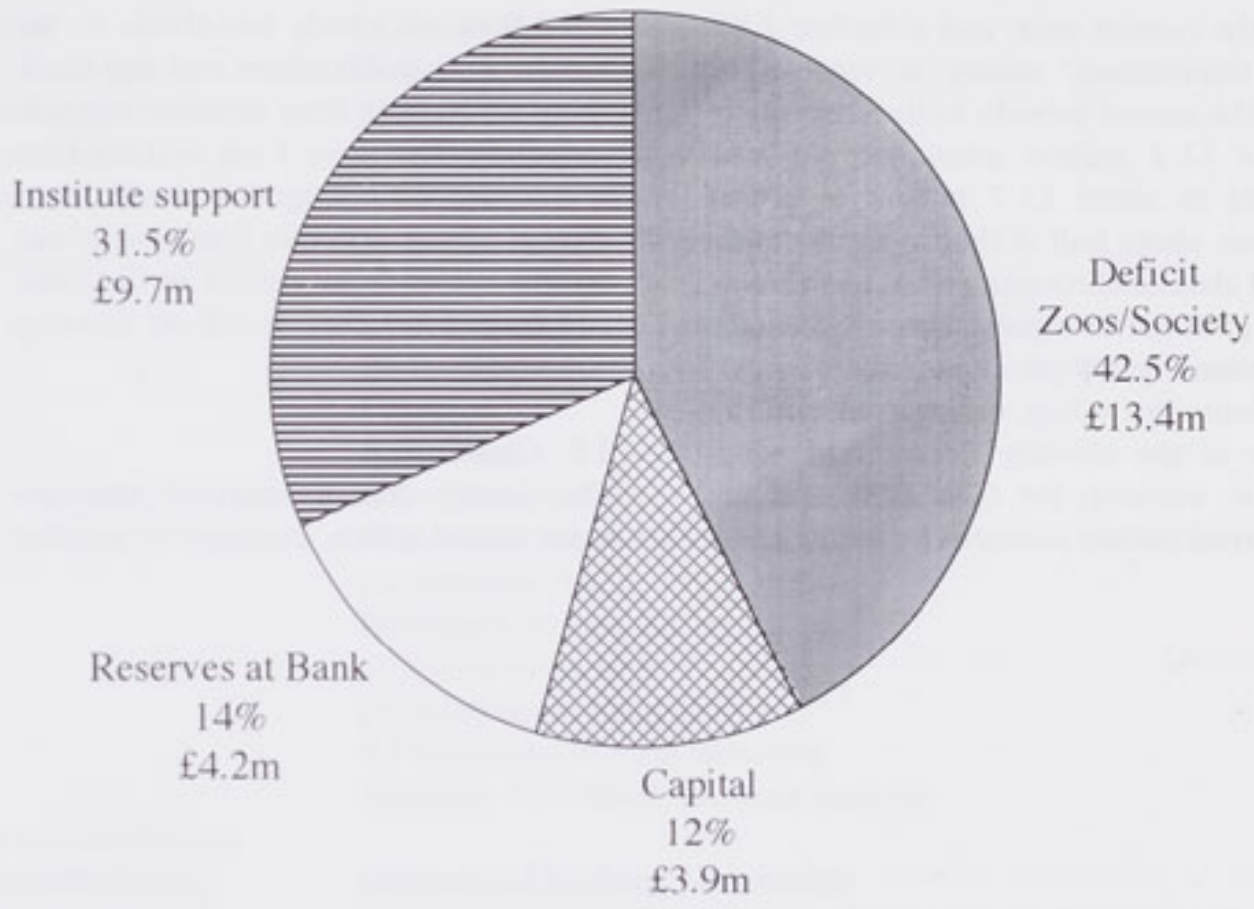


Figure 6 How the £31.2 million was spent in 1982–1991.

9. Total Grants from Government

Another figure about which there are many misconceptions is the famous £31 million that was identified as part of the discussions with the Environment Select Committee. This was given by Government to the Society over the last 10 years and includes the 1988 single grant of £10 million (Figure 6). This is often stated in the Press as having been the figure spent on London Zoo and the implication is that somehow that money could have been spent in different ways. The reality is that something over £13 million of that sum was the figure that was used to defray the difference between our running costs and our income over that 10 year period for both zoos and the Society. If that figure is put into perspective it represents a Government contribution of about 70 pence per head per visitor per year.

10. Comparative Subsidies

Just bear in mind that currently every visitor to Kew is subsidised by about £11; every visitor to the Natural History Museum by £16, and those to the Imperial War Museums have an £8 subsidy on their ticket. Our operating deficit and subsidy on the two Zoos over this 10 year period has averaged about 14%. That compares with a figure of between 40 and 70% for most other city centre zoos in Europe. Also in this figure of £31 million was Institute support of £9.7 million. There was a contribution towards the capital costs of £3.9 million which has already been mentioned. Over £4 million, about 14% of it, still remains in the bank.

11. Income Generation

I would now just like to look at current income from all sources. Admissions, as you might expect, make up about 35% of our total income – £6.6 million, but the first thing that is interesting is the contribution that is now made by catering and retail which is approaching that made from admissions. The Government contribution of £10 million together with the interest earned will amount to about 13% for the zoos and Society

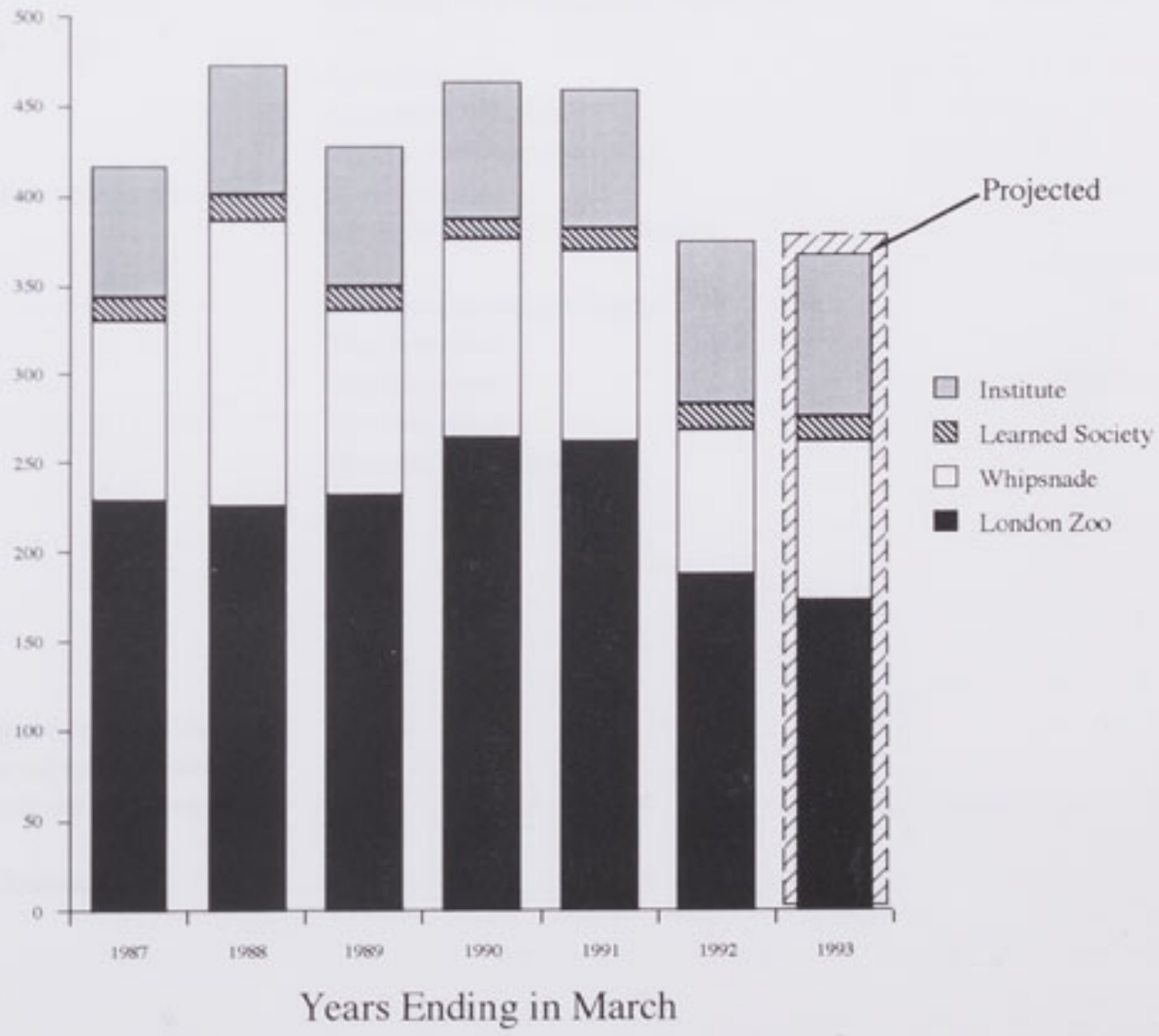


Figure 7 Z.S.L. Average number of staff employed 1987–1993.

in the current year, and a further 7.5% of Government money is represented by the agreed subsidy to the Institute of over £1.4 million annually. We now bring in about £1.7 million in grants alone, about half of that to the Institute and about half covering what has become a significant field programme. Other Zoo income, which is made up of components like riding, concessions and the hire of the Meeting Rooms and adoptions, accounts for £700,000, and the Learned Society accounts for about 2.5%, £500,000, of which two-thirds is the income from publications and one-third, about £120,000, from membership subscriptions. The point I am making here is that we cannot ignore in the overview of all our activities that most of our income comes from visitors at the Gate, and from what they spend on catering and retail.

12. Conclusion

The Society has a financial management record which, contrary to popular belief, compares favourably with zo internationally and the other nation museums and art galleries. It genera more income per head than almost eve other attraction in the public domain, y the high running costs, particula labour costs in the south-east (Figure inherent in managing the national colle tion and the nature of the site, determi that if we are to survive without the Zo attracting a large and regular public su sidy, then income must be that mu greater.

COMMITTEES 1991–1992

Animal Welfare and Conservation Committee

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

Professor D M Broom, MA, PhD
A J Higgins, BVetMed, MSc, PhD, MRCVS
I F Keymer, PhD, FRCVS, FRCPath, FIBiol
Professor L E Lanyon, BVSc, PhD, MRCVS
D Macdonald, MA, DPhil
Georgina M Mace, DPhil
W Plowright, CMG, DVSc, FRCVS, FRS
A J Stevens, MA, BVSc, MRCVS, DipBact, *Chairman*
I R Swingland, PhD
A Lindley, MA, DPhil
Secretary: D M Jones, BSc, BVetMed, MRCVS, FIBiol

Awards Committee

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

Professor R McNeill Alexander, MA, PhD, DSc, FIBiol, FRS
Professor P P G Bateson, MA, PhD, ScD, FRS
Professor M P Hassell, MA, DPhil, DSc, FRS
Professor K Simkiss, PhD, DSc, FIBiol
Mrs Margaret Varley, MA, PhD
Professor J E Webb, DSc, PhD, *Chairman*
Professor L Wolpert, CBE, DIC, PhD, FRS
Professor A J Zuckerman, MD, DSc, DipBact, FRCPath
Secretary: Marcia A Edwards, PhD, FLS

Education Committee

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

J Barrington-Johnson
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PUBLICATIONS BY SOCIETY'S STAFF AND RESEARCH WORKERS

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ANIMALS IN THE COLLECTIONS

column 1 Number of animals in the Collection at 1st January 1991.

column 2 Number of animals received in 1991 by presentation, exchange, purchase, or transfer between the Society's two Collections. The figures in brackets indicate animals which have been so transferred.

column 3 Number of animals born or hatched during 1991.

column 4 Number of animals which died in 1991 within 30 days of birth or hatching. The figures in brackets indicate animals born or hatched during December 1990 and which died during January 1991.
Stillbirths are not included.

column 5 Number of animals which died from natural causes during 1991 apart from those included in column 4.

column 6 Number of animals disposed of in 1991 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 1991 showing sexes where these are known.
e.g. 1/3/1 indicates 1 male, 3 female, 1 sex unknown.

Key

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

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

LONDON ZOO		1	2	3	4	5	6	7
MAMMALS								
Monotremata								
Tachyglossus aculeatus	Australian Echidna	5	—	—	—	2	—	2/1
Zaglossus bruijni	Bruijn's Echidna	3	—	—	—	—	—	1/2
Marsupialia								
Phalanger gymnotis	Grey Ground Cuscus	3	—	—	—	—	—	1/2
Gymnobelideus leadbeateri	Leadbeater's Possum	14	—	1	—	3	—	8/4
Dasyuroides byrnei	Byrne's Pouched Mouse	—	3	—	—	—	—	1/2
Phascolarctos cinereus cinereus	New South Wales Koala	2	—	—	—	1	—	0/1
Potorous tridactylus	Long-nosed Potoroo	—	4	—	—	—	—	1/3
Macropus rufogriseus frutica	Red-necked Wallaby	5	—	1	—	—	2(2)	1/2/1
Insectivora								
Erinaceus europaeus	European Hedgehog	3	—	—	—	1	2	—
Chiroptera								
Pteropus giganteus	Indian Fruit Bat	—	1	—	—	—	1	—
Pteropus rodricensis	Rodriguez Fruit Bat	12	—	3	—	1	5	2/6/1
Carollia perspicillata	Seba's Short-tailed Bat	68	—	36	5	15	1	0/0/83
Scandentia								
Tupaia tana	Large Tree Shrew	1	—	—	—	—	—	0/1
Primates								
Lemur catta	Ring-tailed Lemur	3	—	—	—	—	3	—
Lemur fulvus mayottensis	Brown Lemur	7	1	2	1	—	5	1/3
Lemur mongoz	Mongoose Lemur	2	—	—	—	2	—	—
Varecia variegatus variegatus	Ruffed Lemur	—	1(1)	—	—	—	—	0/1
Varecia variegatus rubra	Ruffed Lemur	2	—	—	—	—	—	1/1
Cheirogaleus medius	Fat-tailed Dwarf Lemur	6	2	—	—	2	—	2/4
Microcebus murinus	Grey Mouse Lemur	6	—	—	—	2	—	3/1

		1	2	3	4	5	6	7
Loris tardigradus	Slender Loris	5	1	—	—	2	—	2/2
Nycticebus coucang	Slow Loris	5	1	1	—	—	4	2/1
Nycticebus pygmaeus	Pygmy Slow Loris	1	1	—	—	—	—	2/0
Galago senegalensis	Senegal Bushbaby	6	—	1	1	3	—	2/1
Aotus trivirgatus boliviensis	Douroucouli	7	1	1	1	2	4	1/1
Pithecia pithecia	White-faced Saki Monkey	8	1	1	—	2	5	1/2
Ateles geoffroyi	Black-handed Spider Monkey	2	—	—	—	—	2	—
Ateles paniscus paniscus	Red-faced Black Spider Monkey	—	2	—	—	—	—	1/1
Callithrix jacchus	Common Marmoset	2	—	2	—	1	3	—
Cebuella pygmaea	Pygmy Marmoset	4	—	4	3	—	—	2/2/1
Saguinus oedipus	Cotton-headed Tamarin	13	—	7	2	2	4	2/2/8
Saguinus imperator	Emperor Tamarin	1	1	—	—	—	—	1/1
Leontopithecus rosalia rosalia	Golden Lion Tamarin	5	—	—	—	—	—	3/2
Leontopithecus rosalia chrysomelas	Golden-headed Lion Tamarin	3	—	—	—	1	—	2/0
Callimico goeldii	Goeldi's Marmoset	6	—	5	—	—	—	3/4/4
Macaca nigra	Sulawesi Crested Macaque	7	1	3	2	—	2	4/2/1
Mandrillus sphinx	Mandrill	7	—	—	—	1	2	2/2
Cercopithecus diana diana	Diana Monkey	4	—	—	—	—	2	1/1
Cercopithecus hamlyni	Owl-faced Monkey	2	1	—	—	—	—	1/2
Colobus polykomos polykomos	Western Black & White Colobus Monkey	2	1	—	—	—	1	1/1
Presbytis entellus thersites	Hanuman Langur	3	—	1	1	—	—	1/2
Hylobates lar	Lar Gibbon	3	—	—	—	—	—	2/1
Pongo pygmaeus pygmaeus	Bornean Orang Utan	10	—	1	—	1	—	2/8
Pan troglodytes	Chimpanzee	12	—	1	—	—	2(2)	4/7
Gorilla gorilla gorilla	W. Lowland Gorilla	5	—	—	—	—	—	1/4
Edentata								
Choloepus didactylus	Two-toed Sloth	2	—	—	—	—	—	1/1
Chaetophractus villosus	Hairy Armadillo	2	—	—	—	—	—	0/2
Rodentia								
Cynomys ludovicianus	Prairie Marmot	5	—	—	—	3	2	—
Tamias townsendi	Townsend's Chipmunk	4	—	—	—	—	—	2/2
Tamias sibiricus	Siberian Chipmunk	2	—	—	—	—	—	1/1
Pedetes capensis	Springhaas	1	—	—	—	—	1	—
Peromyscus polionotus	Oldfield Mouse	13	—	9	—	10	9	1/2
Phodopus sungorus	Dwarf Hamster	23	—	—	—	13	7	1/2
Cricetulus barabensis	Chinese Hamster	50	—	8	—	34	9	4/11
Gerbillus perpallidus	Pallid Gerbil	31	—	4	—	9	9	4/0/13
Meriones unguiculatus	Clawed Jird	6	—	—	—	3	—	0/3
Meriones shawi	Shaw's Jird	7	—	—	—	3	4	—
Alticola strelzowi	Mountain Vole	6	—	—	—	3	—	3/0
Clethrionomys glareolus	Bank Vole	1	—	—	—	1	—	—
Apodemus sylvaticus	Field Mouse	14	—	7	3	5	3	5/5
Micromys minutus	Harvest Mouse	7	—	—	—	3	2	0/2
Acomys cahirinus	Arabian Spiny Mouse	27	—	137	53	16	30	21/31/13
Acomys dimidiatus	Spiny Mouse	43	—	1	1	14	18	1/3/7
Acomys russatus	Golden Spiny Mouse (Black form)	39	—	10	2	14	8	7/17/1
Rattus rattus	Black Rat	60	—	30	5	5	20	0/0/60
Rattus norvegicus	Brown Rat	60	1	700	30	5	666	0/0/60
Dryomis nitedula	Forest Dormouse	6	—	15	1	1	13	2/2/2
Muscardinus avellanarius	Common Dormouse	13	—	—	—	7	—	3/3
Jaculus jaculus	Arabian Jerboa	3	—	—	—	1	2	—
Hystrix africaeaustralis	Cape Crested Porcupine	—	2	—	—	—	—	2/0
Hystrix indica × H. cristata	Hybrid Indian × Crested Porcupine	2	—	—	—	1	—	0/1
Atherurus africanus	African Brush-tailed Porcupine	8	—	4	2	1	3	3/2/1
Kerodon rupestris	Rock Cavy	5	—	—	—	—	5	—
Dasyprocta aguti	Orange-rumped Agouti	11	—	13	2	6	—	2/2/12
Myoprocta pratti	Green Acouchi	7	—	4	1	—	3	2/3/2
Chinchilla laniger	Chinchilla	6	—	1	—	2	1	2/2
Octodon degus	Degu	13	—	3	—	—	7	4/5
Carnivora								
Canis lupus	Grey Wolf	5	—	—	—	—	—	1/4
Fennecus zerda	Fennec Fox	2	—	—	—	—	—	1/1
Ailuropoda melanoleuca	Giant Panda	—	2	—	—	—	—	1/1

		1	2	3	4	5	6	7
Ictonyx striatus	Zorilla	—	4	4	—	—	4	1/1/2
Martes martes	Pine Marten	—	2	—	—	—	—	1/1
Mustela putorius	Polecat Ferret	2	—	—	—	2	—	—
Amblonyx cinerea	Oriental Small-clawed Otter	2	—	—	—	—	—	1/1
Genetta genetta	Common Genet	—	1	—	—	—	1	—
Genetta tigrina	Blotched Genet	2	1	—	—	—	—	2/1
Suricata suricatta	Suricate Meerkat	7	1	—	—	2	4	1/1
Helogale parvula	Dwarf Mongoose	16	2	2	2	—	4	3/2/9
Cynictis penicillata	Yellow Mongoose	8	—	2	—	—	—	3/7
Felis caracal	Caracal Lynx	2	—	—	—	1	1	—
Felis pardalis	Ocelot	3	—	—	—	—	1	1/1
Felis serval	Serval	1	—	—	—	—	1	—
Felis wiedi	Margay	2	—	—	—	1	1	—
Panthera leo	Lion	3	—	—	—	—	3	—
Panthera leo persica	Asian Lion	4	—	—	—	—	—	2/2
Panthera tigris sumatrae	Sumatran Tiger	3	—	—	—	—	—	1/2
Panthera pardus saxicolor	Persian Leopard	2	—	—	—	—	—	1/1
Neofelis nebulosa nebulosa	Clouded Leopard	3	—	—	—	—	1	1/1
Panthera onca	Jaguar	1	—	—	—	—	—	0/1
Pinnipedia								
Zalophus californianus	Californian Sealion	5	—	1	—	2	—	1/3
Tubulidentata								
Orycteropus afer	Aardvark	2	—	—	—	—	2	—
Proboscidea								
Elephas maximus	Asian Elephant	4	—	—	—	—	1	0/3
Perissodactyla								
*Equus burchelli antiquorum**	Chapman's Zebra	—	2	—	—	—	—	2/0
*Equus zebra hartmanni**	Hartmann's Mountain Zebra	5	—	—	—	1	4	—
Tapiris terrestris	Brazilian Tapir	2	—	—	—	—	2	—
Diceros bicornis	Black Rhinoceros	4	—	—	—	—	2	1/1
Artiodactyla								
*Lama glama**	Llama	5	2	—	—	—	5(5)	2/0
*Lama guanicoe**	Guanaco	1	—	—	—	—	1(1)	—
Vicugna vicugna	Vicuna	4	1	1	1	—	1	3/1
*Camelus bactrianus**	Bactrian Camel	5	1(1)	—	—	1	1(1)	0/4
*Pudu pudu**	Pudu	6	—	2	2	—	4	1/1
Rangifer tarandus	Reindeer	5	—	—	—	—	2(2)	0/3
Okapia johnstoni	Okapi	2	—	—	—	—	—	1/1
*Giraffa camelopardalis**	Giraffe	5	—	1	—	—	1	1/4
*Tragelaphus eurycerus**	Bongo	3	—	—	—	—	3(3)	—
*Tragelaphus strepsiceros**	Greater Kudu	5	—	2	—	1	—	2/4
*Bubalus depressicornis**	Anoa	3	—	1	—	—	—	1/3
*Bos gaurus**	Gaur	4	—	—	—	—	4(4)	—
*Hippotragus niger**	Sable Antelope	3	—	—	—	—	3(2)	—
*Oryx leucoryx**	Arabian Oryx	6	—	2	—	1	1(1)	2/4
Domestic								
Pig:	Large Black	6	1	6	—	1	12	—
	Gloucester Old Spot	—	1	12	1	—	12	—
Cattle:	Friesian	2	—	2	—	—	2	0/2
Goat:	Common	6	—	6	—	2	7	0/3
	Nubian	1	—	—	—	—	—	0/1
Sheep:	Dorset Down	6	—	3	—	—	6	0/3
	Black Welsh Mountain	1	—	—	—	—	—	1/0
	Jacob's	1	—	—	—	—	—	1/0
Rabbit		9	6	14	2	7	16	3/1
Guineapig		11	4	17	—	1	20	1/10
Donkey		—	2	—	—	—	—	1/1
Pony:	Cream	2	—	—	—	—	2	—
	Shetland	3	—	—	—	—	—	0/3
	Dartmoor	1	—	—	—	—	—	0/1
Total Mammals:		**938**	**59(2)**	**1095**	**124**	**227**	**1007(23)**	**734**

		1	2	3	4	5	6	7
BIRDS								
Casuariiformes								
Dromaius novaehollandiae	Emu	2	—	—	—	1	1(1)	—
Sphenisciformes								
Spheniscus demersus	Blackfooted (Jackass) Penguin	48	—	18	8	2	—	17/17/22
Spheniscus humboldti	Humboldt's Penguin	2	—	—	—	—	—	1/1
Pelecaniformes								
Pelecanus onocrotalus	Eastern White Pelican	6	—	—	—	—	—	0/0/6
Pelecanus occidentalis	Brown Pelican	4	—	—	—	—	—	0/0/4
Morus bassanus	Gannet	3	—	—	—	—	—	1/0/2
Phalacrocorax carbo	Cormorant	5	—	—	—	—	—	1/4
Phalacrocorax aristotelis	Shag	3	—	—	—	—	3	—
Ciconiiformes								
Nycticorax nycticorax	Night Heron	6	—	—	—	2	—	0/1/3
Ardeola ibis	Cattle Egret	14	—	—	—	1	—	1/2/10
Ardea cinerea	Grey Heron	4	—	—	—	—	—	0/0/4
Ciconia abdimii	Abdim's Stork	24	—	—	—	4	9	0/0/11
Leptoptilos crumeniferus	Marabou Stork	2	—	—	—	—	—	1/1
Threskiornis aethiopicus	Sacred Ibis	38	—	—	—	11	—	0/0/27
Eudocimus ruber	Scarlet Ibis	7	—	1	—	1	—	2/1/4
Platalea alba	African Spoonbill	4	—	—	—	—	—	0/0/4
Phoenicopterus chilensis	Chilean Flamingo	37	4	—	—	—	—	17/24
Anseriformes								
Dendrocygna bicolor	Fulvous Whistling Duck	2	—	—	—	—	—	0/0/2
Dendrocygna viduata	White-faced Tree Duck	8	—	—	—	2	—	1/1/4
Dendrocygna arborea	Cuban Tree Duck	1	—	—	—	—	—	0/1
Branta sandvicensis	Hawaiian Goose	3	—	1	1	—	2	0/1
Branta bernicla orientalis	Brent Goose	4	—	—	—	—	—	3/1
Cereopsis novaehollandiae	Cape Barren Goose	2	—	2	2	—	2	—
Aix sponsa	Carolina Duck	10	1	—	—	2	—	3/6
Callonetta leucophrys	Ringed Teal	14	—	—	—	1	—	9/4
Chenonetta jubata	Maned Goose	1	—	—	—	—	1	—
Anas penelope	Wigeon	4	—	—	—	—	1	1/2
Anas americana	American Wigeon	2	—	—	—	—	—	1/1
Anas sibilatrix	Chiloe Wigeon	10	—	—	—	—	—	2/2/6
Anas sibilatrix × Aythya fuligula	Chiloe Wigeon × Tufted Duck	3	—	—	—	—	—	1/2
Anas strepera	Gadwall	2	—	—	—	—	—	1/1
Anas crecca	Teal	2	—	—	—	1	—	0/1
Anas capensis	Cape Teal	2	—	—	—	—	—	1/1
Anas flavirostris oxyptera	Sharp-winged Teal	1	—	—	—	1	—	—
Anas acuta	Pintail	5	—	—	—	—	—	3/2
Anas bahamensis	Bahama Pintail	7	—	—	—	4	—	0/0/3
Anas versicolor puna	Puna Teal	4	—	1	1	—	—	2/2
Anas punctata	Hottentot Teal	1	—	—	—	—	—	1/0
Anas querquedula	Garganey	9	—	—	—	—	—	7/2
Anas platalea	Argentine Red Shoveler	2	—	—	—	2	—	—
Anas clypeata	Shoveler	1	—	—	—	—	—	1/0
Marmaronetta angustirostris	Marbled Teal	2	—	—	—	1	—	0/0/1
Netta rufina	Red-crested Pochard	5	—	—	—	—	—	3/2
Aythya valisineria	Canvasback	4	—	—	—	—	—	2/2
Aythya ferina	European Pochard	4	—	—	—	—	—	2/2
Aythya fuligula	Tufted Duck	4	—	1	—	1	—	1/3
Somateria mollissima	Eider Duck	13	—	3	3	1	—	6/6
Bucephala clangula	Goldeneye	2	—	—	—	1	—	0/1
Mergus albellus	Smew	2	—	—	—	—	—	1/1
Mergus merganser	Goosander	5	—	—	—	1	—	1/3
Oxyura jamaicensis jamaicensis	North American Ruddy Duck	6	—	—	—	—	—	3/3
Falconiformes								
Milvus migrans parasitus	Black Kite (Yellow-billed race)	1	—	—	—	1	—	—
Milvus migrans migrans	Black Kite	1	—	—	—	—	—	0/0/1
Haliastur indus	Brahminy Kite	1	—	—	—	—	1	—

		1	2	3	4	5	6	7
Torgus tracheliotus	Lappet-faced Vulture	2	—	—	—	—	—	1/1
Terathopius ecaudatus	Bateleur Eagle	2	—	—	—	—	—	1/1
Polyboroides typus	Harrier Hawk	2	—	2	—	2	—	1/1
Butastur rufipennis	Grasshopper Buzzard	1	—	—	—	—	1	—
Heterospizias meridionalis	Savannah Hawk	1	—	—	—	—	1	—
Polihierax semitorquatus	African Pygmy Falcon	3	—	—	—	—	1	1/1
Galliformes								
Penelope purpurascens	Crested Guan	2	—	—	—	—	—	1/1
Crax fasciolata	Bare-faced Curassow	2	—	—	—	—	—	1/1
Francolinus francolinus	Black Francolin	2	—	—	—	1	1	—
Francolinus pondicerianus	Indian Grey Francolin	3	—	—	—	—	3	—
Excalfactoria chinensis	Chinese Painted Quail	—	2	—	—	1	1	—
Rollulus rouloul	Crested Wood Partridge	2	—	—	—	—	2	—
Bambusicola thoracica	Chinese Bamboo Partridge	2	—	—	—	—	2	—
Tragopan satyra	Satyr Tragopan	2	—	—	—	—	—	1/1
Tragopan temminckii	Temminck's Tragopan	1	2	2	1	—	2	1/1
Tragopan temminckii × T. blythii	Temminck's × Blyth's Tragopan	1	—	—	—	1	—	—
Pucrasia macrolopha	Koklass Pheasant	1	—	—	—	—	1	—
Lophophorus impeyanus	Impeyan Pheasant	2	—	8	2	1	5	1/1
Gallus gallus	Red Jungle Fowl	9	—	—	—	1	8(1)	—
Lophura swinhoii	Swinhoe's Pheasant	1	—	—	—	—	1	—
Lophura ignita ignita	Bornean Crested Fireback	2	—	—	—	2	—	—
Crossoptilon crossoptilon	White Eared Pheasant	2	—	10	4	1	6	0/1
Crossoptilon auritum	Blue Eared Pheasant	2	1(1)	—	—	1	2	—
Catreus wallichi	Cheer Pheasant	2	1	2	2	1	—	1/1
Syrmaticus ellioti	Elliot's Pheasant	2	—	4	4	—	2	—
Syrmaticus humiae	Hume's Bar-tailed Pheasant	2	—	2	2	—	—	1/1
Syrmaticus mikado	Mikado Pheasant	2	—	—	—	—	—	1/1
Syrmaticus reevesii	Reeves's Pheasant	2	—	—	—	1	1	—
Chrysolophus pictus	Golden Pheasant	2	—	—	—	1	1(1)	—
Polyplectron bicalcaratum	Grey Peacock Pheasant	2	—	—	—	—	2	—
Pavo cristatus	Common Peafowl	2	—	4	1	—	3(3)	1/1
Afropavo congensis	Congo Peafowl	3	1	—	—	—	1	2/1
Acryllium vulturinum	Vulturine Guineafowl	8	—	—	—	3	—	2/3
Gruiformes								
Grus japonensis	Red-crowned Crane	2	—	—	—	—	—	1/1
Grus vipio	White-naped Crane	2	—	—	—	—	—	1/1
Anthropoides virgo	Demoiselle Crane	6	—	1	1	1	3	1/1
Anthropoides paradisea	Stanley Crane	2	—	—	—	1	1	—
Balearica regulorum	South African Crowned Crane	10	—	—	—	2	8(2)	—
Rallus aquaticus	Water Rail	1	—	—	—	1	—	—
Laterallus leucopyrrhus	White-breasted (Red and White) Crake	1	—	—	—	—	1	—
Lissotis melanogaster melanogaster	Black-bellied Bustard	1	—	—	—	1	—	—
Charadriiformes								
Haematopus ostralegus	Oystercatcher	3	—	—	—	—	—	3/0
Recurvirostra avosetta	Avocet	3	—	—	—	2	—	0/1
Burhinus oedicnemus	Stone Curlew	7	—	1	1	2	3	1/1
Glareola pratincola	Collared Pratincole	1	—	—	—	1	—	—
Vanellus vanellus	Lapwing	2	—	—	—	2	—	—
Numenius arquata	Curlew	2	—	—	—	1	—	0/0/1
Tringa totanus	Redshank	2	—	—	—	—	—	0/0/2
Arenaria interpres	Turnstone	3	—	—	—	3	—	—
Philomachus pugnax	Ruff	4	—	—	—	—	3	1/0
Larus cirrocephalus poiocephalus	Grey-headed Gull	24	—	—	—	—	—	0/0/24
Larosterna inca	Inca Tern	5	—	—	—	1	—	1/3
Uria aalge	Guillemot (Murre)	2	—	—	—	—	—	0/0/2
Columbiformes								
Pterocles alchata	Pintailed Sandgrouse	3	—	—	—	1	—	0/1/1
Columba guinea	Speckled Pigeon	31	—	7	—	11	—	0/0/27
Streptopelia vinacea	Vinaceous Dove	2	—	—	—	—	2	—
Streptopelia chinensis chinensis	Chinese Necklace Dove	1	—	—	—	—	1	—
Phaps elegans	Brush Bronzewing	1	—	—	—	—	1	—

		1	2	3	4	5	6	7
Ocyphaps lophotes	Crested Pigeon	4	—	—	—	—	4	—
Geopelia cuneata	Diamond Dove	1	1	—	—	—	2	—
Geotrygon versicolor	Mountain Witch Dove	1	—	—	—	—	1	—
Ducula badia cuprea	Jerdon's Imperial Pigeon	1	—	—	—	—	1	—
Ducula bicolor	Pied Imperial Pigeon	1	—	—	—	—	1	—
Psittaciformes								
Charmosyna pulchella pulchella	Fairy Lorikeet	—	2	—	—	—	—	1/1
Eolophus roseicapillus	Roseate Cockatoo (Galah)	2	—	—	—	—	2	—
Cacatua alba	White-crested Cockatoo	2	—	—	—	—	—	1/1
Cacatua tenuirostris pastinator	Western Slender-billed Cockatoo	2	—	1	—	—	2	0/1
Nymphicus hollandicus	Cockatiel	4	—	—	—	1	3	—
Nestor notabilis	Kea	2	—	—	—	—	—	1/1
Polytelis swainsonii	Barraband (Superb) Parrakeet	7	—	—	—	1	6	—
Polytelis anthopeplus	Rock Peplar (Regent Parrot)	9	—	—	—	2	7	—
Polytelis alexandrae	Princess of Wales' Parrakeet	5	—	—	—	2	—	1/1/1
Platycercus elegans	Pennant's Parrakeet (Crimson Rosella)	2	—	—	—	—	2	—
Platycercus eximius eximius	Eastern Rosella	1	—	—	—	—	1	—
Psittacus erithacus	Grey Parrot	1	1(1)	—	—	—	2	—
Poicephalus robustus	Cape Parrot	—	2	—	—	—	—	1/1
Poicephalus rueppellii	Ruppell's Parrot	2	—	—	—	—	2	—
Psittacula krameri manillensis	Indian Ring-necked Parrakeet	3	—	—	—	—	3	—
Anodorhynchus hyacinthinus	Hyacinth Macaw	2	—	—	—	—	—	1/1
Ara chloroptera	Green-winged Macaw	—	1	—	—	—	—	1/0
Ara auricollis	Yellow-naped Macaw	1	—	—	—	1	—	—
Cyanoliseus patagonus byroni	Greater Patagonian Conure	5	—	—	—	1	4	—
Myiopsitta monachus	Quaker (Monk) Parrakeet	11	—	11	3	—	7	3/3/6
Brotogeris pyrrhopterus	Orange-flanked Parrakeet	1	—	—	—	—	1	—
Cuculiformes								
Tauraco persa schalowi	Schalow's Turaco	—	1	—	—	1	—	—
Tauraco persa livingstonii	Livingstone's Turaco	2	1	—	—	—	1	1/1
Tauraco persa corythaix	Knysna Turaco	1	—	—	—	—	1	—
Tauraco erythrolophus	Red-crested Turaco	3	—	1	1	—	1	1/1
Tauraco hartlaubi	Hartlaub's Turaco	3	1	—	—	1	1	1/1
Tauraco leucotis	White-cheeked Turaco	7	—	—	—	—	—	2/2/3
Eudynamys scolopacea chinensis	Chinese Koel	1	—	—	—	1	—	—
Strigiformes								
Tyto alba	Barn Owl	4	2	1	—	—	3	1/1/2
Otus bakkamoena	Collared Scops Owl	2	—	—	—	—	—	1/1
Otus leucotis	White-faced Scops Owl	11	2	1	—	1	7	2/3/1
Bubo virginianus	Great Horned Eagle Owl	2	1	—	—	1	2	—
Bubo bubo bubo	European Eagle Owl	2	—	—	—	—	2	—
Bubo bubo turcomanus	Turkmenian Eagle Owl	2	—	4	—	—	4	1/1
Bubo bubo bengalensis	Bengal Eagle Owl	1	—	—	—	—	1	—
Bubo capensis mackinderi	Kenyan Eagle Owl	2	—	3	—	—	5	—
Bubo africanus cinerascens	Abyssinian Spotted Eagle Owl	2	—	—	—	—	2	—
Bubo africanus africanus	Spotted Eagle Owl	2	—	1	1	1	1	—
Bubo vosseleri	Nduk Eagle Owl	2	—	—	—	—	—	2/0
Scotopelia ussheri	Rufous Fishing Owl	1	—	—	—	—	1	—
Pulsatrix perspicillata	Spectacled Owl	2	1	—	—	—	1	1/1
Nyctea scandiaca	Snowy Owl	2	—	1	1	—	—	1/1
Ninox novaeseelandiae	Boobook Owl	2	—	3	—	—	3	1/1
Athene noctua	Little Owl	2	—	—	—	—	2	—
Athene brama	Spotted Owlet	2	—	—	—	—	—	1/1
Speotyto cunicularia	Burrowing Owl	2	1	—	—	1	1	1/0
Strix hylophila	Rusty Barred Owl	2	—	—	—	—	—	1/1
Strix uralensis	Ural Owl	4	—	—	—	—	—	2/2
Strix nebulosa	Great Grey Owl	2	—	—	—	—	1	1/0
Asio otus	Long-eared Owl	2	—	—	—	—	2	—
Asio flammeus	Short-eared Owl	2	—	—	—	—	2	—
Trogoniformes								
Pharomachrus auriceps	Golden-headed Quetzal	1	—	—	—	—	1	—

		1	2	3	4	5	6	7
Coraciiformes								
Dacelo novaeguineae	Kookaburra	7	1(1)	—	—	—	5	1/1/1
Momotus momota	Blue-crowned Motmot	1	—	—	—	—	1	—
Coracias caudata	Lilac-breasted Roller	2	—	—	—	—	2	—
Tockus erythrorhynchus	Red-billed Hornbill	2	1	—	—	—	1	1/1
Tockus flavirostris	Yellow-billed Hornbill	3	—	—	—	—	3	—
Penelopides panini	Tarictic Hornbill	4	—	—	—	—	2	1/1
Anthracoceros coronatus convexus	Southern Pied Hornbill	3	—	—	—	—	—	1/2
Bycanistes subcylindricus	Black and White Casqued Hornbill	2	—	—	—	—	—	1/1
Buceros bicornis	Great Indian Hornbill	1	—	—	—	—	—	0/1
Buceros hydrocorax	Rufous Hornbill	2	—	—	—	—	—	1/1
Piciformes								
Psilopogon pyrolophus	Fire-tufted Barbet	2	—	—	—	—	—	1/1
Pteroglossus aracari	Black-necked Aracari	2	—	—	—	—	—	1/1
Pteroglossus castanotis	Chestnut-eared Aracari	1	—	—	—	—	—	0/1
Baillonius bailloni	Saffron Toucanet	2	—	—	—	—	—	1/1
Ramphastos tucanus	Red-billed Toucan	2	—	—	—	1	1	—
Melanerpes candidus	White Woodpecker	1	—	—	—	—	—	0/1
Passeriformes								
Procnias nudicollis	Naked-throated Bellbird	1	—	—	—	—	—	1/0
Pycnonotus jocosus	Red-whiskered Bulbul	—	2	—	—	—	—	1/1
Pycnonotus cafer bengalensis	Red-vented Bulbul	2	—	—	—	—	2	—
Irena puella	Fairy Bluebird	2	—	—	—	—	—	1/1
Zoothera citrina	Orange-headed Ground Thrush	—	1	—	—	—	1	—
Turdus olivaceus	African (Olive) Thrush	3	—	—	—	1	2	—
Turdoides caudatus	Common Babbler	1	—	—	—	—	1	—
Garrulax albogularis	White-throated Laughing Thrush	1	—	—	—	—	1	—
Garrulax leucolophus	White-crested Laughing Thrush	2	—	—	—	—	—	1/1
Garrulax pectoralis	Necklaced Laughing Thrush	1	—	—	—	—	—	0/0/1
Garrulax chinensis	Black-throated Laughing Thrush	3	—	—	—	—	1	1/1
Garrulax canorus	Melodious Laughing Thrush	—	2	—	—	1	1	—
Garrulax sannio	White-browed Laughing Thrush	2	—	—	—	—	—	0/0/2
Leiothrix argentauris	Silver-eared Mesia	—	2	—	—	—	—	1/1
Leiothrix lutea	Pekin Robin (Red-billed Leiothrix)	8	—	—	—	1	6	1/0
Zosterops sp.	White-eye	4	—	—	—	2	—	0/0/2
Melophus lathami	Black-crested Bunting	3	—	—	—	—	3	—
Sicalis flaveola	Saffron Finch	3	—	—	—	—	3	—
Volatinia jacarina	Jacarini Finch (Blue-black Grassquit)	1	—	—	—	—	1	—
Sporophila torqueola	White-collared Seedeater	1	—	—	—	1	—	—
Sporophila luctuosa	Black & White Seedeater	2	—	—	—	1	1	—
Tiaris fuliginosa	Sooty Grassquit	1	—	—	—	—	1	—
Paroaria coronata	Red-crested Cardinal	1	2	—	—	1	—	1/1
Ramphocelus carbo	Silver-beaked Tanager	2	—	—	—	—	2	—
Ramphocelus flammigerus icteronotus	Lemon-rumped Tanager	1	—	—	—	—	1	—
Thraupis episcopus	Blue Grey Tanager	1	—	—	—	—	1	—
Cyanerpes cyaneus	Red-legged Honeycreeper	1	—	—	—	1	—	—
Cacicus melanicterus	Mexican Cacique	1	—	—	—	—	1	—
Gnorimopsar chopi	Chopi Grackle	2	—	—	—	1	—	1/0
Molothrus bonariensis	Shiny Cowbird	1	—	—	—	—	1	—
Serinus mozambicus	Green Singing Finch (Yellow-fronted Canary)	3	—	—	—	—	3	—
Serinus flaviventris	Yellow Canary	—	1	—	—	—	1	—
Carduelis chloris	Greenfinch	4	—	—	—	—	4	—
Carpodacus mexicanus	Mexican Rose Finch (House Finch)	3	—	1	—	—	4	—
Uraeginthus bengalus	Red-cheeked Cordon Bleu	—	2	—	—	—	2	—
Uraeginthus cyanocephala	Blue-capped Waxbill	1	—	—	—	—	1	—
Estrilda caerulescens	Lavender Finch	2	—	—	—	1	1	—
Estrilda melpoda	Orange-cheeked Waxbill	2	—	—	—	—	2	—
Estrilda troglodytes	Red-eared Waxbill	3	2	—	—	1	4	—
Amandava amandava	Avadavat	2	—	—	—	—	2	—
Amandava amandava punicea	Strawberry Finch	1	—	—	—	—	1	—
Amandava formosa	Green Avadavat	2	—	—	—	1	1	—
Amandava subflava	Golden-breasted Waxbill	3	3	—	—	1	5	—

		1	2	3	4	5	6	7
Neochmia ruficauda	Star Finch	1	—	—	—	—	1	—
Poephila guttata	Zebra Finch	1	2	—	—	1	2	—
Poephila bichenovii	Bicheno's Finch	1	—	—	—	—	1	—
Poephila acuticauda hecki	Heck's Grass Finch	3	—	—	—	1	—	1/1
Erythrura trichroa	Blue-faced Parrot Finch	2	—	—	—	1	—	1/0
Lonchura malabarica cantans	African Silverbill	2	—	—	—	—	2	—
Lonchura striata (domesticated)	Bengalese Finch	1	—	—	—	—	1	—
Lonchura molucca	Moluccan Mannikin	1	—	—	—	—	1	—
Lonchura punctulata	Nutmeg Mannikin	—	2	—	—	—	2	—
Lonchura malacca	Chestnut Mannikin	—	2	—	—	1	1	—
Lonchura maja	White-headed Mannikin	—	1	—	—	—	1	—
Lonchura pallida	Pallid Finch	1	—	—	—	1	—	—
Padda oryzivora	Java Sparrow	2	2	—	—	—	4	—
Amadina fasciata	Cut-throat Finch	—	2	—	—	—	2	—
Pseudonigrita arnaudi	Grey-headed Social Weaver	1	—	—	—	—	1	—
Ploceus sp.	Weaver	1	—	—	—	—	1	—
Ploceus cucullatus	Village Weaver	—	2	—	—	—	2	—
Ploceus jacksoni	Golden-backed Weaver	1	—	—	—	—	1	—
Quelea quelea	Red-beaked Weaver (Quelea)	2	2	1	—	3	—	1/1
Foudia flavicans	Rodriguez Fody	4	—	—	—	—	—	2/2
Euplectes sp.	Weaver	1	—	—	—	—	1	—
Euplectes afer	Napoleon Weaver (Yellow-crowned Weaver)	2	1	—	—	1	2	—
Euplectes orix franciscana	Orange Bishop	—	1	—	—	1	—	—
Vidua chalybeata	Combassou (Green Indigo Bird)	2	1	—	—	—	3	—
Vidua paradisaea	Paradise Whydah	—	1	—	—	—	1	—
Lamprotornis iris	Emerald Glossy Starling	2	—	—	—	—	—	1/1
Lamprotornis purpureus	Purple Glossy Starling	5	—	—	—	—	5	—
Lamprotornis chalybaeus	Green (Blue-eared) Glossy Starling	3	—	—	—	—	3	—
Spreo superbus	Superb Glossy Starling	5	2	9	8	—	6	1/1
Creatophora cinerea	Wattled Starling	4	—	—	—	1	3	—
Sturnus roseus	Rose-coloured Starling	3	—	—	—	—	1	1/1
Sturnus contra	Asian Pied Starling	3	—	—	—	—	1	1/1
Sturnus vulgaris	Common Starling	1	—	—	—	—	—	1/0
Leucopsar rothschildi	Rothschild's Mynah	7	—	—	—	1	1	2/3
Acridotheres fuscus	Jungle Mynah	1	—	—	—	1	—	—
Acridotheres fuscus javanicus	White-vented Mynah	1	—	—	—	—	1	—
Acridotheres cristatellus	Crested Mynah	4	—	—	—	1	3	—
Ampeliceps coronatus	Golden-crested Mynah	—	2	—	—	—	—	0/0/2
Gracula religiosa intermedia	Nepal Hill Mynah	4	—	—	—	1	1	0/1/1
Gracula religiosa religiosa	Javan Hill Mynah	1	—	—	—	1	—	—
Cyanocorax chrysops	Plush-crested Jay	—	2	—	—	—	—	1/1
Corvus corax corax	Raven	2	—	—	—	—	—	1/1
Domestic								
	Common Duck	3	—	—	—	1	—	1/1
	Old English Game Bantam	3	—	—	—	2	—	0/1
	Domestic Chicken	1	4	—	—	—	—	2/3
Total: Birds		**895**	**77(3)**	**108**	**47**	**137**	**317(8)**	**579**

REPTILES

Testudines								
Sternotherus odoratus	Stinkpot	2	—	—	—	1	—	1/0
Kinosternon subrubrum	Eastern Mud Terrapin	1	—	—	—	—	—	0/0/1
Kinosternon scorpioides	Scorpion Mud Terrapin	2	—	—	—	—	—	1/1
Pseudemys scripta dorbignyi	South American Ornate Terrapin	1	—	—	—	—	—	0/1
Pseudemys scripta elegans	Red-eared Terrapin	6	—	—	—	—	—	1/3/2
Emys orbicularis	European Pond Tortoise	3	—	—	—	—	3	—
Terrapene carolina	Carolina Box Terrapin	1	—	—	—	—	1	—
Terrapene carolina triunguis	Three-toed Box Terrapin	2	—	—	—	—	—	1/0/1
Testudo graeca	Spur-thighed Tortoise	10	—	—	—	—	8	1/1

		1	2	3	4	5	6	7
Testudo hermanni	Hermann's Tortoise	4	—	—	—	—	4	—
Malacochersus tornieri	Pancake Tortoise	2	—	—	—	—	1	1/0
Geochelone carbonaria	Red-footed Tortoise	3	—	—	—	—	3	—
Eretmochelys imbricata	Hawksbill Turtle	3	—	—	—	—	—	0/1/2
Chelus fimbriatus	Matamata	6	—	—	—	—	1	0/1/4
Chelodina longicollis	Long-necked Terrapin	5	—	—	—	—	—	2/3
Trionyx hurum	Peacock Soft-shelled Turtle	2	—	—	—	—	—	1/1
Crocodylia								
Alligator mississippiensis	American Alligator	3	—	—	—	—	3	—
Alligator sinensis	Chinese Alligator	7	—	—	—	—	—	1/2/4
Sauria								
Teratoscincus scincus	Frog-eyed Sand Gecko	7	—	—	—	1	5	1/0
Hemitheconyx caudicinctus	African Fat-tailed Gecko	24	—	1	—	1	20	0/2/2
Chondrodactylus angulifer	Namib Sand Gecko	9	—	—	—	—	4	3/2
Gekko gecko	Tokay Gecko	5	—	1	—	1	—	0/4/1
Phelsuma madagascariensis grandis SS	Giant Day Gecko	—	2	1	—	—	3	—
Coleonyx variegatus	Western Banded Gecko	1	—	—	—	—	—	1/0
Eublepharis macularius	Leopard Ground Gecko	19	—	—	—	—	15	2/2
Anolis richardii	Richard's Anole	1	—	—	—	1	—	—
Corythophanes cristatus	Abbess Lizard	1	—	—	—	1	—	—
Laemanctus longipes deborrei	Casque-headed Lizard	2	—	—	—	1	—	0/1
Basiliscus vittatus	Banded Basilisk	4	—	—	—	—	4	—
Basiliscus plumifrons	Plumed Basilisk	3	—	—	—	—	3	—
Cyclura cornuta	Rhinoceros Iguana	5	—	—	—	1	—	3/1
Iguana iguana	Common Iguana	1	—	—	—	—	1	—
Sauromalus obesus	Chuckwalla	4	—	—	—	—	4	—
Amphibolurus vitticeps	Inland Bearded Dragon	4	—	—	—	—	—	2/2
Physignathus lesueurii	Eastern Water Dragon	4	—	—	—	3	1	—
Uromastyx ocellatus	Eyed Dabb Lizard	5	—	—	—	—	5	—
Uromastyx aegyptius	Egyptian Dabb Lizard	8	—	—	—	3	5	—
Uromastyx hardwicki	General Hardwick's Dabb Lizard	3	—	—	—	—	—	0/0/3
Chamaelo chamaeleon	Common Chameleon	2	—	—	—	2	—	—
Egernia striolata	Australian Tree Skink	5	—	—	—	—	3	1/1
Sphenomorphus quoyii	Golden Water Skink	1	—	—	—	1	—	—
Corucia zebrata	Prehensile-tailed Skink	1	5	—	—	—	—	0/0/6
Trachydosaurus rugosus	Shingleback	8	—	—	—	1	4	1/2
Tiliqua scincoides scincoides	Eastern Blue-tongued Skink	3	3	—	—	—	6	—
Tiliqua scincoides intermedia	Northern Blue-tongued Skink	4	1	—	—	—	3	1/0/1
Tiliqua nigrolutea	Blotched Blue-tongued Skink	6	—	—	—	—	6	—
Mabuya quinquetaeniata	Five-lined Skink	5	—	—	—	—	3	0/0/2
Leiolopisma telfairii	Round Island Skink	3	—	—	—	1	2	—
Eumeces schneiderii	Schneider's Skink	3	—	—	—	—	—	0/0/3
Chalcides ocellatus	Eyed Skink	11	—	—	—	—	8	1/1/1
Gerrhosaurus major	Greater Plated Lizard	3	—	—	—	—	—	2/1
Lacerta lepida	Eyed Lizard	2	2	—	—	—	2	0/0/2
Trogonophis wiegmanni	Wiegmann's Burrowing Lizard	1	—	—	—	—	—	0/0/1
Varanus exanthematicus exanthematicus	Bosc's Monitor	3	—	—	—	—	1	1/0/1
Heloderma suspectum suspectum	Reticulated Gila Monster	9	—	—	—	—	—	3/4/2
Heloderma suspectum cinctum	Banded Gila Monster	2	—	—	—	—	—	1/1
Anguis fragilis	Slow-worm	2	—	—	—	—	—	0/0/2
Cordylus giganteus	Sungazer	8	—	—	—	—	—	0/0/8
Pseudocordylus microlepidotus	Small-scaled Girdled Lizard	1	—	—	—	1	—	—
Serpentes								
Liasis boa	Bismark Ringed Python	1	3	—	—	—	—	1/0/3
Morelia spilotus spilotus	Diamond Python	1	—	—	—	—	—	1/0
Python molurus bivittatus	Burmese Rock Python	2	—	1	1	—	—	1/1
Python regius	Royal Python	8	—	—	—	—	3	1/0/4
Candoia carinatus paulsoni SS	Solomon Islands Boa	—	6	—	—	—	6	—
Eunectes notaeus	Yellow Anaconda	3	—	—	—	—	3	—
Boa constrictor	Boa Constrictor	13	—	18	—	1	25	0/2/3
Eryx colubrinus	Theban Sand Boa	3	—	—	—	3	—	—
Lichanura trivirgata roseofusca	Coastal Rosy Boa	2	—	—	—	—	2	—

		1	2	3	4	5	6	7
Lichanura trivirgata gracia	Desert Rosy Boa	3	1	—	—	—	4	—
Natrix natrix	Grass Snake	2	—	—	—	—	1	0/0/1
Drymarchon corais couperi	Eastern Indigo Snake	1	—	—	—	—	—	0/0/1
Elaphe guttata	Corn Snake	—	2	—	—	—	2	—
Elaphe obsoleta obsoleta	Black Rat Snake	1	—	—	—	—	1	—
Elaphe obsoleta quadrivittata	Yellow Rat Snake	2	—	—	—	—	1	0/0/1
Elaphe radiata	Radiated Rat Snake	2	—	—	—	—	1	0/0/1
Pituophis catenifer deserticola	Desert Gopher Snake	4	—	—	—	1	3	—
Pituophis melanoleucus melanoleucus	Northern Pine Snake	—	2	—	—	—	—	1/1
Hydrodynastes gigas	Boipevassu Snake	3	—	4	—	—	5	1/0/1
Heterodon nasicus	Western Hog-nosed Snake	2	—	—	—	—	1	0/0/1
Coronella austriaca	Smooth Snake	2	—	—	—	—	—	1/0/1
Lampropeltis getulus floridana	Florida King Snake	—	1	—	—	—	—	0/0/1
Lampropeltis getulus californiae	Californian King Snake	7	—	—	—	—	5	1/1
Lampropeltis triangulum sinaloae	Sinaloan Milk Snake	2	—	—	—	—	—	1/1
Lampropeltis triangulum hondurensis	Honduras King Snake	2	—	—	—	—	2	—
Lampropeltis triangulum annulata	Mexican Milk Snake	2	—	—	—	1	1	—
Dasypeltis scabra	Egg-eating Snake	1	—	—	—	—	1	—
Psammophis subtaeniatus	Peter's Long-lined Snake	1	—	—	—	—	—	0/0/1
Dispholidus typus	Boomslang	2	—	—	—	—	—	0/0/2
Oxyuranus scutellatus	Taipan	3	1	—	—	—	—	1/2/1
Notechis scutatus	Tiger Snake	2	—	—	—	—	—	1/1
Walterinnesia aegyptia	Innes' Cobra	2	—	—	—	—	2	—
Naja melanoleuca	Black & White Cobra	3	—	—	—	—	3	—
Naja pallida	Red Spitting Cobra	2	—	—	—	—	—	1/1
Naja naja kaouthia	Monocellate Cobra	3	—	—	—	—	1	1/1
Naja naja naja	Sri Lankan Cobra	2	—	—	—	—	2	—
Naja naja oxiana	Central Asian Cobra	2	—	—	—	—	2	—
Micrurus fulvius	Eastern Coral Snake	4	—	—	—	—	3	0/0/1
Dendroaspis angusticeps	Common Green Mamba	2	—	—	—	—	—	1/1
Dendroaspis polylepis	Black Mamba	1	—	—	—	1	—	—
Vipera berus	Adder	3	—	—	—	1	1	0/0/1
Vipera ammodytes ammodytes	Western Long-nosed Viper	4	—	—	—	1	—	2/1
Vipera russelli siamensis	Russell's Viper	2	—	—	—	—	—	1/0/1
Bitis arietans	Puff Adder	4	—	—	—	—	2	1/1
Bitis gabonica gabonica	Gaboon Viper	2	—	—	—	1	—	1/0
Cerastes cerastes	Horned Cerastes Viper	1	—	—	—	—	1	—
Echis carinatus sochureki	Saw-scaled Viper	22	—	—	—	—	13(10)	1/2/6
Echis carinatus ocellatus	West African Saw-scaled Viper	1	2	—	—	1	—	1/0/1
Echis carinatus leakeyi	East African Saw-scaled Viper	3	—	—	—	—	—	1/2
Agkistrordon piscivorus	Cottonmouth Moccasin	1	—	—	—	—	—	0/0/1
Agkistrordon contortrix mokeson	Northern Copperhead	2	—	—	—	—	2	—
Calloselasma rhodostoma	Malayan Pit Viper	29	—	—	—	2	18	1/2/6
Trimeresurus purpureomaculatus	Mangrove Pit Viper	7	—	—	—	2	3	0/0/2
Bothrops moojeni S	Moojen's Fer-de-Lance	—	1	—	—	—	—	0/0/1
Sistrurus catenatus tergeminus	Western Massasauga	9	—	—	—	—	7	1/1
Crotalus durissus culminatus	North Western Neotropical Rattlesnake	2	—	—	—	—	—	1/1
Crotalus atrox	Western Diamond-back Rattlesnake	3	—	—	—	—	1	1/1
Crotalus viridis helleri	Southern Pacific Rattlesnake	1	—	—	—	—	1	—
Crotalus viridis oreganus	Northern Pacific Rattlesnake	1	—	—	—	—	—	0/1
Crotalus mitchelli	Speckled Rattlesnake	1	—	—	—	—	—	1/0
Crotalus cerastes	Sidewinder	1	—	—	—	—	—	0/0/1
	Total: Reptiles	**453**	**32**	**26**	**1**	**35**	**261(10)**	**214**

AMPHIBIANS

Gymnophiona

Typhlonectes compressicauda	Caecilian	3	—	—	—	3	—	—

Caudata

Ambystoma maculatum	American Spotted Salamander	7	5	—	—	6	—	0/0/6
Ambystoma mexicanum	Axolotl	7	—	9	—	—	—	0/0/16
Ambystoma tigrinum	Tiger Salamander	2	—	—	—	—	—	0/0/2

		1	2	3	4	5	6	7
Pleurodeles waltl	Spanish Ribbed Newt	5	—	—	—	—	—	0/0/5
Salamandra salamandra	Fire Salamander	14	—	10	7	—	—	0/0/17
Taricha torosa	Rough-skinned Newt	3	—	—	—	1	—	0/0/2
Triturus cristatus	Crested Newt	1	—	—	—	—	—	0/0/1
Triturus vulgaris	Smooth Newt	12	—	—	—	—	8	0/0/4
Pachytriton sp.	Dog-faced Newt	6	—	—	—	3	3	—
Anura								
Bombina orientalis	Oriental Fire-bellied Toad	8	—	10	5	5	6	0/0/2
Bombina variegata	Yellow-bellied Toad	2	—	—	—	1	—	0/0/1
Bufo bufo	Common Toad	—	3	—	—	3	—	—
Bufo marinus	Cane Toad	4	—	—	—	1	—	1/0/2
Bufo viridis	Green Toad	1	—	—	—	—	—	0/1
Ceratophrys cranwelli	Horned Frog	1	—	—	—	1	—	—
Colostethus trinitatus	Stream Frog	35	—	30	—	—	—	0/0/65
Dendrobates auratus	Poison Arrow Frog	—	19	—	—	3	9	0/0/7
Dendrobates truncatus	Poison Arrow Frog	9	—	16	—	8	10	0/0/7
Dyscophus antongilli	Tomato Frog	3	—	—	—	3	—	—
Hyla rubra	Daudin's Banana Frog	5	—	—	—	—	5	—
Hyla septentrionalis	Cuban Tree Frog	6	—	—	—	5	—	0/0/1
Kassina senegalensis	Running Frog	—	10	—	—	3	—	7/0
Litoria caerula	White's Tree Frog	6	5	—	—	4	—	0/0/7
Litoria infrafrenata	Giant Tree Frog	2	—	—	—	1	—	0/0/1
Pipa pipa	Surinam Toad	1	—	—	—	1	—	—
Polypedates dennysi	Asian Tree Frog	4	—	—	—	4	—	—
Polypedates leucomastyx	Bamboo Tree Frog	3	—	—	—	—	3	—
Pyxicephalus adspersus	African Bullfrog	1	—	—	—	1	—	—
Rana catesbeiana	American Bullfrog	9	—	—	—	4	—	0/0/5
Rana limnocharis	Rice Paddy Frog	17	—	—	—	14	—	0/0/3
Rana pipiens	Leopard Frog	2	—	—	—	1	—	0/0/1
Rana ridibunda	Marsh Frog	2	—	—	—	1	—	0/0/1
Rana temporaria	Common Frog	—	2	—	—	—	—	0/0/2
Xenopus laevis	Clawed Frog	8	—	—	—	3	—	0/0/5
Xenopus tropicalis	Clawed Frog	6	—	—	—	4	—	0/2
Total: Amphibians		**195**	**44**	**75**	**12**	**84**	**44**	**174**

WHIPSNADE WILD ANIMAL PARK

MAMMALS

Marsupialia								
Macropus rufogriseus frutica	Red-necked Wallaby	556	2(2)	—	—	51	30	454/10/1
Primates								
Varecia variegatus variegatus	Ruffed Lemur	—	2	—	—	—	1(1)	0/1
Saimiri sciureus	Squirrel Monkey (Black-capped form)	15	—	2	—	1	—	2/5/9
Saguinus oedipus	Cotton-headed Tamarin	1	—	—	—	—	1	—
Leontopithecus rosalia rosalia	Golden Lion Tamarin	2	—	—	—	—	—	0/2
Pan troglodytes	Chimpanzee	7	2(2)	1	1	—	1	5/3
Rodentia								
Cynomys ludovicianus	Prairie Marmot	234	—	—	—	—	—	0/0/234
Dolichotis patagonum	Mara	40	—	1	—	2	13	7/2/17
Chinchilla laniger	Chinchilla	2	—	—	—	—	—	0/2
Carnivora								
Canis lupus	Grey Wolf	19	—	8	2	3	—	8/13/1
Ursus arctos	Brown Bear	3	—	3	—	—	—	3/3
Ailurus fulgens	Red Panda	2	—	1	—	—	1	1/1
Nasua nasua	Ring-tailed Coati	9	1	—	—	3	2	2/3
Helogale parvula	Dwarf Mongoose	8	—	—	—	—	—	4/4

		1	2	3	4	5	6	7
Panthera leo	Lion	2	—	—	—	—	—	1/1
Panthera tigris altaica	Siberian Tiger	3	—	—	—	—	—	1/2
Acinonyx jubatus	Cheetah	14	2	1	—	3	1	7/6
Pinnipedia								
Zalophus californianus	Californian Sealion	6	—	—	—	1	—	2/3
Phoca vitulina	Common Seal	1	—	—	—	—	—	1/0
Halichoerus grypus	Grey Seal	1	—	—	—	—	—	0/1
Proboscidea								
Elephas maximus	Asian Elephant	3	—	—	—	—	—	0/3
Perissodactyla								
*Equus burchelli antiquorum**	Common Zebra (Chapman's form)	1	2	—	—	1	—	2/0
*Equus grevyi**	Grevy's Zebra	8	—	1	—	1	1	2/5
*Equus hemionus**	Asiatic Wild Ass (Persian form)	10	1	3	—	1	1	3/7/2
*Equus przewalskii**	Przewalski's Horse	12	2	3	—	1	3	2/11
Rhinoceros unicornis	Indian Rhinoceros	3	—	1	—	1	—	2/1
Cerototherium simum	White Rhinoceros	10	1	—	—	2	1	4/4
Artiodactyla								
*Phacochoerus aethiopicus**	Wart Hog	1	—	—	—	—	1	—
Hippopotamus amphibius	Hippopotamus	2	3	1	—	—	—	2/4
Choeropsis liberiensis	Pygmy Hippopotamus	5	—	3	—	3	2	1/2
*Lama glama**	Llama	—	5(5)	—	—	—	—	5/0
*Lama guanicoe**	Guanaco	—	1(1)	—	—	—	—	1/0
Camelus bactrianus	Bactrian Camel	10	1(1)	8	—	2	4(1)	3/10
Camelus dromedarius	Arabian Camel	1	—	—	—	—	—	0/1
Muntiacus reevesi	Reeves's Muntjac	17	—	1	—	—	—	7/5/6
Dama dama	Fallow Deer	16	—	2	—	2	—	7/2/7
*Axis axis**	Axis Deer	46	—	19	10	11	—	16/22/6
*Axis porcinus**	Hog Deer	44	—	7	1	7	—	19/21/3
*Cervus duvaucelî**	Barasingha	28	—	5	5	5	—	11/12
*Cervus nippon**	Sika Deer (Formosan form)	41	—	9	5	4	—	9/27/5
Cervus elaphus	Red Deer	74	—	52	—	5	1	27/93
*Elaphurus davidianus**	Père David's Deer	51	—	11	5	5	—	12/34/6
Rangifer tarandus	Reindeer	10	5(2)	2	—	2	7	1/7
Hydropotes inermis	Chinese Water Deer	353	—	—	—	5	6	0/0/342
*Giraffa camelopardalis**	Giraffe	3	—	—	—	—	—	2/1
*Giraffa camelopardalis reticulata**	Giraffe (Reticulated)	4	—	—	—	—	—	2/2
*Tragelaphus angasi**	Nyala	9	—	4	—	4	—	4/5
*Tragelaphus spekei**	Sitatunga	12	—	6	3	5	—	2/7/1
*Tragelaphus strepsiceros**	Greater Kudu	2	1	—	—	2	—	1/0
*Tragelaphus euryceros**	Bongo	—	3(3)	—	—	—	—	1/2
*Boselaphus tragocamelus**	Nilgai	26	—	17	20	3	—	1/18/1
*Bos gaurus**	Gaur	2	4(4)	—	—	1	—	2/2/1
Bos grunniens	Yak	11	—	3	—	—	—	6/7/1
*Syncerus caffer**	African Buffalo (Dwarf Forest form)	4	—	2	—	—	—	2/4
Bison bison	American Bison	—	2	—	—	—	—	1/1
Bison bonasus	European Bison	10	2	—	—	2	—	2/7
*Hippotragus equinus**	Roan Antelope	10	—	3	—	2	—	5/6
*Hippotragus niger**	Sable Antelope	—	2(2)	—	—	—	—	1/1
*Kobus ellipsiprymnus**	Common Waterbuck	10	—	4	3	4	—	2/5
Kobus megaceros	Nile Lechwe	4	—	1	—	1	—	2/2
*Oryx gazella**	Gemsbok	9	1	1	1	4	—	1/5
*Oryx tao**	Scimitar-horned Oryx	25	1	13	3	10	—	7/19
*Oryx leucoryx**	Arabian Oryx	2	1(1)	—	—	1	—	3/0
*Damaliscus dorcas**	Bontebok	4	—	—	—	1	—	0/3
*Antilope cervicapra**	Blackbuck	15	—	11	7	5	—	4/7/3
*Gazella thomsoni**	Thomson's Gazelle	11	—	3	1	8	—	1/3/1
Ovibos moschatus	Musk Ox	7	—	3	3	4	—	1/2
Ovis musimon	Mouflon	2	—	1	—	2	—	0/1
Ovis canadensis	Bighorn Sheep	16	—	2	—	11	—	4/3
Domestic								
	Donkey	1	2	—	—	—	3	—
	Shire Horse	2	2	—	—	—	2	1/1

		1	2	3	4	5	6	7
Cream Pony		4	—	—	—	—	3	0/1
Welsh Pony (Cream form)		1	—	—	—	—	—	1/0
Saddleback × Oxford Saddleback Pig		—	13	—	—	2	10	0/0/1
Oxford Sandy & Black Pig		1	—	—	—	—	—	0/1
Ankole Cattle		1	—	—	—	1	—	—
Belted Galloway Cattle		1	—	—	—	—	—	1/0
Red Poll Cattle		2	2	2	2	1	—	0/3
Manx Loghtan Sheep		2	—	—	—	—	—	2/0
Lincoln Longwool Sheep		1	—	1	—	—	1	0/1
Wensleydale Sheep		1	1	1	—	—	1	1/1
Hampshire Sheep		8	—	8	1	1	1	1/12
Windsor White Goat		13	—	4	—	1	1	2/13
Total: Mammals		**1907**	**67(23)**	**235**	**74**	**197**	**99(2)**	**1839**
BIRDS								
Casuariiformes								
Casuarius casuarius	Australian Cassowary	3	—	—	—	—	1	1/1
Dromaius novaehollandiae	Emu	7	1(1)	—	—	—	—	3/2/3
Tinamiformes								
Nothoprocta perdicaria	Chilean Tinamou	7	—	—	—	—	7	—
Sphenisciformes								
Aptenodytes patagonica	King Penguin	13	—	—	—	1	—	3/4/5
Eudyptes crestatus	Rockhopper Penguin	11	—	1	—	2	—	4/2/4
Spheniscus humboldti	Humboldt's Penguin	56	5	18	—	2	11	4/4/58
Ciconiiformes								
Ciconia ciconia	White Stork	13	—	6	1	2	—	2/4/10
Eudocimus ruber	Scarlet Ibis	8	—	—	—	3	—	0/0/5
Phoenicopterus ruber roseus	Greater Flamingo	21	—	—	—	—	21	—
Phoenicopterus ruber ruber	Rosy Flamingo	56	—	1	—	2	—	0/0/55
Anseriformes								
Cygnus atratus	Black Swan	8	—	—	—	6	—	1/1
Cygnus melanocoryphus	Black-necked Swan	3	—	4	4	1	—	1/1
Cygnus cygnus	Whooper Swan	2	—	3	—	—	—	1/1/3
Coscoroba coscoroba	Coscoroba Swan	2	—	—	—	—	—	1/1
Anser anser	Greylag Goose	2	—	—	—	1	—	1/0
Anser indicus	Bar-headed Goose	55	—	4	2	13	—	11/14/19
Anser canagicus	Emperor Goose	7	—	—	—	3	—	2/1/1
Branta leucopsis	Barnacle Goose	23	—	—	—	6	—	4/2/11
Branta bernicla orientalis	Brent Goose	2	—	—	—	1	—	0/1
Branta ruficollis	Red-breasted Goose	9	—	—	—	3	—	5/0/1
Cereopsis novaehollandiae	Cape Barren Goose	2	—	—	—	2	—	—
Alopochen aegyptiacus	Egyptian Goose	8	—	—	—	—	—	1/1/6
Tadorna cana	South African Shelduck	8	—	—	—	1	—	2/2/3
Tadorna tadorna	Shelduck	7	1	—	—	2	—	4/2
Aix sponsa	Carolina Duck	13	—	—	—	12	—	0/1
Aix galericulata	Mandarin Duck	5	—	—	—	5	—	—
Anas penelope	Wigeon	2	—	—	—	—	—	1/1
Anas sibilatrix	Chiloe Wigeon	8	—	—	—	7	—	0/0/1
Anas falcata	Falcated Teal	1	—	—	—	1	—	—
Anas strepera	Gadwall	3	—	—	—	—	—	1/2
Anas crecca	Teal	2	1	—	—	2	—	1/0
Anas specularioides	Crested Duck	6	—	—	—	—	—	2/4
Anas acuta	Pintail	3	—	—	—	2	—	1/0
Anas bahamensis	Bahama Pintail	1	—	—	—	1	—	—
Anas querquedula	Garganey	1	—	—	—	1	—	—
Anas clypeata	Shoveler	3	—	—	—	—	—	2/1
Netta rufina	Red-crested Pochard	7	—	—	—	2	—	3/2

		1	2	3	4	5	6	7
Aythya ferina	Pochard	1	—	—	—	1	—	—
Aythya fuligula	Tufted Duck	2	—	—	—	—	—	0/2
Aythya marila	Greater Scaup	4	—	—	—	1	—	2/1
Somateria mollissima	Eider Duck	14	—	3	—	1	—	4/9/3
Bucephala islandica	Barrow's Goldeneye	2	—	—	—	2	—	—
Oxyura vittata	Argentine Ruddy Duck	1	—	—	—	—	—	1/0
Falconiformes								
Haliaeetus leucocephalus	Bald Eagle	—	1	—	—	—	—	0/1
Gyps africanus	African White-backed Vulture	1	—	—	—	—	—	1/0
Gyps rueppellii	Ruppell's Griffon Vulture	4	—	1	—	—	—	2/2/1
Parabuteo unicinctus	Harris' Hawk	1	—	—	—	—	—	0/1
Aquila rapax	Tawny Eagle	2	—	—	—	—	1	1/0
Falco tinnunculus	Kestrel	1	—	—	—	—	1	—
Falco biarmicus	Lanner Falcon	3	—	—	—	—	1	2/0
Falco mexicanus	Prairie Falcon	1	—	—	—	—	1	—
Falco cherrug	Saker Falcon	—	1	—	—	—	—	1/0
Falco peregrinus	Peregrine Falcon	—	1	—	—	—	—	1/0
Galliformes								
Francolinus erckelii	Erckel's Francolin	1	—	—	—	—	—	1/0
Lophophorus impeyanus	Impeyan Pheasant	1	—	—	—	—	—	0/1
Gallus gallus	Red Jungle Fowl	24	1(1)	—	—	—	3	10/11/1
Crossoptilon mantchuricum	Brown Eared Pheasant	1	—	—	—	—	1	—
Crossoptilon crossoptilon	White Eared Pheasant	2	—	—	—	—	—	1/1
Crossoptilon auritum	Blue Eared Pheasant	1	—	—	—	—	1(1)	—
Chrysolophus pictus	Golden Pheasant	—	1(1)	—	—	—	—	1/0
Pavo cristatus	Common Peafowl	180	3(3)	—	—	22	22	139
Gruiformes								
Grus monacha	Hooded Crane	1	—	—	—	1	—	—
Grus canadensis	Sandhill Crane	2	—	—	—	—	2	—
Grus japonensis	Red-crowned Crane	4	—	—	—	—	—	2/2
Grus vipio	White-naped Crane	5	—	—	—	—	1	2/2
Grus antigone	Sarus Crane	1	—	—	—	—	—	0/1
Grus rubicunda	Brolga	2	—	—	—	—	—	1/1
Bugeranus carunculatus	Wattled Crane	6	—	—	—	1	1	2/2
Anthropoides virgo	Demoiselle Crane	3	—	—	—	1	1	0/1
Anthropoides paradisea	Stanley Crane	4	2	3	1	1	1	2/2/2
Balearica regulorum	South African Crowned Crane	3	2(2)	—	—	—	—	4/1
Cariama cristata	Red-legged Seriema	—	2	—	—	—	—	2/0
Otis tarda tarda	Great Bustard	5	—	—	—	—	—	3/2
Charadriiformes								
Haematopus ostralegus	Oystercatcher	—	7	—	—	1	—	0/0/6
Burhinus bistriatus	Double-striped Thick-knee	—	2	—	—	—	—	1/1
Psittaciformes								
Pseudeos fuscata	Dusky Lory	2	—	—	—	1	—	1/0
Eolophus roseicapillus	Roseate Cockatoo	1	—	—	—	—	1	—
Cacatua galerita	Greater Sulphur-crested Cockatoo	3	—	—	—	1	2	—
Cacatua galerita triton	Triton Cockatoo	—	1	—	—	—	—	0/0/1
Cacatua sanguinea	Bare-eyed Cockatoo	3	1	—	—	—	4	—
Alisterus scapularis	King Parrot	2	—	—	—	—	—	1/1
Platycercus eximius cecilae	Golden-mantled Rosella	2	—	—	—	—	1	1/0
Psittacus erithacus	Grey Parrot	1	—	—	—	—	1(1)	—
Ara macao	Scarlet Macaw	2	—	—	—	—	2	—
Ara chloroptera	Green-winged Macaw	1	2	—	—	—	2	1/0
Cyanoliseus patagonus	Patagonian Conure	6	6	—	—	—	2	1/0/9
Myiopsitta monachus	Quaker Parrakeet	2	5	—	—	—	—	2/1/4
Strigiformes								
Tyto alba	Barn Owl	6	1	—	—	—	1	3/2/1
Otus leucotis	White-faced Scops Owl	2	—	2	—	—	—	1/1/2
Bubo bubo bengalensis	Bengal Eagle Owl	—	1	—	—	—	—	0/1
Nyctea scandiaca	Snowy Owl	2	—	—	—	—	—	1/1
Strix aluco sylvatica	Tawny Owl	2	—	—	—	—	—	1/1

		1	2	3	4	5	6	7
Coraciiformes								
Dacelo novaeguineae	Laughing Kookaburra	1	1	—	—	—	1(1)	0/0/1
Piciformes								
Baillonius bailloni	Saffron Toucanet	2	—	—	—	—	2	—
Ramphastos vitellinus citreolaemus	Citron-throated Toucan	2	—	—	—	—	—	0/2
Passeriformes								
Carpodacus mexicanus	Mexican Rose Finch	6	—	—	—	—	6	—
Urocissa erythrorhyncha occipitalis	Red-billed Blue Pie	1	—	—	—	—	1	—
Domestic								
	Old English Game Bantam	1	—	—	—	1	—	—
	Birmingham Roller Pigeon	28	—	—	—	4	—	11/13
	Total: Birds	**749**	**49(8)**	**46**	**8**	**123**	**103(3)**	**610**

REPTILES

Testudines								
Testudo graeca	Spur-thighed Tortoise	34	—	—	—	—	21	0/0/13
Testudo hermanni	Hermann's Tortoise	21	—	—	—	—	12	0/0/9
Testudo kleinmanni	Kleinman's Tortoise	—	2	—	—	—	—	0/0/2
Geochelone denticulata	Yellow-footed Tortoise	—	3	—	—	—	—	0/0/3
Crocodylia								
Osteolaemus tetraspis	West African Dwarf Crocodile	2	—	—	—	—	—	0/0/2
Sauria								
Phelsuma madagascariensis grandis	Giant Day Gecko	—	6	—	—	2	—	0/0/4
Eublepharis macularius	Leopard Ground Gecko	15	—	9	—	4	8	0/0/12
Basiliscus plumifrons	Plumed Basilisk	7	—	—	—	—	—	0/0/7
Iguana iguana	Common Iguana	8	—	—	—	1	1	0/0/6
Agama stellio	Starred Agama	1	—	—	—	1	—	—
Eumeces schneiderii	Schneider's Skink	4	—	—	—	—	—	0/0/4
Scincus scincus	Sand Fish	4	—	—	—	1	—	0/0/3
Uromastyx aegypticus	Egyptian Dabb Lizard	1	2	—	—	—	—	0/0/3
Anolis carolinensis	Carolina Anolis Lizard	3	—	—	—	1	—	0/0/2
Anolis sagrei	Anolis Lizard	2	—	—	—	1	—	0/0/1
Ameiva sp.	Ameiva	—	6	—	—	4	—	0/0/2
Varanus exanthematicus	Bosc's Monitor	3	1	—	—	—	—	0/0/4
Serpentes								
Python molurus bivitatus	Burmese Python	3	1	40	—	4	29	0/0/11
Boa constrictor	Boa Constrictor	—	1	—	—	—	—	0/0/1
Corallus caninus	Emerald Tree Boa	—	2	—	—	—	—	0/0/2
Corallus enydris cooki	Cook's Tree Boa	—	2	—	—	—	—	0/0/2
Epicrates cenchria	Rainbow Boa	—	2	—	—	—	—	0/0/2
Epicrates subflavus	Jamaican Boa	1	—	—	—	1	—	—
Thamnophis sirtalis	Garter Snake	3	—	—	—	—	—	0/0/3
Malopolon moilensis	Moila Snake	1	—	—	—	1	—	—
Cerastes cerastes	Horned Cerastes Viper	3	2	—	—	1	—	0/0/4
Echis carinatus sochureki	Saw-scaled Viper	—	10(10)	—	—	—	—	0/0/10
	Total: Reptiles	**116**	**40(10)**	**49**	**—**	**22**	**71**	**112**

AMPHIBIANS

Caudata								
Ambystoma mexicanus	Axolotl	1	—	—	—	1	—	—
Anura								
Bufo marinus	Cane Toad	2	—	—	—	1	—	0/0/1
Ceratophrys cornuta	Horned Toad	2	—	—	—	—	—	0/0/2

		1	2	3	4	5	6	7
Dendrobates auratus	Black/Green Poison Arrow Frog	2	2	—	—	—	—	0/0/4
Phylobates sp.	Poison Arrow Tree Frog	3	—	—	—	1	—	0/0/2
Hyla septentrionalis	Cuban Tree Frog	1	—	—	—	—	—	0/0/1
Rhacophorus dennysi	Giant Asian Tree Frog	6	—	—	—	2	—	0/0/4
	Total: Amphibians	**17**	**2**	**—**	**—**	**5**	**—**	**14**

SUMMARY

London Zoo

	1	2	3	4	5	6	7	Number of Species (excluding domestic)
Mammals	938	59(2)	1095	124	227	1007(23)	734	92
Birds	895	77(3)	108	47	137	317(8)	579	139
Reptiles	453	32	26	1	35	261(10)	214	75
Amphibians	195	44	75	12	84	44	174	26
Total	**2481**	**212(5)**	**1304**	**184**	**483**	**1629(41)**	**1701**	**332**

Estimated number of fishes and invertebrates in the Collection at 31 December 1991:

Fishes	Approx 4,400	270 species
Invertebrates (excluding some common species)	Approx 6,300 (+ 5 colonies)	70 species

Whipsnade Wild Animal Park

Mammals	1907	67(23)	235	74	197	99(2)	1839	66
Birds	749	49(8)	46	8	123	103(3)	610	74
Reptiles	116	40(10)	49	—	22	71	112	24
Amphibians	17	2	—	—	5	—	14	6
Total	**2789**	**158(41)**	**330**	**82**	**347**	**273(5)**	**2575**	**170**

Estimated number of fishes and invertebrates in the Collection at 31 December 1991:

Fishes	Approx 160	30 species
Invertebrates (excluding some common species)	Approx 130	14 species

Grand Total Zoological Society of London	**5270**	**324**	**1634**	**266**	**830**	**1856**	**4276**	**448***

*The species common to London Zoo and Whipsnade Wild Animal Park are counted as one.

COLLABORATIVE RESEARCH, ADVISORY AND CONSULTANT SERVICES

AFRC Animal Breeding Research Organization, Roslin: Collaborative studies on seasonal control of oestrogen secretion in Deer.

AFRC Institute of Animal Physiology & Genetics Research, Babraham: Collaborative projects on molecular biology of trophoblast interferons and on IGF gene expression in primate ovaries.

AFRC Institute for Food Research, Norwich: Collaborative evaluation of new methods for diagnosis of disease.

AFRC Institute for Grassland & Animal Production, Hurley: Collaborative studies on reproductive technology in Red Deer.

African Lion Safari and Game Farm Ltd/University of Guelph, Canada: Collaboration research on reproductive endocrinology of Asian Elephants.

Al-Areen Wildlife Park, Bahrain: Collaborative study on semen preservation in Arabian Oryx.

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

Animal Diseases Research Association: Collaborative studies on toxoplasmosis of non-human primates and diseases of red deer.

Biochemical Genetics Research Group, MRC Clinical Research Centre, Harrow: Collaborative project on the evolutionary biology of alanine glyoxylate aminotransferase.

Bou-Hedma Reserve, Tunisia: Health assessment of Reserve animals, especially reintroduced Scimitar-horned Oryx.

British Divers Marine Life Rescue: Clinical advice on Beluga Whale in the Black Sea.

Centre for Population Biology, Imperial College at Silwood Park: Collaborative study on population genetics of *Andricus quercuscalicis*.

Chapultepec Zoo, Mexico: Advice and assistance on Giant Panda artificial insemination.

People's Republic of China Ministry of Forestry (with International Union for Conservation of Nature and Natural Resources/World Wide Fund for Nature/North of England Zoological Society/ Marwell Zoological Trust/Longleat/Glasgow Zoo): Continuing monitoring of reintroduced Père David's Deer.

Commission of the European Community – DG XI: Advise on zoo and CITES legislation.

Corporation of London Veterinary Department and Animal Quarantine Station: Advice on identification, handling and management of reptiles.

Dalgety PLC and Anglia Higher Education College, Cambridge: Collaborative research on chemical communication in mammals.

Doha Zoo, Municipality of Doha, Qatar: Advice on management of the national zoo for the Qatar Government.

Dundee Institute of Technology (Department of Mathematical and Computer Sciences): Collaborative project on novel methods of analysing space-time movements and associations of individuals in free-ranging populations.

Edward Grey Institute of Field Ornithology, University of Oxford: Collaborative studies on 'puffinosis' in Manx Shearwaters.

Estacion Biologica de Donana, Ministerio de Educacion y Ciencia, Spain: Collaborative research on genetics of Gray wolves.

Faith Foundation: Advice and assistance with Rhino Project in Tanzania.

German Primate Centre, Göttingen: Collaborative research on primate ovarian function and development of non-invasive techniques for monitoring reproductive status in exotic species.

Glaxo Research PLC: Consultant advice on *in vitro* fertilization.

Hallam Medical Centre, London: Collaborative study on human granulosa-luteal cell function.

HM Customs: Housing and advice on identification of reptiles.

Hospital for Tropical Diseases, London: Collaborative evaluation new methods for diagnosis of disease; laboratory service testing of serum for diagnosis of *Toxocariasis*.

Institute of Biochemistry, Veterinary University, Vienna: Collaborative studies on faecal steroid hormone analysis in exo species.

Institute of Terrestrial Ecology (Monkswood): Investigations of hea metal and organochlorine levels in avian tissues; (*Banchor* Collaborative research on population genetics of the Atlan Puffin and genetics of Otters and Seals.

Institute of Virology and Environmental Microbiology, Oxfo Collaborative research on 'puffinosis' in Manx Shearwaters.

Instituto de Zoologia, Universidade do Porto, Portugal: Collaborati study on population genetics of Rabbits in Portugal and t UK.

International Institute of Parasitology: Collaborative research Mountain Gorilla parasites.

John Radcliffe Hospital, Oxford (Nuffield Department of Clini Medicine): Advice on housing and management of venomo snakes.

Joint Nature Conservation Committee: Health assessment of Re Kites for reintroduction.

Kenya Wildlife Service:Assistance with funding and organizati of conservation programmes for Black Rhinoceros and Afric Elephant; veterinary services.

King's College [KQC], London (Department of Anatomy and Huma Biology): Collaborative investigation of GnRH distribution in th hypothalamus of the Naked Mole-rat: (*Department of Phy ology*): Collaborative research on melatonin binding in th Wallaby.

Limassol Zoo, Cyprus: Advice on new exhibits.

London School of Hygiene and Tropical Medicine: Collaborative eval ation of new methods for diagnosis of disease; collaborati research on Mountain Gorilla protozoa.

Macaulay Land Use Research Institute, Edinburgh: Collaborati project on the development of seasonality and reproducti technology in Red and Père David's Deer.

MAFF Central Veterinary Laboratory, Surrey: Collaborative studi on spongiform encephalopathy in zoo Antelopes and on vir diseases of birds (including 'puffinosis').

MAFF Experimental Husbandry Farm, Hereford: Collaborati project on reproductive technology in Deer.

MAFF Fisheries Laboratory, Burnham-on-Crouch: Collaborative r search on organochlorine and heavy metal levels in cetacean Seals and Otters.

MAFF Veterinary Investigation Unit, Polwhele: Collaborative stud on pathology of cetaceans and Seals.

Marwell Zoological Trust : Assistance with the development of arti cial breeding techniques; collaboration with studbook keepe for karyotyping Okapi in British Zoos.

Meat & Livestock Commission Pig Breeding Centre: Collaborati project on sperm motility.

National Avian Research Centre, United Arab Emirates: Advice o nutrition of Bustards.

National Museums of Kenya: Collaborative research on genetics Hyenas and African Hunting Dogs.

National Wildlife Research Centre, Taif and The King Khalid Wildli Research Centre, Thumamah (Saudi Arabia): Collaborative studi on genetic management of the Arabian Oryx using DNA finge printing, and on Gazelle reproduction.

National Zoo, Washington DC/University of Oxford: Collaborative research on endocrinological aspects of behaviour in the African Wild Dog.

Natural History Museum, London: Collaborative studies on parasitic diseases of free-living and captive wild animals and on the life history and parasitology of cetaceans.

Nature Conservancy Council: Health assessment of Red Kites for reintroduction; genetic assessment of hybridization between Red Deer and Sika Deer; genetic analysis of Scottish Wild Cats; population genetics of Pine Martens.

Nature Conservation Bureau Ltd: Collaborative project on systematics and population genetics of Bustards.

Norwegian Institute for Nature Research: Collaborative project on spatial and temporal heterogeneity in performance of Red Deer.

Police and Local Authorities: Advice and assistance on identification, handling, management and capture of reptiles.

Polytechnic of East London: Collaborative study on protozoal infections of reptiles.

Queen Mary & Westfield College, London: Collaborative study on variation between species in the cell kinetics of the growth plates of limb bones.

Queen Mary & Westfield College, London and University of Leiden: Collaborative project on genetic drift in the African Satyrine Butterfly.

Regional Health Authorities: Laboratory service for testing of serum for diagnosis of *Toxocariasis*.

Rhino Ark/Overseas Development Administration: Advice and assistance with Stage II fencing of Aberdare's National Park, Kenya.

Royal Free Hospital: Collaborative evaluation of new methods for diagnosis of disease; research on comparative anatomy of the appendix.

Royal Holloway & Bedford New College, Egham: Collaborative study on mortality of the Common Dormouse.

Royal Society for Nature Conservation, Jordan: Veterinary assistance with the management of Arabian Oryx.

Royal Society for the Protection of Birds: Health assessment of Red Kites for reintroduction; investigation of Mute Swan mortality in Orkney; supplementary feeding of Kestrels to control Little Tern predation.

RSPCA Seal Assessment Centre, Docking: Collaborative study on pathology of cetaceans and Seals.

Royal Veterinary College: Collaborative study on genetic relationships of domestic Dog breeds; collaborative project on interaction of parasites, plane of nutrition and host genotype on resistance to disease; *(Field Station, Hatfield)*: Collaborative research on ultrasound monitoring of reproductive cycles.

SAC Veterinary Investigation Centre, Inverness: Collaborative study on pathology of cetaceans and Seals.

St Mary's Hospital, London: Collaborative project on retroviral infections of wild animals.

Scottish Natural Heritage: Collaborative research on spatial variation in diseases and performance of Red Deer on the Island of Rum.

Sea Mammal Research Unit, Cambridge: Collaborative studies on the life history of the Harbour Porpoise, on organochlorine and heavy metal levels in cetaceans, Seals and Otters and on gene flow in geographically structured Seal populations.

Sense & Vision Electronic Systems Ltd, Sheffield: Consultant advice on use of sperm tracker.

Shanks & McEwan (Southern) Ltd: Collaborative studies on botulism.

State Institute for Public Health and Environment, Bilthoven: Collaborative research on virus diseases in cetaceans and Seals.

State University of Utrecth: Collaborative research on virus diseases in cetaceans and Seals.

Swiss Centre of Scientific Research, Abidijan, Ivory Coast/Stirling University: Collaborative project on faecal steroid analysis in free-ranging Maxwell Duikers.

Tshabalala Wildlife Sanctuary, Department of National Parks and Wildlife Management, Zimbabwe: Development of a wildlife development plan.

Tsimbazaza Zoo, Madagascar: Advice on captive Lemur husbandry and medicine.

Turkey Ministry of the Environment: Advice on health and welfare of a Beluga Whale in the Black Sea.

Turks and Caicos Ministry of Health and 'Into the Blue' Project: Advice on translocation and rehabilitation of captive Bottle-nosed Dolphins to the wild.

University of Aberdeen: Collaborative research on *Lyme borreliosis* in Red Deer; *(Department of Zoology)*: Collaborative study on population structure of European Pipistrelles.

University of Birmingham Medical School (Department of Pathology): Collaborative research on evolutionary physiology of Tam-Horsfall protein.

University of Bradford (Department of Biomedical Sciences): Collaborative project on control of hair growth in Deer.

University of Bristol (Department of Zoology): Collaborative research on genetics of Munjacs and Red Foxes, and on population structure of European Pipistrelles.

University of California (Los Angeles): Collaborative project on systematics and population genetics of mammalian carnivores.

University of Cambridge (Department of Anatomy): Collaborative study on pineal melatonin secretion in mammals; *(Department of Genetics)*: Collaborative project on selection of allozymes in ungulate populations; *(Department of Zoology)*: Collaborative studies on individual fitness and population demography in ungulates and on genetics of Bat-eared Foxes.

University of Cape Town (Department of Zoology): Comparative endocrine studies of African Mole-rats.

University of Liverpool: Collaborative evaluation of new methods for diagnosis of disease; *(Department of Pathology)*: Collaborative study on pathology of cetaceans and Seals.

University of Manchester (Medical Information Group, Department of Computer Science): Collaborative research on representing clinical findings in epidemological information systems.

University of Munich: Collaborative study on genetics of Brown Bears.

University of Nottingham School of Agriculture (Department of Physiology & Environmental Studies): Collaborative project on trophoblast interferons.

University of Olsztyn, Poland: Collaborative research on Roe Deer in Mazuria.

University of Oxford (Department of Zoology): Collaborative research on social organization of Badgers.

University of Southampton (Department of Human Reproduction): Collaborative study of the human and Marmoset corpus luteum.

University of Rome (Department of Animal and Human Biology): Collaborative research on genetics of Gray Wolves.

University of Virginia (Department of Biology): Collaborative project on biological clocks in Hamsters.

University of Zurich (Anthropology Institute and Museum): Collaborative study on reproductive endocrinology of Goeldi's Monkeys.

Veterinary Research Laboratories, Stormont: Collaborative research on virus diseases in cetaceans and Seals.

Volcano Veterinary Centre, Morris Animal Foundation, Rwanda: Collaborative study on Mountain Gorilla parasites.

Wildlife Conservation Research Unit, Oxford: Collaborative study on conservation and biology of canids.

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

World Wide Fund for Nature (UK, International, East Africa): Advice and assistance with Kenya Black Rhino, Laikipia Elephant Projects (Kenya) and reintroduction of Sahelian species, Niger.

Zimbabwe Department of Parks and Wildlife: Assistance with staff funding (Rhino Rescue).

Government departments, Research institutes, Universities, Zoological collections and Veterinary practices involved in zoo and wildlife medicine in the UK and abroad: Veterinary advice, referrals of clinical cases and specimens for post mortem investigation.

Zoos (National and International): Monitoring reproductive status in exotic species.

Representation on Scientific Societies, Zoological, Conservation and Research Organizations

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

Agricultural and Food Research Council: Professor A P F Flint (Member, Animal Research Grants Board and Animals Studentship Panel)

AFRC Institute of Animal Physiology and Genetics Research: Professor A P F Flint (Visiting Scientist)

American Association of Zoological Parks and Aquariums: Dr J R Ginsberg (Equid Taxon Advisory Group -TAG)

Animal Welfare: Dr M A Edwards (Advisory Editor)

Anthropoid Ape Advisory Panel: Dr J H W Gipps (Convenor, Scientific Co-ordinating Committee); Dr P M Bennett; Dr G M Mace; Dr J K Kirkwood; Dr H J Shaw (Members, Scientific Co-ordinating Committee)

Association of Veterinary Anaesthetists: Mr R A Kock (Committee)

British Andrology Society: Dr W V Holt (Secretary)

British Deer Society: Dr A S I Loudon (Chairman, Scientific Advisory Committee)

British Veterinary Journal: Professor A P F Flint (Advisory Board)

British Veterinary Zoological Society: Mr A A Cunningham; Dr J K Kirkwood; Mr R A Kock (Council)

British Wildlife Rehabilitation Council: Dr J K Kirkwood (Treasurer)

Brooke Hospital for Animals, Cairo: Mr D M Jones (Chairman)

College of William and Mary, Williamsburg: Sir Cyril A Clarke (Honorary Doctor of Science)

Conservation Corporation, Phinda Project in South Africa: Mr D M Jones (Member)

Department of the Environment: Mr D M Jones; Dr J K Kirkwood; Mr R A Kock (Secretary of State's List of Inspectors under the Zoo Licensing Act 1981)

Digit Fund UK Dr B E Hastings (Trustee)

European Cetacean Society: Dr T Kuiken (Contact person for Pathology Working Group)

European Community Association of Zoos and Aquaria: Mr D M Jones (Zoological Society representative)

Fauna and Flora Preservation Society: Mr D M Jones (Chairma

Hawk and Owl Trust: Dr J K Kirkwood (Scientific Committee)

Howletts & Port Lympne Zoo Parks: Mr D M Jones (Co Member)

International Recovery & Management Committee for Golden-h Lion Tamarin: Dr G M Mace (Member)

International Union for Conservation of Nature and Natural Res (Species Survival Commission): Dr P M Bennett (Captive Bre and Reintroduction Specialist Groups); Mr A A Cunnin (Captive Breeding (Invertebrate) Specialist Group); Miss Dixon (Antelope, Parrot, Captive Breeding and Reintrodu Specialist Groups; Zoological Society representative on UK (mittee); Professor A P F Flint (Captive Breeding Group); Dr Gipps (Captive Breeding, Reintroduction and Rodent Spec Groups); Dr J R Ginsberg (Deputy Chairman, Canid Spec Group; Member, Equid and Reintroduction Specialist Gro Dr J K Kirkwood; Mr R A Kock (Veterinary Specialist Group D M Jones (Asiatic Elephant, Antelope and Captive Bre Specialist Groups); Dr A S I Loudon (Deer Specialist Group G M Mace (Captive Breeding and Reintroduction Spec Groups)

International Union of Directors of Zoological Gardens: Mr D M (Zoological Society Representative)

Jersey Wildlife Preservation Trust: Dr G M Mace (Scientific Adv Committee)

Joint Management of Species Group in the British Isles: Dr Bennett (Executive Secretary)

Joint RSPCA/UFAW/FRAME/BVA Workshops on Reinfement A W Sainsbury (Housing of Rabbits Group)

Joint (UK) Elephant Management Group: Ms C A Niemuller-B (Member)

Journal of Animal Ecology: Dr S D Albon (Editor)

Journal of Clinical Laboratory Analysis: Dr A Voller (Editorial Bo

Journal of Clinical Pathology: Dr A Voller (Editorial Board)

Journal of Comparative Pathology: Dr G R Smith (Chairman, Ed ial Board)

Journal of General Microbiology: Dr A Voller (Editorial Board)

Journal of General Virology: Dr A Voller (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 Physiology and Pharmacology, Krakow: Professor A Flint (Editorial Board)

Journal of Reproduction and Fertility: Professor A P F Flint (Edit Board); Dr H D M Moore (Council of Management)

Journal of Virological Methods: Dr A Voller (Editorial Board)

Linnean Society of London: Dr M A Edwards (Editorial and P gramme Committees)

Mammal Society: Dr J H W Gipps (Council Member)

Marine Mammal Research Steering Group: Dr T Kuiken (Membe

Marwell Zoological Trust: Mr D M Jones (Trustee); Dr G M M (Member, Scientific and Animal Management Committee)

Medical Research Council: Professor G H du Boulay (Member, Board)

Medicina: Dr A Voller (Editorial Board)

National Federation of Zoological Gardens of Great Britain and Irel Dr P M Bennett (Secretary, Conservation and Animal Mana ment Committee; Chairman, Parrot Working Group; Mem Invertebrate Working Group); Miss A M Dixon; Mr R A K (Conservation and Animal Management Committee); Dr G Mace (Joint Management of Species Committee)

Molecular and Cellular Endocrinology: Professor A P F Flint (Editorial Board)
National Hospital for Nervous Diseases, London: Professor G H Du Boulay (Honorary Consultant; Trustee, Queen Square Development Foundation)
National Trust: Mr R Coates (Whipsnade Advisory Committee)
Neuroradiology: Professor G H du Boulay (Editor-in-Chief)
Norwegian Institute for Nature Research: Dr S D Albon (Scientific Adviser)
Oxford Reviews of Reproductive Biology: Professor A P F Flint (Editorial Board)
Primate Society of Great Britain: Dr P M Bennett (Conservation Working Party); Dr J K Kirkwood (Council); Dr G M Mace (Captive Care Working Party); Mr A W Sainsbury (Council; Captive Care Working Party)
Programme for Appropriate Technology in Health (PATH): Dr A Voller (Technical Advisory Group)
Radiological Research Trust: Professor G H Du Boulay (Director)
Reproductive Research Information Services: Dr A S I Loudon; Dr H J Shaw (Management Board)
Royal Entomological Society of London: Sir Cyril A Clarke (President)
Royal (Dick) School of Veterinary Studies, Edinburgh: Dr G R Smith (External Examiner in Veterinary Microbiology)
Society for the Study of Fertility: Dr H D M Moore (Committee)
Tropenmedizin und Parasitologie: Dr A Voller (Editorial Board)
Trust for Research and Education in the Biology of Reproduction: Professor A P F Flint (Chairman)
University of Bristol: Dr J K Kirkwood (Visiting Lecturer, Departments of Animal Husbandry and Medicine)
University of Kent: Dr G M Mace (External examiner in Conservation Biology)
University of London: Dr C M Argo; Dr A S I Loudon; Dr H J Shaw (Course Lecturers, Department of Biology, University College); Professor G H Du Boulay (Emeritus Professor of Radiology, National Hospital for Nervous Diseases); Dr B R Brinklow (Honorary Lecturer, Department of Physiology, King's College; Course Lecturer, Department of Biology, University College; Visiting Lecturer, Department of Biomedical Science, Polytechnic of Central London); Mr A A Cunningham (Visiting Lecturer, Department of Pathology and Parasitology, Royal Veterinary College); Dr C G Faulkes (Visiting Lecturer, Department of Physiology, King's College [KQC]; Course Lecturer, Department of Biology, University College); Professor A P F Flint (Member, Academic Advisory Board in Biology; Member, Board of Studies in Biology; Visiting Professor in Biology, University College; Visiting Professor, Biosphere Sciences Division, King's College [KQC]); Dr W V Holt (Honorary Lecturer in Physiology, King's College [KQC]); Mr D M Jones (Member, Board of Studies in Biology); Dr J K Kirkwood (Member, Board of Studies, Royal Veterinary College); Dr G M Mace; Dr H F Stanley (Course Lecturers, Intercollegiate Lecture Courses); Dr H D M Moore (Honorary Research Fellow, Department of Biology; Visiting Lecturer, Department of Zoology, University London); Dr A Voller (Reader in Immunology of Parasitic Diseases, London School of Hygiene and Tropical Medicine; Council Member, London School of Hygiene and Tropical Medicine); Dr G E Webley (Honorary Lecturer in Physiology, King's College [KQC]; Course Lecturer, Royal Veterinary College and Department of Biology, University College)
University of Manchester: Dr P M Bennett (Honorary Research Fellow, Department of Computer Science)
University of Nottingham School of Agriculture: Professor A P F Flint (Special Professor of Molecular Biology)
Vaccine: Dr A Voller (Editorial Board)
Veterinary Deer Society: Mr R A Kock (Editorial Committee)
Veterinary Invertebrate Society: Mr A A Cunningham (Secretary)
Veterinary Research Club: Dr G R Smith (President)
Volcano Veterinary Association Advisory Committee: Dr B E Hastings (Scientific Committee)
Wildlife Link: Miss A M Dixon (Member; Zoological Society representative)
Wisconsin Regional Primate Research Center, University of Wisconsin, USA: Dr G E Webley (International Affiliate Scientist)
World Association of Wildlife Veterinarians: Mr A W Sainsbury (Secretary)
World Health Organization: Dr A Voller (Member, Expert Advisory Panel on Parasitology; Member, WHO/IUIS Sub-committee on Standardization of Reagents for Enzyme Immunoassays)
World List of Scientific Periodicals: Mr R A Fish (Council Member)
The World Parrot Trust: Dr P M Bennett (Board of Management)
World Pheasant Association: Dr P M Bennett; Dr G M Mace (Scientific Advisory Committee)
World Society for the Protection of Animals: Mr A W Sainsbury (Scientific Advisory Panel)
World Wide Fund for Nature: Dr R A Brett (Project Executive, Rhinoceros Conservation Programme, Kenya); Mr D M Jones (Chairman, Conservation Review Group, UK)

AMENDMENTS TO THE REGULATIONS

The following amended Regulations, effective from 1 January 1992, were made by Council pursuant to the power granted in Article 8 of the Charter:

ENTRANCE FEES AND SUBSCRIPTIONS

7 £10 out of the annual subscription of £40 shall be remitted in the case of Ordinary Fellows resident within the British Isles but outside a radius of 50 miles from Charing Cross.

8 £20 out of the annual subscription of £60 shall be remitted in the case of a Scientific Fellow who does not wish to receive the *Journal of Zoology*.

9 £5 out of the annual subscription of £30 shall be remitted in the case of Associates resident within the British Isles but outside a radius of 50 miles from Charing Cross, save for those Associates who qualify for student remission under Regulation 6 (vi) for whom the annual subscription shall be half the full rate.

12 Overseas List

(i) An Ordinary Fellow who is resident outside the British Isles at the time of his election shall be registered on the Overseas List, in which case £25 out of the annual subscription of £40 shall be remitted.

(ii) An Ordinary Fellow who takes up residence outside the British Isles after election or intends at any time to reside outside the British Isles for a period of more than twelve months shall be transferred to the Overseas List. During his residence abroad, £25 out of the annual subscription of £40 shall be remitted, except in respect of the year in which he leaves the British Isles.

(iii) A Scientific Fellow who is resident outside the British Isles at the time of his election shall be registered on the Overseas List. If he does not wish to receive the *Journal of Zoology*, £45 out of the annual subscription of £60 shall be remitted.

(iv) A Scientific Fellow who takes up residence outside the British Isles after election or intends at any time to reside outside the British Isles for a period of more than twelve months shall be transferred to the Overseas List. If he does not wish to receive the *Journal of Zoology* during his residence abroad, £45 out of the annual subscription of £60 shall be remitted, except in respect of the year in which he leaves the British Isles.

(v) An Associate who is resident outside the British Isles at the time of his election shall be registered on the Overseas List, in which case £15 out of the annual subscription of £30 shall be remitted.

(vi) An Associate who takes up residence outside the British Isles after election or intends at any time to reside outside the British Isles for a period of more than twelve months shall be transferred to the Overseas List. During his residence abroad £15 out of the annual subscription of £30 shall be remitted except in respect of the year in which he leaves the British Isles.

13 Life Fellows

The following life composition fees shall be payable by any Fellow who wishes to compound his future subscriptions:

Age group	18–29	30–39	40–49	50–59	60 years and over
	£940	£860	£755	£625	£320

provided that any Fellow who has reached the age of sixty-five and has at least twenty-five years membership may compound his future subscriptions by making a single payment of £60 subject, if he is a Scientific Fellow, to relinquishing the privilege of receiving the *Journal of Zoology* without charge.

Any Fellow on the Overseas List may compound his future subscriptions by a single payment bearing the same proportion to the full composition fee for his age group as his annual subscription bears to the full annual subscription, provided that the balance of the full composition fee for his age group shall be payable if and when he becomes resident in the British Isles.

Life Associates

The following life composition fees shall be payable by any Associate who wishes to compound his future subscriptions:

Age group	18–29	30–39	40–49	50–59	60 years and over
	£780	£715	£630	£520	£270

FINANCE

The Society's deficit for the year is £2.03 million compared with the deficit for the previous year of £2.08 million.

Transactions relating to particular funds, which are described in note 1(e) on pages 62 and 63, are transferred from or to the appropriate fund, leaving a deficit on the General Fund only, of £0.34 million. The General Fund balance brought forward at 31 March 1991 of £0.96 million has decreased to £0.62 million.

The total number of visitors to both zoos is down by 7.5% over the corresponding financial year. Expressed on a calendar year basis, 6% fewer visitors came to both zoos in 1991 (an increase at Whipsnade of 5%, a decrease at London of 10%) as compared with 1990.

The Society wishes to express its thanks to all those who contributed to the Society and its two zoos, by way of grants for purchasing fixed assets, numerous research funding grants and individual legacies and donations.

The income and expenditure of London Zoo and Whipsnade Wild Animal Park are accounted for in the Society's wholly owned subsidiary company Zoo Operations Ltd (ZOL). The Financial Statements show the consolidated results of all the Society's activities, including those of ZOL. Following the Financial Statements are shown the audited accounts of ZOL.

FINANCIAL STATEMENTS

Consolidated Revenue Account for the year ended 31st March 1992

	Note	Year ended 31st March 1992 £'000s	Year ended 31st March 1991 £'000s
Income	2	12,634	12,338
Expenditure	2	16,618	16,922
Operating deficit for the year	3	(3,984)	(4,584)
Income from investments	5	82	24
Interest receivable	6	406	1,099
		488	1,123
		(3,496)	(3,461)
Government Grant	7	1,463	1,383
Deficit for the year		(2,033)	(2,078)
Exceptional items			
Grants for purchasing fixed assets		342	518
Surplus/(deficit) on sale of assets		70	(9)
Restructuring costs		(839)	—
		(2,460)	(1,569)
Extraordinary item			
Curtailment costs	8	(1,254)	—
Excess of expenditure over income		(3,714)	(1,569)
Appropriations from/(to) specific funds			
From Endowment Fund	16	3,263	2,238
From/(to) Development Fund	17	19	(651)
From/(to) Other Designated Funds	18	(10)	57
From Building and Equipment Fund	19	99	376
		(343)	451
General Fund balance brought forward		959	508
General Fund balance carried forward		616	959

The notes on pages 62 to 74 form part of these financial statements.

Consolidated Balance Sheet as at 31st March 1992

	Note	£'000s	1992 £'000s
Fixed assets			
Tangible assets	9		2,487
Investments	10		1,003
			3,490
Current assets			
Stocks	11	546	
Debtors	12	920	
Cash at bank and in hand		1,596	
		3,062	
Creditors: amounts falling due within one year	13	(2,595)	
Net current assets			467
Total assets less current liabilities			3,957
Creditors: amounts falling due after more than one year	14		(12)
			3,945
Funds	15		
Endowment	16		1,132
Development	17		701
Other designated	18		1,105
Building and Equipment	19		391
General			616
			3,945

Approved by Council on 13th July, 1992
PETER HOLWELL
Treasurer
SIR JOHN CHAPPLE
President

The notes on pages 62 to 74 form part of these financial statements.

Consolidated Cash Flow Statement
for the year ended 31st March 1992

	Note	£'000s	1992 £'000s	1991 £'000s
Net cash outflow from operating activities	24		(3,400)	(1,833)
Returns on investment and servicing of finance				
Interest received		406		1,099
Investment income		82		24
Interest element of finance leases		(7)		(7)
Bank interest paid		(1)		(1)
Net cash inflow from returns on investments and servicing of finance			480	1,115
Investing activities				
Purchase of fixed assets		(600)		(3,193)
Disposal of fixed assets		7		—
Purchase of investments		(71)		—
Sale of investments		63		51
Net cash outflow from investing activities			(601)	(3,142)
Net cash outflow before financing			(3,521)	(3,860)
Financing				
Capital element of finance leases		(14)		(15)
Net cash outflow from financing			(14)	(15)
Decrease in cash and cash equivalents	25		(3,535)	(3,875)

The notes on pages 62 to 74 form part of these financial statements.

Report of the Auditors
TO THE COUNCIL OF THE ZOOLOGICAL SOCIETY OF LONDON

We have audited the financial statements on pages 59 to 74 in accordance with Auditing Standards.

The financial statements have been prepared on a going concern basis. The Society has suffered a deficit of £2,033,000 in the year e 31st March, 1992, and continues to incur operational deficits. In view of such persistent operational deficits and the level of fina resources available to the Society, the level of operations is being curtailed significantly. A provision of £1,254,000 has been made f estimated costs of curtailment of part of the Regent's Park area. At this time it is not possible to determine with reasonable certain ultimate costs of this curtailment. The appropriateness of the going concern basis is dependent upon the avoidance of further signif liabilities arising on the curtailment and the commencement of profitable operations subsequently.

Should the going concern basis prove to be inappropriate, adjustments would have to be made to reduce the value of the assets to recoverable amount, to provide for any further liabilities that might arise, and to reclassify fixed assets and long term liabilities as cu assets and liabilities.

As explained in Note 22, the Society has a significant potential liability for repairing obligations in connection with the Regent's Park l The Society is in negotiation with the Department of the Environment concerning this matter. At this time it is not possible to determi ultimate outcome, and hence the cost, if any, which should be provided.

Subject to the above, and the adjustments which might be necessary if the outcome of the uncertainties referred to above had been kn in our opinion the financial statements give a true and fair view of the state of affairs at 31st March 1992 and of the excess of expend over income and cash flows of the Society for the year ended on that date.

ERNST & YOUNG *Chartered Accountants/Registered Auditor*
London
13th July, 1992

Notes to the Financial Statements

1. ACCOUNTING POLICIES

(a) *Accounting Convention*
The financial statements are prepared under the historical cost convention and in accordance with applicable accounting stand

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

(c) *Basis of Financial Statements*
The financial statements have been prepared on a going concern basis. Subsequent to the year end, the Council has decided tha existing levels of operations can no longer be sustained and intends to liquidate or curtail significantly some of its present activitie that end, Council announced on 17th June, 1992 that London Zoo would close at the end of September 1992.

(d) *Consolidation*
The financial statements consolidate the results and the assets and liabilities of Zoo Operations Limited, a wholly owned subsi which manages the activities of the Zoological Gardens at London Zoo and Whipsnade Wild Animal Park; activities formerly ca out by the Society itself, and the assets and liabilities of Whipsnade Wild Animal Park Limited, a wholly owned subsidiary which is dormant and which owned and managed the Steam Railway at Whipsnade Wild Animal Park.

(e) *Form of Accounts*
The Society maintains a number of internal funds earmarked by the Society itself for specific purposes. These designated funds a
(i) Endowment Fund: This fund was created from a grant received from the Department of the Environment. The capital and inc are available to help pay for the upkeep, improvement and management of the Zoological Gardens at London Zoo and Whips Wild Animal Park.
(ii) Development Fund: This fund relates to expenditure incurred on new buildings, the restoration of existing buildings and cha to the infrastructure of the Society's properties carried out to improve the facilities available to the animals and to the membe the public. It is financed from donations and grants received from the public which in certain circumstances have been matche grants from the Government.
(iii) Other designated funds: These have been given or bequeathed to the Society to be used in accordance with resolutions passe the Council of the Society. Both the capital and the income may be spent. Until they are spent, the funds are invested in st shares and deposits.

(iv) Building and Equipment Fund: The fund comprises grants received and appropriations from the General Fund which are wholly invested in tangible assets and which are released back to revenue over the expected useful life of the relevant asset by equal annual amounts.

(v) General Fund: The General Fund is the free fund of the Society. It has to provide for the maintenance, improvement and management of the Institute of Zoology, Publications, Library and membership administration as well as for the Society's requirement for working capital.

(f) *Restricted Funds*

Restricted funds of the Society which have conditions attached to their use are not included in the balance sheet. Details of these are set out in Note 20.

(g) *Grants*

Government grants received of a revenue nature are credited to the General Fund in the year in which they are received. Grants received of a capital nature are credited to the Revenue Account and then appropriated to the appropriate designated fund and are released to revenue over the expected useful life of the relevant assets by equal annual amounts.

(h) *Fixed Assets and Depreciation*

Fixed assets acquired by purchase or gift during the year are shown at cost or valuation depreciated on a straight line basis at rates appropriate to write off the cost over their expected useful lives. Freehold and leasehold buildings are depreciated over a range of 1 to 30 years; plant and equipment 5 to 15 years and motor vehicles 5 years.

(i) *Investments and Investment Income*

Listed investments are included in the balance sheet at cost less diminution for permanent decline in value. Dividends and interest are accounted for when the cash is received. The amount shown includes the related tax credits which, because of the Society's charitable status, are recoverable. Interest on bank deposits is accounted for on an accruals basis.

(j) *Stocks*

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

(k) *Pension Costs*

The cost of providing pension benefits is charged to the revenue account over the period benefiting from employees' services.

(l) *Leasing Commitments*

Assets obtained under finance leases are capitalised in the balance sheet and are depreciated over their useful lives. The interest element of the rental obligations is charged to the revenue account over the period of the lease and represents a constant proportion of the balance of capital repayments outstanding.

2. DETAILED CONSOLIDATED REVENUE ACCOUNT FOR THE YEAR ENDED 31st MARCH 1992

	Note	Income £'000s	Expenditure £'000s	1992 Surplus/ (Deficit) £'000s
Zoological Gardens				
London Zoo	2(a)	8,125	9,340	(1,215)
Whipsnade Park	2(a)	3,183	4,056	(873)
Scientific				
Institute of Zoology	2(b)	938	2,605	(1,667)
Publications	2(c)	321	348	(27)
Library	2(d)	1	94	(93)
Learned Society	2(e)	143	140	3
Less:				
Scientific Fund transfer to Institute of Zoology		(77)	—	(77)
Investment charges		—	35	(35)
Totals of Income and Expenditure		12,634	16,618	
Operating deficit for the year				(3,984)

2 (a) Zoological Gardens

	Note	London Zoo 1992 £'000s	London Zoo 1991 £'000s	Whipsnade Park 1992 £'000s	Whipsnade Park 1991 £'000s
Income					
Admission of visitors		3,714	3,863	1,558	1,351
Educational visits		153	107	53	41
Admission of cars to Park		—	—	191	191
Car Parking at Zoo		170	179	—	—
Catering and Shops	2(f)	3,802	3,788	1,170	1,119
Lifewatch scheme		104	101	73	57
Consultancy		18	15	—	—
Other		164	59	138	103
		8,125	8,112	3,183	2,862
Expenditure					
Cost of goods sold		1,444	1,647	493	464
Staff costs		4,042	4,289	1,652	1,544
Provisions		255	343	228	201
Less:					
Income from animal adoption scheme		(88)	(163)	(22)	(21)
Works		139	154	191	132
Gardening and Grounds		25	34	8	7
Utilities and other overheads		1,866	2,075	652	545
Publicity and advertising		726	835	572	656
Backlog maintenance		147	142	5	57
Administration		518	511	181	184
Depreciation		64	40	84	52
		9,138	9,907	4,044	3,821
(Deficit) in Subsidiary company		(1,013)	(1,795)	(861)	(959)
Overheads		153	—	—	3
Depreciation		669	886	235	206
Release from Endowment Fund		(234)	(108)	(93)	(60)
Release from Development Fund		(338)	(626)	(106)	(112)
Release from Building & Equipment Fund		(48)	(50)	(24)	(26)
(Deficit) in Society		(202)	(102)	(12)	(11)
Operating (Deficit)		(1,215)	(1,897)	(873)	(970)

(b) Institute of Zoology

	Veterinary Science	Wellcome Laboratories	Nuffield Laboratories	1992 Total
	£'000s	£'000s	£'000s	£'000s
Income				
Fees	37	—	5	42
Transfer from Scientific Fund (Note 18)	—	—	77	77
Grants				
Specific projects	72	266	481	819
	109	266	563	938
Expenditure				
Staff costs	325	411	845	1,581
Overheads	94	150	558	802
Administration	20	31	115	166
Depreciation	4	25	29	58
Release from Building & Equipment Fund	—	(1)	(1)	(2)
	443	616	1,546	2,605
Operating (Deficit)	(334)	(350)	(983)	(1,667)
Government Grant	306	298	859	1,463
(Deficit)	(28)	(52)	(124)	(204)

(c) Publications

	Journal of Zoology, Symposia	International Zoo Yearbook	Zoological Record and Nomenclator	1992 Total
	£'000s	£'000s	£'000s	£'000s
Income				
Sales	247	73	1	321
Expenditure				
Staff costs	90	52	27	169
Overheads	13	4	—	17
Printing	125	20	—	145
Administration	13	4	—	17
	241	80	27	348
Operating Surplus/(Deficit)	6	(7)	(26)	(27)

International Zoo Yearbook: Fixed costs are written off in the year in which they are incurred. Paper and printing costs are charged in the year in which each volume is published. One volume was published in 1991/92 (1990/91 – two volumes published).

(d) Library

	1992 £'000s	1991 £'000s
Income	1	2
Expenditure		
Staff costs	67	70
Overheads	19	37
Administration	8	9
	94	116
Operating (Deficit)	(93)	(114)

(e) Learned Society

Income		
Members subscriptions and fees	108	103
Donations	31	149
Symposium	4	—
	143	252
Expenditure		
Staff costs	44	44
Symposium costs	12	—
Overheads	103	177
Investment charges transferred to Scientific Fund	(29)	5
Administration	10	10
	140	236
Operating Surplus	3	16

In prior years, investment charges relating to the Scientific Fund investments were charged to the Learned Society. From 1991/92 they have been charged to the Scientific Fund. The transfer of £29,327 to the Scientific Fund is in respect of prior years charges.

(f) Catering and Shops

The turnover and net contribution to the Society from Catering and Shops were as follows:

	London Zoo	Whipsnade Park	1992 Total	London Zoo	Whipsnade Park	1991 Total
	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s
TURNOVER						
Catering	2,337	667	3,004	2,412	655	3,067
Shops	1,465	503	1,968	1,376	464	1,840
	3,802	1,170	4,972	3,788	1,119	4,907
CONTRIBUTION TO SOCIETY						
Catering	169	148	317	175	196	371
Shops	475	153	628	332	135	467
	644	301	945	507	331	838

3. OPERATING DEFICIT FOR THE YEAR

	1992 £'000s
Operating deficit is stated after charging the following items:	-
Auditors remuneration	44
Depreciation of fixed assets	1,142
Release of Grants for purchasing fixed assets	(846)
Consultancy fees	34
Bank Interest payable	1
Finance charges on leased assets	7

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

4. STAFF COSTS

Salaries and wages	6,188
Social security costs	574
Other pension costs	445
	7,207

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

	Full Time	Part Time
Zoological Gardens – London Zoo	156	50
– Whipsnade Park	85	23
Institute of Zoology	75	—
Publications	8	—
Library	3	—
Learned Society	1	—
Administration	27	2
	355	75

5. INCOME FROM INVESTMENTS

	1992 £'000s
Listed investments	82
Permanent diminution in value of investment	—
	82

6. INTEREST RECEIVABLE

Bank deposits	406

7. GOVERNMENT GRANT

Revenue grant was received as follows:

For Institute of Zoology	1,463

8. CURTAILMENT COSTS

	1992 £'000s	1991 £'000s
A provision has been made for the estimated costs that would arise on the closure of London Zoo. The amount includes provision for statutory redundancy payments, and liabilities for the early termination of contracts.	1,110	—
Provision for permanent diminution in value of fixed assets at London Zoo	3,897	—
Release of Grants for purchasing fixed assets	(3,753)	—
	1,254	—

9. TANGIBLE FIXED ASSETS

	Freehold land and buildings	Short leasehold buildings	Plant and equipment	Motor vehicles	Leased plant	Total
	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s
Cost						
At 31st March 1991	2,093	4,940	2,062	404	91	9,590
Purchased during the year	202	330	99	5	—	636
Disposals	(36)	—	(2)	(22)	—	(60)
At 31st March 1992	2,259	5,270	2,159	387	91	10,166
Depreciation						
At 31st March 1991	377	1,218	768	275	26	2,664
Charge for the year	217	541	321	53	10	1,142
Permanent diminution in value	—	3,480	417	—	—	3,897
Disposals	(3)	—	(1)	(20)	—	(24)
At 31st March 1992	591	5,239	1,505	308	36	7,679
Net book value						
At 31st March 1992	1,668	31	654	79	55	2,487
At 31st March 1991	1,716	3,722	1,294	129	65	6,926

Included in additions during the year is £495,503 (1990/91 – £1,053,574) incurred by the Endowment Fund and £36,839 (1990/91 – £1,753,502) incurred by the Development Fund.

10. INVESTMENTS

	1992 £'000s	1991 £'000s
Investments at cost, less provision		
Quoted investments	1,003	932
Market valuation at 31st March 1992	1,203	1,261
These investments are attributed to:		
Scientific Fund	1,180	1,237
Fantham Bequest	23	24
	1,203	1,261

11. STOCKS

	1992 £'000s
Raw materials and consumables	128
Finished goods and goods for resale	418
	546

12. DEBTORS

Trade	213
VAT	—
Other debtors	596
Prepayments and accrued income	111
	920

13. CREDITORS: amounts falling due within one year

Trade	393
VAT	3
PAYE and National Insurance contributions	152
Other creditors	405
Accruals and deferred income	532
Curtailment Costs (see Note 8)	1,110
	2,595

14. CREDITORS: amounts falling due after more than one year

Finance lease obligations	12

15. FUNDS

The Society has designated five main funds in order to present more clearly the substantial inflows of funds received for cap development purposes and from the Government.

16. ENDOWMENT FUND	1992 £'000s	1991 £'000s
Balance at 31st March 1991	5,592	7,998
Release of Grants for purchasing fixed assets	(327)	(168)
Release of Grants for permanent diminution in value of fixed assets at London Zoo	(870)	—
Grants for purchasing fixed assets	317	200
Interest receivable	154	681
Deficit on Zoo Operations Ltd	(1,784)	(2,996)
Transfer to Development Fund	(1)	—
Transfer to General Fund	—	(123)
Restructuring Costs	(839)	—
Curtailment Costs (see Note 8)	(1,110)	—
Being appropriation (to) Revenue Account	(3,263)	(2,238)
Balance at 31st March 1992	1,132	5,592

17. DEVELOPMENT FUND		
Balance at 31st March 1991	3,618	3,705
Release of Grants for purchasing fixed assets	(445)	(738)
Release of Grants for permanent diminution in value of fixed assets at London Zoo	(2,453)	—
Grants for purchasing fixed assets	25	317
Interest receivable	—	76
Transfer from Endowment Fund	1	—
Transfer to General Fund	(35)	(118)
Transfer (to)/from Building & Equipment Fund	(10)	376
Being appropriation from/(to) Revenue Account	(19)	651
Balance at 31st March 1992	701	3,618

18. OTHER DESIGNATED FUNDS

	Fantham Bequest	Scientific Fund	Composition Fund	Staff Benevolent Fund	Lord Zuckerman Bursary Fund	To
	£'000s	£'000s	£'000s	£'000s	£'000s	£'0
Balance at 31st March 1991	13	1,032	35	3	12	1,0
Investment income	1	56	—	—	1	
Surplus on sale of investments	—	64	—	—	—	
Transfer to Institute of Zoology (Note 2(b))	—	(77)	—	—	—	(7
Investment charges (Note 2(e))	—	(35)	—	—	—	(3
Being appropriation from Revenue Account	1	8	—	—	1	
Balance at 31st March 1992	14	1,040	35	3	13	1,1

The Investment Charges include £29,327 in respect of prior years charges previously a charge on the General Fund.

19. BUILDING AND EQUIPMENT FUND

	1992	19
	£'000s	£'0
Balance at 31st March 1991	994	1,4
Release of Grants for purchasing fixed assets	(74)	(7
Release of Grants for permanent diminution in value of fixed assets at London Zoo	(430)	-
Transfer from Development Fund	10	(3
Transfer to General Fund	(109)	-
Being appropriation (to) Revenue Account	(99)	(3
Balance at 31st March 1992	391	9

20. RESTRICTED FUNDS

(a) De Arroyave Fund

The capital of the fund is held by the Official Custodian for Charities. The net income was £23,856.

(b) Davis Fund

The capital of the fund is held in trust by the Society but is not included on the balance sheet. The income from the fund was £1

21. PENSION SCHEMES

The Society participates in several Pension Schemes and employees join the appropriate scheme, depending on their employme terms. The total pension cost of the Society was £444,567 (1990/91 £401,658).

(a) Universities Superannuation Scheme: This is a defined benefit scheme which is externally funded and contracted out of the St Earnings-Related Pension Scheme. The Fund is valued every three years by a professionally qualified independent actuary usi the projected unit credit method, the rates of contribution payable being determined by the trustee on the advice of the actuary. I the intervening years, the actuary reviews the progress of the Scheme. Pension costs are assessed in accordance with the advice the actuary, based on the latest actuarial valuation of the Scheme, and are accounted for on the basis of charging the cost providing pensions over the period during which the Society benefits from the employees' services. Unless it is considered prude to recognise deficiencies over a shorter period, variations from regular cost are spread over the expected average remainin working lifetime of Members of the Scheme after making suitable allowances for future withdrawals.

The Scheme provides benefits based on final pensionable salary for employees of all UK universities and some other employers suc as the Society. The assets of the Scheme are held in a separate trustee-administered fund.

The latest actuarial valuation of the Scheme was at 31st March 1990. The main actuarial assumptions were an investment return of 8½% per annum, salary scale increases of 6½% per annum and that pensions would increase by 5% per annum.

At the date of the last actuarial valuation, the market value of the assets of the Scheme was £5,474 million and the actuarial value of the assets was sufficient to cover 90% of the benefits which had accrued to Members after allowing for the effect of future increases in their earnings. The level of contributions paid by the Society takes into account this actuarial deficiency.

(b) The Zoological Society Pension Fund and the Zoological Society 1988 Pension Scheme (together 'the Fund'): the Society's own self-administered occupational pension Fund is a non-contributory defined benefit scheme which is externally funded and is not contracted out of the State Earnings-Related Pension Scheme. The Fund is valued every three years by a professionally qualified independent actuary using the attained age method. The Actuary confirms annually, based on a detailed knowledge of the affairs of the Fund, that the conclusions reached at the last valuation date have not substantially altered. Payments made to the Fund and charged in these financial statements are based upon actuarial advice. The assets of the Fund are held in separate trustee-administered funds.

The latest actuarial valuation of the Fund was at 30th June 1990. The main actuarial assumptions are an investment return of 9% per annum, salary increases would average 7% per annum and that pensions would increase by 4.5% per annum.

At the date of the latest actuarial valuation the market value of the assets was £7.3 million and the actuarial value of the assets exceeded the benefits that had accrued to members by 26%, after allowing for the effect of future increases in their earnings. Improvements to benefits have been made which have the effect of reducing the over-provision to a level acceptable to the Inland Revenue.

In recent years, the Society has formed subsidiary companies to carry out its trading functions. Under the terms of the Trust Deed of the Zoological Society Pension Fund, they cannot participate as employers. To overcome this the Zoological Society 1988 Pension Scheme was established from 2nd October 1988 after which all eligible new staff have joined this scheme. The terms, conditions, scale of contributions, and benefits are identical to those of the Zoological Society Pension Fund. Council is of the opinion that the funding requirements of this new scheme are similar to those of the earlier scheme. On 29th June 1992 the Zoological Society Pension Fund was wound up and, with the sanction of the Inland Revenue, the assets and liabilities were transferred to the Managing Trustees of the Zoological Society 1988 Pension Scheme.

In the opinion of Council, on the recent advice of their actuaries, the present level of funding is adequate.

At the present time the impact of the curtailment of part of the Regent's Park area on the Zoological Society 1988 Pension Scheme has not been determined.

(c) Department of Education and Science: The Society contributes for one person to a pension scheme administered through the Department of Education and Science, for teachers employed by the Society during their period of service.

22. CAPITAL COMMITMENTS AND CONTINGENT LIABILITIES

	1992 £'000s	1991 £'000s
Expenditure contracted	—	217
Authorised but not yet contracted	—	29

No provisions have been made for the significant potential liability estimated at £15 million for repairing obligations in connection with the Regent's Park lease. The Council has been informed that no obligation will pertain over certain buildings where operations are curtailed, and for which the lease is not renewed. Discussions continue with the Department of the Environment concerning the remaining potential obligations which are estimated at £2.5 million.

23. FINANCE LEASE OBLIGATIONS

Net amount payable:

Next year	12	15
In the second to fifth years	12	26
	24	41

24. RECONCILIATION OF OPERATING LOSS TO NET CASH OUTFLOW FROM OPERATING ACTIVITIES

	1992 £'000s	
Deficit for the year after exceptional items	(2,460)	
Investment income	(82)	
Interest received	(406)	
Provision for curtailment costs	(1,110)	
Decrease in debtors	504	
Decrease in creditors	(51)	
(Increase)/decrease in stocks	(29)	
Interest element of finance leases	7	
Bank interest paid	1	
(Surplus)/deficit on sale of assets	(70)	
Depreciation	1,142	
Release of Grants for purchasing fixed assets	(846)	
Net cash outflow from operating activities	(3,400)	

25. ANALYSIS OF CHANGES IN CASH AND CASH EQUIVALENTS DURING THE YEAR

Balance at 1st April	5,131	
Net cash outflow	(3,535)	
Balance at 31st March (See note 26)	1,596	

26. ANALYSIS OF THE BALANCE OF CASH AND CASH EQUIVALENTS AS SHOWN IN THE BALANCE SHEET

	1992 £'000s	1991 £'000s	Change in year £'000
Cash at bank and in hand	1,596	5,131	
	1,596	5,131	

27. ANALYSIS OF CHANGES IN FINANCING DURING THE YEAR

	Specific Funds £'000s	Finance lease obligations £'000
Balance at 1st April 1991	11,299	
Cash outflows from financing	(333)	
Provision for curtailment costs	(5,008)	
Deficit in Zoo Operations Ltd	(1,784)	
Release of Grants for purchasing fixed assets	(846)	
Balance at 31st March 1992	3,328	

28. STATUS OF THE SOCIETY

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

ZOO OPERATIONS LIMITED

FINANCIAL STATEMENTS
for the year ended 31st March 1992

DIRECTORS' REPORT

The directors submit their report and financial statements for the year ended 31st March 1992.

Results and Review of the Business
The Company carries out the trading functions of the Zoological Society of London of which it is a wholly owned subsidiary. In particular it manages, under licence from the Society, the London Zoo and Whipsnade Wild Animal Park.

The Society announced on 17th June 1992 that London Zoo would close at the end of September 1992. The number of visitors projected to come to the Zoo in the new financial year had fallen significantly below target. With insufficient reserves to sustain further losses and in order not to jeopardise the Society's ability to continue with its other operations, this decision was taken.

Directors and their Interests
The directors of the Company at 31st March 1992 were as follows:

NON-EXECUTIVE
P Holwell (Chairman) – Appointed 6th June 1991
Sir Barry Cross
Prof A P F Flint
Mrs P Herbert
Prof P A Jewell – Appointed 29th October 1991
J M Knowles
Lord McAlpine of West Green – Resigned 10th July 1991
C J Perrin – Appointed 29th October 1991
Rt Hon Lord Peyton of Yeovil – Resigned 10th July 1991
Sir Alfred Sheppard – Resigned 15th April 1991
R J Wheater – Appointed 11th February 1992

EXECUTIVE
L D Corp
A M C Elischer – Resigned 30th April 1992
A I C Forbes
A Y Grant – Resigned 30th September 1991
Miss A Horsman – Resigned 10th April 1992
D M Jones – Resigned 30th April 1992

No director has any beneficial interest in the shares of the Company.

During the year the Company acquired insurance cover for its directors against liabilities incurred whilst acting in their capacity as officers of the Company.

Increase in share capital
During the year calls on the part paid shares were made totalling £3,850,000.

Employees
The company gives full and fair consideration to applications for employment made by disabled persons, having regard to their particular aptitudes and abilities.

The company provides its employees and their unions with information, on a regular basis, on matters of concern to them as employees.

Auditors
A resolution to re-appoint Ernst & Young as auditors will be put to the members at the Annual General Meeting.

BY ORDER OF THE BOARD

P H Denton
SECRETARY

Regent's Park
London
NW1 4RY
13th July 1992

Report of the Auditors
TO THE MEMBERS OF ZOO OPERATIONS LIMITED

We have audited the financial statements on pages 77 to 86 in accordance with Auditing Standards.

As stated in note 1(b), the financial statements have been prepared on a going concern basis on the assumption of continued finan support from the Zoological Society of London ('the Society') and in view of the curtailment of the company's operations by the decisi close London Zoo. The appropriateness of the going concern basis is dependent on the Society's ability to provide continued financial sup and the achievement of profitable operations by the remaining activities of the company.

Should the going concern basis prove to be inappropriate, adjustments would have to be made to reduce the value of the assets to t recoverable amount, to provide for any further liabilities which might arise and to reclassify fixed assets and long term liabilities as cur assets and liabilities.

Subject to the appropriateness of the going concern basis, in our opinion the financial statements give a true and fair view of the sta affairs of the company at 31st March 1992 and of the results and cash flows for the year then ended and have been properly prepare accordance with the Companies Act 1985.

ERNST & YOUNG *Chartered Accountants/Registered Auditor*
London
13th July 1992

Profit and Loss Account
for the year ended 31st March 1992

	Note	Year ended 31st March 1992 £	Year ended 31st March 1991 £
Turnover	2	11,417,852	11,416,697
Cost of activities		12,592,272	13,750,419
Net deficit on activities		(1,174,420)	(2,333,722)
Administrative expenses		(698,907)	(695,138)
Operating loss for the year	3	(1,873,327)	(3,028,860)
Interest receivable		89,648	32,618
Loss for the year		(1,783,679)	(2,996,242)
Loss brought forward		(7,483,991)	(4,487,749)
Loss carried forward		£(9,267,670)	£(7,483,991)

The notes on pages 80 to 86 form part of the financial statements.

Balance Sheet
as at 31st March 1992

	Note	£	1992 £	£
Fixed assets				
Tangible assets	5		466,258	
Investment in subsidiary	6		1	
Current assets				
Stocks	7	545,320		509,406
Debtors	8	536,038		347,881
Cash at bank and in hand		201,281		487,474
		1,282,639		1,344,761
Creditors: amounts falling due within one year	9	(1,005,135)		(3,023,688)
Net current assets (liabilities)			277,504	
Total assets less current liabilities			743,763	
Creditors: amounts falling due after more than one year	10		(761,433)	
			£(17,670)	
Capital and Reserves				
Called up share capital	11		9,250,000	
Retained Loss			(9,267,670)	
			£(17,670)	

Approved by the Board on 13th July 1992
P HOLWELL
L D CORP
} Directors

The notes on pages 80 to 86 form part of the financial statements.

Cash Flow Statement
for the year ended 31st March 1992

	Note	£	1992 £	1991 £
Net cash outflow from operating activities	17		(3,625,438)	(1,335,104)
Returns on investments and servicing of finance				
Interest received		89,648		32,618
Finance lease interest and charges		(3,297)		(3,297)
Bank interest paid		(1,355)		(856)
Net cash inflow from returns on investments and servicing of finance			84,996	28,465
Investing activities				
Disposal of Fixed Assets		2,115		—
Purchase of Fixed Assets		(251,733)		(133,172)
Net cash outflow from investing activities			(249,618)	(133,172)
Net cash outflow before financing			(3,790,060)	(1,439,811)
Financing				
Calls made on partly paid Share Capital		3,850,000		2,350,000
Repayments of borrowings		(338,000)		(192,100)
Principal repayments of finance lease obligations		(8,133)		(6,499)
Net cash inflow from financing			3,503,867	2,151,401
(Decrease)/increase in cash and cash equivalents	18		£(286,193)	£711,590

The notes on pages 80 to 86 form part of the financial statements.

Notes to the Financial Statements at 31st March 1992

1. ACCOUNTING POLICIES

(a) *Accounting convention*
The financial statements are prepared under the historical cost convention and in accordance with applicable accounting standa

(b) *Basis of Financial Statements*
The financial statements have been prepared under the going concern basis as The Zoological Society of London has indicated th will continue to provide financial support to the company and, as stated in Note 21 to the financial statements, has decided to c London Zoo.

(c) *Fixed Assets and Depreciation*
Fixed assets are shown at cost, or valuation where acquired by gift, and are depreciated on a straight line basis at rates appropria write off their cost or valuation over their expected useful lives. These rates are as follows:

Plant and equipment	5–15 years
Motor vehicles	5 years

(d) *Stocks*
Stocks are stated at the lower of cost or net realisable value. Cost is defined as the original purchase cost determined on a first in, firs basis.

(e) *Pension Costs*
The cost of providing pension benefits is charged to the profit and loss account over the period benefiting from employee's service

(f) *Leasing Commitments*
Assets obtained under finance leases are capitalised in the balance sheet and are depreciated over their useful lives. The interest ele of the rental obligations is charged to the profit and loss account over the period of the lease and represents a constant proportion o balance of capital repayments outstanding.

2. TURNOVER

(a) Turnover comprises amounts receivable from the admission of visitors, from educational visits, donations, and from services sup (stated net of value added tax)

	1992 £	
Admission of visitors	5,272,216	5,214
Educational visits	205,991	148
Admission of cars to Park	190,962	191
Car Parking at Zoo	169,815	178
Catering (see Note 2(b))	3,004,279	3,066
Shops	1,967,929	1,839
Animal adoption scheme	109,688	183
Lifewatch scheme	176,791	157
Consultancy	18,000	15
Other	302,181	420
	£11,417,852	£11,416

Income relating to the catering joint venture at the Regent's Park site has this year been disclosed gross. The 1991 comparative been restated accordingly.

(b) **Catering Concession**

Turnover – London Zoo	£2,337,413	£2,411
Contribution to Company – London Zoo	£169,152	£175

3. OPERATING LOSS FOR THE YEAR

	1992 £	1991 £
(a) Operating Loss is stated after charging the following items:		
Directors' remuneration (see Note 3(b))	312,098	214,275
Auditors' remuneration	22,000	20,000
Depreciation of fixed assets	147,861	112,556
Consultancy fees	33,697	37,631
Bank interest payable	1,355	856
Finance charges on leased assets	3,297	3,297

Costs incurred relating to the restructuring of the Company have been borne by the Zoological Society of London.

(b) Directors' remuneration		
Fees	—	—
Other emoluments (including pension contribitions and benefits in kind)	282,098	214,275
Compensation for loss of office	30,000	—
	£312,098	£214,275
Emoluments of the Chairman (excluding pension contributions) (see below)	Nil	Nil
Emoluments of the highest paid director (excluding pension contributions)	£61,715	£49,582

All the non-executive directors including the Chairman and one executive director do not receive emoluments or fees.

The emoluments of the directors fell within the following ranges:

£0–£5,000	11	15
£15,001–£20,000	Nil	Nil
£25,001–£30,000	Nil	Nil
£30,001–£35,000	1	Nil
£35,001–£40,000	Nil	Nil
£40,001–£45,000	1	1
£45,001–£50,000	Nil	3
£50,001–£55,000	1	Nil
£55,001–£60,000	1	Nil
£60,001–£65,000	1	Nil

STAFF COSTS

Salaries and wages	4,595,855	4,525,952
Social security costs	432,889	426,538
Other pension costs	277,983	242,251
	£5,306,727	£5,194,741

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

	1992 Full Time	1992 Part Time	1991 Full Time	1991 Part Time
London Zoo	156	50	196	37
Whipsnade Wild Animal Park	85	23	98	8
Administration	27	2	29	1
	268	75	323	46

Administration staff also service the Company's parent, the Zoological Society of London

5. TANGIBLE FIXED ASSETS

	Plant and Equipment	Motor Vehicles	Leased Plant	Tot
Cost	£	£	£	
At 31st March 1991	392,945	138,074	33,318	564,3
Purchased during the year	214,891	4,900	—	219,7
Transferred from Society	35,094	—	—	35,0
Disposals at cost	(2,644)	—	—	(2,6
At 31st March 1992	640,286	142,974	33,318	816,5
Depreciation				
At 31st March 1991	143,302	49,871	6,663	199,8
Charge for the year	112,605	28,593	6,663	147,8
Transferred from Society	3,152	—	—	3,1
Disposals	(529)	—	—	(5
At 31st March 1992	258,530	78,464	13,326	350,3
Net Book Value				
At 31st March 1992	£381,756	£64,510	£19,992	£466,2
At 31st March 1991	£249,643	£88,203	£26,655	£364,5

6. INVESTMENT IN SUBSIDIARY

	1992	19
	£	
Zoo Restaurants Limited (UK)	1	

Zoo Restaurants Limited is dormant. The Company has not prepared consolidated accounts because in the opinion of the direct consolidated accounts would not be materially different from those of the Company.

7. STOCKS

Equipment spares	89,436	104,6
Consumables	39,203	95,1
Food	18,367	28,6
For resale	398,314	280,8
	£545,320	£509,4

8. DEBTORS

The Zoological Society of London	174,676	
Trade debtors	213,195	139,2
Other debtors	55,052	188,9
Prepayments and accrued income	93,115	19,6
	£536,038	£347,8

9. CREDITORS

	1992	1991
	£	£
Amounts falling due within one year:		
The Zoological Society of London	—	1,353,250
Whipsnade Wild Animal Park Ltd	197,131	—
Trade creditors	393,264	939,518
Other creditors	48,622	49,240
Accruals	175,846	539,167
PAYE and National Insurance contributions	107,397	132,270
VAT	82,875	10,243
	£1,005,135	£3,023,688

10. CREDITORS

Amounts falling due after one year:		
Finance lease obligations	11,433	19,566
Loan stock (see below)	750,000	750,000
	£761,433	£769,566

The loan stock comprises zero coupon subordinated convertible unsecured loan stock dated 2014.

Created	£3,650,000	£3,650,000
Issued	£750,000	£750,000

The loan stock was issued to The Zoological Society of London, is non-transferable, and is subordinated in that it ranks after all other creditors for repayment.

The loan stock is interest free, redeemable on 31st March 2014 and convertible to ordinary shares at any time (at the holder's option) before the redemption date. The loan stock is convertible at the rate of £1 of ordinary share capital of the company for every £1 nominal stock converted.

On 22nd January 1991, £500,000 of loan stock was converted into ordinary shares of £1 each.

11. SHARE CAPITAL

Authorised		
10,750,000 ordinary shares of £1 each	£10,750,000	£10,750,000
Issued		
350,000 ordinary shares of £1 each, issued fully paid	350,000	350,000
500,000 ordinary shares of £1 each, issued fully paid	500,000	500,000
3,650,000 ordinary shares of £1 each, issued nil paid, now fully paid	3,650,000	3,650,000
5,500,000 ordinary shares of £1 each, issued nil paid, now part paid	4,750,000	900,000
10,000,000	£9,250,000	£5,400,000

On 13th December 1989, 3,650,000 ordinary shares with an aggregate nominal value of £3,650,000 were issued, nil paid. Calls were made in settlement of indebtedness of equal amounts to the Zoological Society of London of £2,200,000; £400,000; £300,000 and £750,000 on 13th March 1990; 5th June 1990; 3rd July 1990 and 22nd January 1991 respectively.

On 22nd January 1991 the company increased its authorised share capital by 5,500,000 ordinary shares of £1 each.

On 22nd January 1991 500,000 ordinary shares were issued fully paid in respect of the holder of £500,000 of loan stock.

On 22nd January 1991 5,500,000 ordinary shares with an aggregate nominal value of £5,500,000 were issued, nil paid. Calls we made in settlement of indebtedness of equal amounts to the Zoological Society of London of £900,000; £1,500,000; £500,00 £500,000 and £1,350,000 on 12th March 1991; 16th April 1991; 6th June 1991; 21st November 1991 and 11th December 19 respectively, to ensure the continuing solvency of the Company.

12. DIRECTORS' INTEREST IN CONTRACTS

Until 30th September 1991 Mr A Y Grant, Mr L D Corp and Mr A I C Forbes were interested through their 82%, 5% and 5% respecti equity interests in Grant Leisure Group Limited, in a contract to supply managerial assistance to the company.

In the terms of this contract, an amount of £85,929 (1990/91 – £199,441) is payable for the year relating to the secondment certain staff and for the services of Mr A Y Grant.

In addition, an incentive payment based upon performance of the company and sponsorship are payable and for the year th amounted to Nil (1990/91 – Nil) and £5,364 (1990/91 – £2,632) respectively.

During the course of the year, the company entered into, in the ordinary course of business, several contracts with Sir Robert McAlpi and Sons Limited; a company of which Lord McAlpine of West Green is a director and has interests. The contracts had a valu £148,154 (1990/91 – £90,175).

13. PENSION SCHEMES

The Company participates in several Pension Schemes and employees join the appropriate scheme, depending on their employme terms. The total pension cost of the Company was £277,983 (1990/91 – £242,251).

(a) Universities Superannuation Scheme: This is a defined benefit scheme which is externally funded and contracted out of the St Earnings-Related Pension Scheme. The Fund is valued every three years by a professionally qualified independent actuary us the projected unit credit method, the rates of contribution payable being determined by the trustees on the advice of the actuary. the intervening years, the actuary reviews the progress of the Scheme. Pension costs are assessed in accordance with the advice the actuary, based on the latest actuarial valuation of the Scheme, and are accounted for on the basis of charging the cost providing pensions over the period during which the Company benefits from the employees' services. Unless it is consider prudent to recognise deficiencies over a shorter period, variations from regular cost are spread over the expected avera remaining working lifetime of Members of the Scheme after making suitable allowances for future withdrawals.

The Scheme provides benefits based on final pensionable salary for employees of all UK universities and some other employers su as the Company. The assets of the Scheme are held in a separate trustee-administered fund.

The latest actuarial valuation of the Scheme was at 31st March 1990. The main actuarial assumptions were an investment retu of $8\frac{1}{2}\%$ per annum, salary scale increases of $6\frac{1}{2}\%$ per annum and that pensions would increase by 5% per annum.

At the date of the last actuarial valuation, the market value of the assets of the Scheme was £5,474 million and the actuarial val of the assets was sufficient to cover 90% of the benefits which had accrued to Members after allowing for the effect of futu increases in their earnings. The level of contributions paid by the Company takes into account this actuarial deficiency.

(b) The Zoological Society Pension Fund and the Zoological Society 1988 Pensions Scheme (together 'the Fund'): the s administered occupational pension Fund is a non-contributory defined benefit scheme which is externally funded and is n contracted out of the State Earnings-Related Pension Scheme. The Fund is valued every three years by a professionally qualifi independent actuary using the attained age method. The Actuary confirms annually, based on a detailed knowledge of the affa of the Fund, that the conclusions reached at the last valuation date have not substantially altered. Payments made to the Fund a charged in these financial statements are based upon actuarial advice. The assets of the Fund are held in separate trust administered funds.

The latest actuarial valuation of the Fund was at 30th June 1990. The main actuarial assumptions are an investment return of 9 per annum, salary increases would average 7% per annum and that pensions would increase by 4.5% per annum.

At the date of the latest actuarial valuation the market value of the assets was £7.3 million and the actuarial value of the ass exceeded the benefits that had accrued to members by 26%, after allowing for the effect of future increases in their earnin Improvements to benefits have been made which have the effect of reducing the over-provision to a level acceptable to the Inla Revenue.

In recent years, the Zoological Society of London has formed subsidiary companies to carry out its trading functions of which th Company is one. Under the terms of the Trust Deed of the Zoological Society Pension Fund, the trading companies cann participate as employers. To overcome this the Zoological Society 1988 Pension Scheme was established from 2nd October 19 after which all the Company's eligible new staff have joined this Scheme. The terms, conditions, scale of contributions, and benef are identical to those of the Zoological Society Pension Fund. The Directors are of the opinion that the funding requirements of th new scheme are similar to those of the earlier scheme. On 29th June 1992 the Zoological Society Pension Fund was wound up an with the sanction of the Inland Revenue, the assets and liabilities were transferred to the Managing Trustees of the Zoologic Society 1988 Pension Scheme.

In the opinion of the directors, on the recent advice of their actuaries, the present level of funding is adequate.

At the present time the impact of the curtailment of part of the Regent's Park area on the Zoological Society 1988 Pension Scheme has not been determined.

(c) Department of Education and Science:The Company contributes for one person to a pension scheme administered through the Department of Education and Science, for teachers employed by the Company during their period of service.

14. CONTINGENT LIABILITIES

There are no contingent liabilities at 31st March 1992.

15. CAPITAL COMMITMENTS

	1992 £	1991 £
Expenditure contracted	—	—
Authorised but not yet contracted	—	—

16. FINANCE LEASE OBLIGATIONS

Net amount payable:		
Next year	6,498	6,499
In the second to fifth year	11,433	19,566
	£17,931	£26,065

17. RECONCILIATION OF OPERATING LOSS TO NET CASH OUTFLOW FROM OPERATING ACTIVITIES

Loss for the year	(1,783,679)	(2,996,242)
Interest received	(89,648)	(32,618)
Change in intercompany account	(1,189,925)	967,952
(Increase)/decrease in debtors	(13,481)	74,612
Increase/(decrease) in creditors	(665,304)	374,472
(Increase)/decrease in stocks	(35,914)	160,011
Interest element of finance leases	3,297	3,297
Bank interest paid	1,355	856
Depreciation charges	147,861	112,556
Net cash outflow from operating activities	£(3,625,438)	£(1,335,104)

18. ANALYSIS OF CHANGES IN CASH AND CASH EQUIVALENTS DURING THE YEAR

Balance at 1st April	487,474	(224,116)
Net cash (outflow)/inflow	(286,193)	711,590
Balance at 31st March (See note 19)	£201,281	£487,474

19. ANALYSIS OF THE BALANCES OF CASH AND CASH EQUIVALENTS AS SHOWN IN THE BALANCE SHEET

	1992 £	1991 £	Change in year £
Cash at bank and in hand	201,281	487,474	(286,193)
	£201,281	£487,474	£(286,193)

20. ANALYSIS OF CHANGES IN FINANCING DURING THE YEAR

	Share Capital £	Loans and finance lease obligations £
Balance at 1st April 1991	5,400,000	769,566
Cash inflows/(outflows) from financing	3,850,000	(8,133)
Balance at 31st March 1992	£9,250,000	£761,433