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ZOO

The Zoological Society of London

Annual Report 1970

THE ZOOLOGICAL SOCIETY OF LONDON

The Society was founded in 1826 by Sir Stamford Raffles, Sir Humphry Davy (President of the Royal Society) and other eminent naturalists,

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

and was incorporated by Royal Charter in 1829. A new Charter was granted to the Society in January 1963.

The Society's Gardens in Regent's Park, which were first opened to the public, without restriction, in 1846, now cover an area of 36 acres. Of the original features and buildings designed by Decimus Burton, the old Camel House with its clock tower, the Ravens' Aviary and the Giraffe House are still in existence. In 1927 the Society acquired 500 acres of farm and downland at Whipsnade and has developed them into a Zoological Park.

The existence of the Zoological Society as an Institution under a Royal Charter depends on the fulfilment of the object for which it was founded. It undertakes and encourages scientific research in zoology by members of its curatorial staff, by visiting scientists, and through its Institutes of Comparative Physiology and Comparative Medicine, both of which make a vital contribution to the management of the Collection. It also spreads zoological knowledge through its educational activities. Scientific meetings, commencing at 5 p.m., are held in the Meeting Room on the second Tuesday in the months February to June and October to December. At these meetings the results of new research are communicated and discussed, and specimens and films of zoological interest are exhibited. Symposia on special subjects are arranged on other dates, which are notified as occasion arises. The Society owns one of the finest zoological libraries in the world, containing approximately 120,000 volumes, including many complete sets of scientific journals.

The Society publishes:

The *Journal of Zoology*, being the *Proceedings of the Society* – the papers cover all fields of zoology and are fully illustrated with plates and text figures. Three volumes (12 parts) are published annually.

The *Transactions* are published at irregular intervals.

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

The *Zoological Record*, a comprehensive bibliography of zoological literature with subject and systematic indices, is available either as a complete volume or separately in 20 parts dealing with the different animal groups.

The *Nomenclator Zoologicus* contains the names of all the genera and subgenera in zoology from the 10th Edition of Linnaeus 1758 to the end of 1955, with a bibliographical reference to the original description of each. The work contains approximately 260,000 entries and is published in 6 volumes.

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

Report of the Council

The Council has pleasure in presenting
its 142nd Annual Report to the
Annual General Meeting of the Society
to be held on Thursday 20th May 1971
at 3.45 pm in the Society's Meeting
Room at Regent's Park

THE ZOOLOGICAL SOCIETY OF LONDON

THE ZOOLOGICAL SOCIETY OF LONDON

PATRON: HER MAJESTY THE QUEEN

COUNCIL 1970-1971

President: HRH The Prince Philip, Duke of Edinburgh, KG, KT

Treasurer: Sir Terence Morrison-Scott, DSC, DSc

Secretary: Professor Sir Solly Zuckerman, OM, KCB, MD, DSC, FRS

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The Earl of Bessborough, *Vice-President*

The Earl of Cranbrook, CBE, MA, FLS, *Vice-President*

The Lord Donaldson, OBE

Sir Dudley Forwood, Bt

Francis C. Fraser, CBE, DSC, FRS, *Vice-President*

The Viscount Head, PC, GCMG, CBE, MC

The Marquess of Lansdowne, PC, DL

Sir Harry Legge-Bourke, KBE, DL, MP

The Hon. Ivor Montagu

The Duke of Northumberland, KG, TD, FRS

Sir Michael Perrin, CBE, FRIC, *Vice-President*

Professor A. T. Phillipson, MRCVS, MA, PhD, FRSE, DVSC

Peter Scott, CBE, DSC

Professor G. P. Wells, ScD, FRS, *Vice-President*

C. A. Wright, DSc, PhD, FIBiol

Woodrow Wyatt

Frank Yates, CBE, ScD, FRS

THE ZOOLOGICAL SOCIETY OF LONDON

HONORARY FELLOWS

Date of election

- 1952 Professor J. Berlioz
Muséum National d'Histoire Naturelle,
Jardin des Plantes, 57 rue Cuvier, Paris 5^e, France
- 1937 HH Maharajah Raol Shri Krishnakumarsinhji Bhavsinhji of Bhavnagar,
Bhavnagar, Kathiawar, India
- 1951 Professor Dr H. Boschma
Rijksmuseum van Natuurlijke, Leiden, Holland
- 1955 Dr G. W. Corner
American Philosophical Society, 104 South Fifth Street,
Philadelphia 6, Pennsylvania, USA
- 1957 Professor Robert Courrier
L'Institut de France, (Académie des Sciences), 23 Quai de Conti, Paris 6^e,
France
- 1945 Monsieur Jean Delacour
Parc Zoologique de Clères, Clères, Rouen, S-M., France
- 1929 Dr W. K. Gregory
American Museum of Natural History,
Central Park West at 79th Street, New York, USA
- 1952 Professor Sven Otto Hörstadius
Zoologiska Institutionen, Uppsala, Sweden
- 1948 Professor A. R. Jorge
Museu Bocage, Faculdade de Ciências, Lisbon, Portugal
- 1939 The Rt Hon. Sir Robert Gordon Menzies
2 Haverbrack Avenue, Malvern, Melbourne, 3144, Victoria, Australia
- 1952 Dr R. C. Murphy
American Museum of Natural History,
Central Park West at 79th Street, New York, USA
- 1953 Professor Dr A. H. Schultz
Anthropologisches Institut der Universität Zurich,
Sempersteig, Zurich 1, Switzerland
- 1947 Professor G. G. Simpson
Department of Geology, University of Arizona, Tucson, Arizona 85721, USA
- 1937 Dr E. A. Stensiö
Naturhistoriska Riksmuseum, Stockholm 50, Sweden

CONTENTS

REPORT OF THE COUNCIL

The Membership	7
Financial review	9
The London Zoo	12
Whipsnade Park	18
Scientific activities	21
Research	24
Educational activities	27
General matters	28
Acknowledgments	31

APPENDICES

1. Regulations	35
2. Committees	36
3. Staff	38
4. Publications by Society's staff and research workers	39
5. List of animals received	41
6. Donors of animals	52
7. Donations to the Zoological Record Fund	54
8. Books presented to the Library	55
Meetings during 1971	56
Financial accounts, with Auditors' report	57

THE MEMBERSHIP

COUNCIL

At the Annual General Meeting held on 20th May the following members of Council retired:

Mr Aubrey Buxton
Mr Charles Clore
Dr Raymond Greene
Professor A. T. Phillipson
Air Vice-Marshal G. Silyn Roberts
Dr G. E. W. Wolstenholme

Professor Phillipson who, in accordance with the Byelaws had been appointed to the Council to fill the vacancy caused by the resignation of Professor O. E. Lowenstein, retired and was elected for a further term. The remaining vacancies were filled by the election of The Earl of Cranbrook, the Hon. Ivor Montagu, Dr C. A. Wright (Scientific Fellows); The Lord Donaldson and Sir Harry Legge-Bourke (Ordinary Fellows).

The Duke of Northumberland and Mr Peter Scott were appointed during the year to fill the vacancies caused by the death of Mr C. J. Harris and the resignation of Sir Edward Hulton.

ROLL OF MEMBERS

At the end of the year there were 3,146 Fellows and 2,381 Associates.

AMENDMENTS TO BYELAWS AND REGULATIONS

Increases in the annual subscriptions of Scientific Fellows and Associates were recommended in the report submitted to the Ministry of Public Building and Works by Associated Industrial Consultants Limited, to which reference is made on page 9. These recommendations were accepted by the Council. The necessary amendments to the Byelaws were submitted to the Fellowship and approved by a substantial majority of Fellows, living in the United Kingdom and voting on a postal ballot. In accordance with the Byelaws the amendments were then submitted to the Privy Council and approved in November, taking effect in January 1971.

The new Byelaws are:

'Byelaw 5

The entrance fee for Ordinary Fellows shall be £10 or such greater sum not exceeding £15 as the Council shall from time to time recommend and the Society in general meeting shall approve. There shall be no entrance fee for Scientific Fellows. The annual subscription, which shall be payable on the 1st January in every year, shall be £10 in the case of Ordinary Fellows and £9 in the case of Scientific Fellows or such greater sum not exceeding £12 in the case of both Ordinary Fellows and Scientific Fellows as the Council shall from time to time recommend and the Society in general meeting shall approve. The Council may at its discretion remit in whole or in part the entrance fee and annual subscription or either of them in respect of any

Fellow or group of Fellows. Any Fellow may compound his future subscriptions by the payment of such fee as the Council (having regard to the age of the Fellow and the current rates of subscription and to such actuarial advice as the Council may from time to time obtain) may determine.

Byelaw 12

The annual subscription for Associates, which shall be payable on the 1st January in every year, shall be £5 or such greater sum not exceeding £8 as may from time to time be recommended by the Council and approved by the Society in general meeting. An Associate elected after the 1st July in any year shall be liable to pay one-half only of the subscription for that year. The Council may at its discretion remit in whole or in part the annual subscription of any Associate or group of Associates.'

Consequential amendments to the Regulations were approved by Council and the opportunity was also taken of making minor amendments, for the sake of clarity, in some of the existing Regulations. The amended Regulations are given in Appendix 1.

OBITUARY

The Council records with deep regret the deaths of the following Fellows who at various times had served on Council and its committees: Mr C. J. Harris; Mr S. Wilson Kitchen; Professor F. W. Rogers Brambell; and Major Anthony Buxton.

It is with great sorrow that Council also records the deaths of Sir Edward Hallstrom, President of the Taronga Zoological Park Trust, Sydney, Australia, who had been appointed an Honorary Fellow in 1963; and of Mr James Fisher, a Fellow of the Society since 1936, and Assistant Curator from 1937 to 1939. In 1969 Mr Fisher was awarded the Society's Silver Medal in recognition of his contributions to zoology and to conservation.

AWARDS

The following awards for contributions to zoology were presented at the Annual General Meeting, by the President HRH The Duke of Edinburgh:

The Stamford Raffles Award (awarded to an amateur zoologist for distinguished contributions to zoology) to *Mr Rex A. Jubb*, of the Albany Museum, Grahamstown, South Africa, in recognition of his contributions to the ichthyology of southern Africa. Mr Jubb was not able to attend the meeting, and the award, a sculpture, *Wild Boar*, by Miss Elisabeth Frink, was received on his behalf by Dr P. H. Greenwood.

The Scientific Medal (awarded to persons under 40 years of age for distinguished work in zoology) to *Professor R. McN. Alexander*, of the University of Leeds, for his work on the mechanical biophysics and morphology of fish; *Dr R. V. Short*, of the Department of Veterinary Clinical Studies, Cambridge, for his work on the physiology of reproduction, particularly in the field of chemical assay of sex hormones; and *Professor T. R. E. Southwood*, of the Imperial College of Science and Technology, for his work on the ecology of insects.

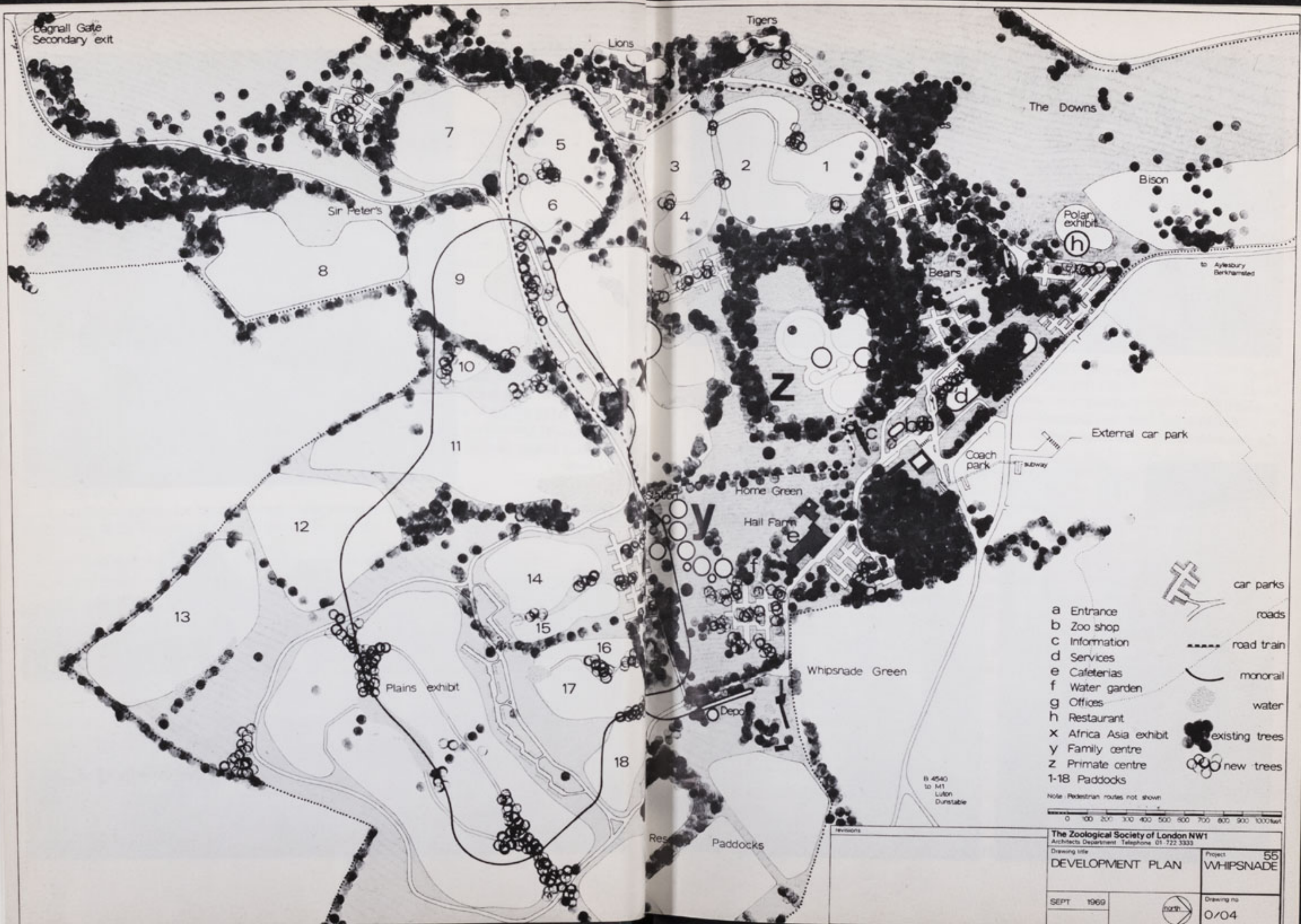
The Thomas Henry Huxley Award (for original work submitted as a doctoral thesis) to *Dr Gillian D. Sewell*, of University of London, King's College, for her thesis 'Ultrasound in Small Mammals'. The award was a sculpture, *Kangaroo*, by Mr David Wynne.

Brown bear cubs born
at Whipsnade Park,
January, 1970
*W. G. Vanderson,
Fox Photos Limited*



Herd of White Rhinos,
Whipsnade Park
*Zoological Society
of London*





- a Entrance
 - b Zoo shop
 - c Information
 - d Services
 - e Cafeterias
 - f Water garden
 - g Offices
 - h Restaurant
 - x Africa Asia exhibit
 - y Family centre
 - z Primate centre
 - 1-18 Paddocks
- car parks
 - roads
 - road train
 - monorail
 - water
 - existing trees
 - new trees

Note: Pedestrian routes not shown

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Dunstable

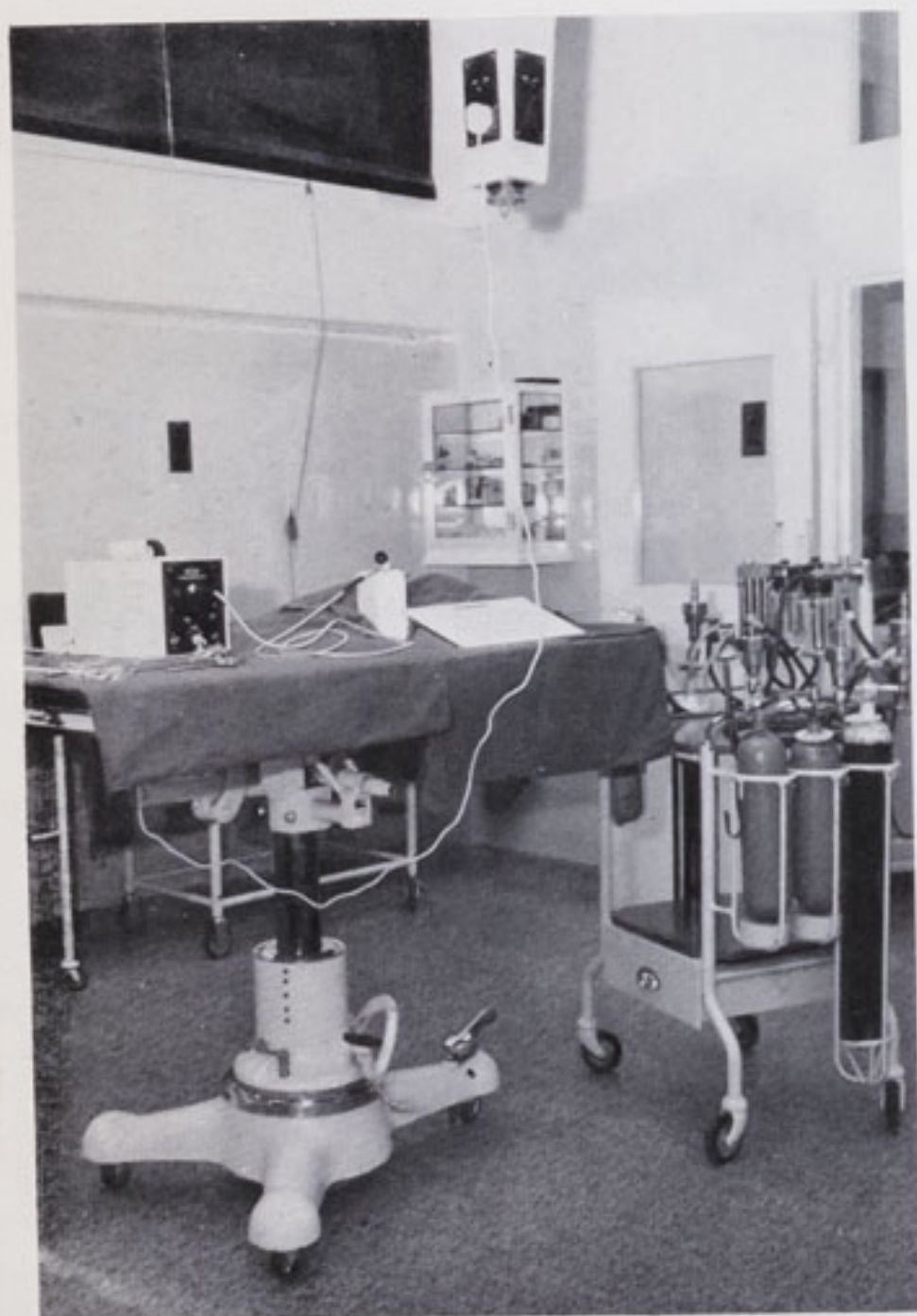
The Zoological Society of London NW1 Architects Department Telephone 01 722 3333		Project 55
Drawing title DEVELOPMENT PLAN		Project WHIPSNADE
SEPT 1969	Drawing no 0/04	



Fennec Foxes born
October 1970,
London Zoo
*W. G. Vanderson,
Fox Photos Limited*

Operating Theatre,
Animal Hospital,
London Zoo
*W. G. Vanderson,
Fox Photos Limited*

Information Panel,
Whipsnade Park
*Zoological Society
of London*



A Certificate of Commendation was awarded to *Dr B. C. R. Bertram*, of the University of Cambridge (now at the Serengeti Research Institute) for his thesis 'The Social and Vocal Behaviour of the Indian Hill Mynah (*Gracula religiosa*)'.

The Prince Philip Medal (for an account of practical work involving some aspect of living animals by a pupil, under 19 years of age, in a school in the United Kingdom) awarded to *Mark T. Joffe*, of University College School, Hampstead, for his essay 'A study of the leaf decomposition in a woodland stream'.

FINANCIAL REVIEW

A highly significant stage in the Society's long history was reached as a result of our appeal to the Government for help in completing the Society's capital development programme. The immediate response was an arrangement that the Bank of England lent the Society until 1st July 1970, up to £375,000, under guarantee from the Ministry of Public Building and Works, and the commissioning of Associated Industrial Consultants Limited to examine the Society's affairs. The report of this firm of consultants found very little scope for further economies in any of the Society's activities. The negotiations which followed the presentation of its findings were concluded in May, and announced in Parliament by the Minister in the following terms:—

'In their report the consultants, while acknowledging the great progress made by the Society in the last few years, have concluded that substantial Government help is essential to enable the Society to place their finances on a sound basis. They have recommended that the Government should repay the short-term debts incurred by the Society in their capital rebuilding programme and should also bear a share of the cost of the remaining part of the programme to which many benefactors have generously contributed. Given this assistance, together with the implementation of various measures which they have proposed for achieving a surplus on revenue account, and the Society's own continued strenuous efforts to the same end, the consultants are confident that the Society can achieve financial stability in the longer term.

In the light of these recommendations, the Government have decided to make a grant of £650,000 to the Society to enable them to repay their short-term debts, and also to waive repayment of the Government Loan of £250,000 made to the Society in 1964. In addition, they will provide assistance, subject to certain conditions, up to a total of £700,000 towards the Society's capital rebuilding programme over the period 1970-74. In providing the Society with this substantial measure of support, the Government have had in mind that the Zoo has become in fact, if not in form, a national institution, that it is a major London amenity, and also an important tourist attraction.'

The mark of confidence which this action implies is acknowledged by the Council

with deep gratitude. The decision is not only a tribute to the Society's work over nearly 150 years; it also provides the necessary financial help and encouragement to enable the Society to continue to advance zoological science. More than that – the Government's decision imposes on the Society a continuing responsibility to serve as the custodian of our national collection of exotic animals, in the same way as our national galleries and museums are the custodians of the public's collections of pictures, works of art and antiquities.

It is worth remembering that the Society began in 1826 as a private institution, dedicated by a Royal Charter of 1829 (which was renewed in 1963) to the precise purposes of 'the advancement of Zoology and Animal Physiology and the introduction of new and curious subjects of the animal kingdom.' It is essentially the fact that these, and these alone, are the purposes of the Society which differentiates it from most other institutions, private or public, which maintain zoos.

The Zoological Society of London is more than its famous Zoological Gardens in London, though from the latter, it may be worth noting, the word 'Zoo' historically derives in all languages. It is an educational charity which not only maintains animal collections, but also devotes a considerable part of such resources as it has to the advancement of zoological science and animal husbandry, as well as to an extensive educational programme. Unlike any other institution in the country, and certainly unlike any other zoo, the Society maintains both a modern hospital for exotic animals and powerful research laboratories whose purpose it is to advance our knowledge of the diseases, nutritional requirements and reproductive physiology of wild animals. It is also a scientific institution which has organized monthly scientific meetings almost continuously over the 150 years of its existence. The Society owns one of the greatest zoological libraries in the world, and is responsible for the publication of several scientific journals, including the *Zoological Record*, which is a required reference work for all professional zoologists, and the *International Zoo Yearbook*, which is an essential handbook for all zoos. It is no exaggeration to say that if the Zoological Society of London had not contributed as much as it has to the knowledge which exists about exotic animals, it would have proved difficult for other zoos, and impossible for some, to exist. Equally the work of its research departments is invaluable, not only in its application to zoo management, but also in its relevance to problems concerned with the health and welfare of man and his domestic stock.

In his book 'Zoos of the World' the late Mr James Fisher stated that, on average, only five out of every twenty animals in what would be described as good zoos, have been bred in captivity. At Regent's Park we breed nearly half of the mammals in the Collection while at Whipsnade, 80 per cent of the mammals have been bred in the Park. Even more significant is the wide variety of species which we have succeeded in breeding, ranging from the very rare, but well known, species such as the European Bison, which a few zoos have saved from extinction, to others such as the Cheetah, which has only rarely bred in zoos, as well as small mammals such as marmosets, tamarins and lorises. We are also achieving great success in the breeding of chimpanzees, and there is a constant record of achievement with hoofed animals at Whipsnade, of which, apart from the European Bison, notable examples are the Musk Ox, Barasingha or Indian Swamp Deer and Thomson's Gazelle.

Until the recent help provided by the Government, the Society had managed, as best it could, to maintain its various activities on the basis of such funds as it accumulated through 'gate-money' and subscriptions and, over the past fifteen years, with the generous help it has received from Foundations and private benefactors. If it were possible for the Society to confine its activities only to the maintenance of the London and Whipsnade Zoos, we could operate as successfully – from the point of view of profit – as any commercial zoo not concerned with the advancement of zoological science and animal husbandry. But there could be neither any legal nor any moral justification for the Society to operate in so limited a way. While we have in general been able to meet ordinary operating costs, we have frequently lacked capital funds for the replacement or modernizing of old buildings. Few of the houses which we inherited from the 19th century have been able to live up to modern ideas of animal display, even though every effort has always been made to adapt them in the interests of good animal management. It is for that reason that the Society had in 1958 to embark on a comprehensive re-development programme, which is now more than half completed, with money from our own resources and with very substantial help from the generous patrons who have supported our work. Mr Michael Sobell's recent gift has made it possible to start the new Primate House, which should be finished early next year, and with the assurance of Government support, plans for further buildings are in hand. The progress on this and other new developments is described on page 13.

It is also now possible to begin the implementation of a master plan, prepared in 1969, for the development of Whipsnade. Action on this plan has had to be shelved until the capital became available, but detailed preparation is now in train.

The total expenditure on capital works in 1970 amounted to £147,000.

Needless to say, the general financial climate has worsened considerably since the start of our negotiations with the Government some three years ago. Like all institutions, we have suffered greatly from the phase of inflation through which the economy is now passing. In spite of stringent economies in all our operations, increasing costs, in particular higher labour costs, which always account for well over half of our operating expenditure, coupled with an overall fall of some 7 per cent in the number of visitors, have had the effect that we have ended 1970 with a deficit of £60,000, which represents 6 per cent on the year's working. The salaries and wages paid to the Society's staff are broadly aligned with those of the public services. In 1970 nationally negotiated awards were, as is well known, substantially above the level that was anticipated. As the agreed increases related to various dates during the course of the year, their full effect will not be felt until the end of 1971, when increases at an annual rate of £78,000 will have been added to our wages and pensions bill. This increase is alone equivalent to about 8d of the admission price paid by every visitor.

As already observed, the Society's revenue to meet all operating costs, including the running of the menageries, veterinary services, advisory services, library, scientific meetings, and such of our research programme as is not met out of grants, is almost entirely derived from the income we receive from admission charges and subscriptions. Fluctuations in the number of visitors from year to year are bound to occur and, for the most part, depend on factors which are beyond our control. A very cold Easter – as in 1970 – can easily result in a loss of some 40,000–50,000 visitors, and such a loss can

rarely be made up later. As admission charges have only been increased when absolutely necessary, our budget is always strained.

Careful attention is being paid to the management consultants' suggestions for new developments. New exhibits are being completed, both at Regent's Park and Whipsnade; much is being done to make the Gardens more attractive and to bring the improvements to the attention of the public. We hope that, granted reasonable weather conditions, attendances in 1971 will be high enough to offset any further effects of inflation, and that we shall get through the years immediately ahead without any further deficit, and if possible, with a surplus.

DONATIONS

The Council gratefully acknowledges an anonymous donation of £9,943; £500 from the Edmund de Rothschild Trust; £500 from the New Court Trust; a legacy of £3,483 from Mr F. W. J. Thwaites; and gifts of special apparatus for the Hospital from Mr W. L. Whitehouse.

A gift of £11,415, towards the cost of establishing the White Rhino herd at Whipsnade, was received from the World Wildlife Fund, being the proceeds of the première of the film 'Now or Never' which was arranged through the generosity of Anglia Television. The Council is grateful to the World Wildlife Fund and Anglia Television for their support of this conservation project.

THE LONDON ZOO

Visitors during the year 1,794,400

Visitors to the Children's Zoo 420,300

Visitors to the Aquarium 360,700

GENERAL

Because of the introduction of British Standard Time, and in order to simplify the complicated arrangements for the manning of the Menagerie and Gate-keeping departments, some changes in closing times were made from the beginning of 1970. The Gardens now close at 5.00 p.m. in the four winter months, and at 6.00 p.m. from March to October, remaining open until 7.00 p.m. on Sundays and Bank Holidays during this period. These new times have proved very satisfactory, both from the point of view of the public and from that of the management of the Zoo. The winter closing times will, however, now have to be revised when GMT is re-introduced at the end of 1971.

GENERAL DEVELOPMENT

The construction of the new Primate House is going on apace. The contractors, Trollope & Colls (City) Limited, began work in June, and the whole building should be finished by the spring of 1972. The first stage, which involved the demolition of half of the present Monkey House and the remains of the former Decimus Burton Terrace, consists of three units to house the Great Apes and at least 7 groups of the larger species of monkeys. These units should be ready in the summer of 1971 for the animals still in the remaining part of the old Monkey House, which will then be pulled down to allow the last two units of the new complex to be built.

The Mappin Terraces were built in 1913, and still provide efficient and attractive enclosures for wild sheep and goats on the artificial upper hills, with bears and pigs at the lower levels. The basic design is good, but inevitably, after 50 years of use, major repair work is needed in the reinforced concrete structure. This consists of sealing any gaps in the concrete, waterproofing the surface, and covering the whole with a coloured epoxy treatment. The last process is comparatively new, and has been made possible by recent developments in plastics.

Other work now in progress at Regent's Park, most of which should be completed by the time this Report is published, includes the extension and modernization of the Regent Bar, a playground for young children to be sited behind the Zoo Shop, and a modification of the outside pool in the elephant paddock.

Every year unspectacular, but not insignificant, work goes on to improve the facilities in the Zoo, both for the public and for the management of the animals. 1970 was no exception. For example, 'Chi-Chi', the Giant Panda, as she becomes older, likes to retire to her indoor den, but the public still wish to see her all the time. This problem has been resolved by putting a large viewing window into the outside wall of the den. In the Charles Clore Pavilion a system of taped records of animal night cries has been installed in the 'Moonlight World', to reinforce the general illusion of a nocturnal environment and, hopefully, to distract visitors, particularly children, and so discourage them from making too much noise.

In the Children's Zoo a ramp for invalid chairs, the cost of which was paid for by a small group of benefactors, was built in the Chimpanzee Theatre. Other small improvements in the Children's Zoo included new drainage for the farm animal pens, and an additional children's lavatory.

Ways of improving the management of animals in the Collection are constantly being sought on the basis of new knowledge and experience, and many entail modifications to buildings and installations. The service passage in the Chimpanzee Breeding Colony was rebuilt to allow better control of the animals; a rough covering was laid on the floors of the Deer and Antelope dens in the Cotton Terraces to prevent young animals slipping, while the drinking and feeding troughs in the same houses were resited to allow more space in the dens. The elephant dens in the Elephant and Rhino Pavilion were divided, by removable post barriers, to make control of the elephants easier, particularly as they now include some very young ones.

Since the Council for Nature moved to other accommodation in the TV and Film Office block, the offices at the top of the Reptile House, which for some years they

occupied, have been re-adapted as laboratories and reserve quarters and quarantine rooms for reptiles.

With the announcement of Government support for future capital development, the next stage in the rebuilding of Regent's Park is now being planned in detail. The first major building scheduled for redevelopment is the Lion House, now nearly 100 years old. In its place there will be a series of linked exhibits, rather than a single large building, for the collection of 7 species of big cats and some 5 of small cats. The final plans will be ready before the end of 1971 so that building can start the following year.

THE COLLECTION

Mammal section Once again the breeding record of the Charles Clore Pavilion is worthy of first mention. Apart from species, such as the Silvery Marmoset, which have already successfully reared young in the Clore Pavilion, others have bred for the first time. These included a Titi Monkey, the first birth of its kind in the Society's Collections, three Leopard Cats and, although it did not survive long, a Giant Fruit Bat, the first at Regent's Park for many years. Cotton-headed Tamarins had been born both in 1968 and 1969 but lived only a short time; two were successfully reared this year.

The most interesting births of the year were eight Common Tree Shrews in three litters from one pair, all of which were reared and, late in the year, three Fennec Foxes, one of which died after six weeks. The breeding of the Fennec Foxes may be due to a change in the lighting arrangements in the nocturnal basement to simulate an annual rhythm in the length of daylight. The Fennec Fox is known to be a seasonal breeder, and the litter of young in the Clore Pavilion was bred in the first 'spring' induced by this change in the timing of the light.

The year's other notable births were a Polar Bear, born as is usual at the end of November, another Chimpanzee, three Brindled Gnu, two leopards and, among the hoofed animals, Blackbuck, Mouflon and Barbary Sheep. Two important young animals were born but, sadly, did not survive. They were a Sealion, the first since 1963, which was abandoned by its mother after two weeks, and a Kudu, which died soon after birth as a result of an injury probably caused by the dam. Both cases were first births for the mother, and it is to be hoped that succeeding ones will be more successful.

The Chimpanzee born in 1970 makes the tenth from the Breeding Colony. Five of the six young Chimpanzees now in the Children's Zoo 'nursery and primary school' have been born at Regent's Park.

The 12 Bactrian Camels, imported in 1969 from the Moscow Zoo Centre, finished their urban confinement of one year at Regent's Park during 1970, and the last of them was sent to Whipsnade in November. Seven of the 11 females in the group produced young during the year at Regent's Park and, although two of the calves died, the other five have gone to Whipsnade to make up a fine herd of 17 camels, which should ensure breeding of this species at Whipsnade for a long time to come.

To fill the gap left by the death in 1969 of the older of the two Indian Elephants, a young elephant was bought from Thailand. She was about six months old on arrival and has had to be treated with all the care that any baby needs. Until she was content to be left alone, the staff of the Elephant House spent many nights in her den.

The demolition of half of the Monkey House to clear the site for the new Primate

House caused temporary accommodation problems which had to be solved by bringing back into use the old North Mammal House. The new House has been designed on the principle of keeping viable breeding groups of a relatively small number of species. The three Great Ape species and examples of ten other species of monkey are to be included in the new collection, as against thirty or so in the present building, some consisting of single animals, others of small groups. It would therefore have been necessary to find new homes for some of our present animals had not a new factor changed the whole situation. In 1970, a ban was placed on the import of all animals susceptible to rabies, including primates. This has clearly affected the plans for the assembly of groups of monkeys for the new Primate House, and it was considered necessary to keep many of the monkeys from the present collection in reserve.

The rabies situation has, of course, affected other sections of the mammal collections at both Regent's Park and Whipsnade, and some planned additions have had to be postponed. But the high rate of breeding of mammals in both zoos, and the resources available from elsewhere in the United Kingdom, have lessened the effect on the Collection of the very necessary precautions taken by the Government to avoid the infinitely greater difficulties which an outbreak of rabies in the country would undoubtedly cause.

Bird section It was highly satisfactory that in European Conservation Year several species of birds were reared which are rare in the wild or not often bred in captivity – such as the Palawan Peacock Pheasant, Spectacled Owl, Tasmanian Waterhen, Sarus Crane, White-cheeked Turaco, Laysan Duck and Hume's Bar-tailed Pheasant.

The White-cheeked Turaco was hatched out in the Snowdon Aviary, which maintains its excellent record of breeding. A most spectacular and rewarding sight is the breeding colony of Sacred Ibis and Cattle Egrets in the trees, some 10 feet away from the public walkway.

The aim in the bird collection is to provide prospective mates for birds which at present lack them, to give them more extensive accommodation with more natural surroundings, and where possible to provide conditions which will induce breeding.

As part of this policy the number of small cages has been reduced; the Scarlet Ibis and Sun Bittern moved into an outside aviary; pairs of Hoopoes, Stanley Cranes, Royal Starlings, Hooded Pittas, Rothschild's Starlings and Wood Hoopoes have been acquired; and companions have been found for the Chough, Little Owl, Golden Eagle, Petz's Conure, Blue-eared Pheasant, Bamboo Partridge, and various ducks and geese.

Species or sub-species which have been added to the collection for the first time include Red-tailed Comet, *Sappho sparganura*, Red-bearded Bee-eater, *Nyctyornis amicta*, Mountain Imperial Pigeon, *Ducula badia badia*, and *Ducula badia griseicapilla*, Little Cuckoo Dove, *Macropygia ruficeps*, and Little Green Pigeon, *Treron olax*.

Two sad deaths were the Naked-throated Bell Bird which had been in the Collection for 18 years, and the Fig Parrot which arrived in 1957.

Aquarium It is now almost a year since the new amphibian exhibition section was taken over by the Aquarium staff. It is proving very successful, both in attracting the interest of the general public and in producing very encouraging breeding results; these include

Smooth, Crested and Japanese Newts as well as axolotls, frogs and toads. There are already clear indications that new stock settles down well.

A small shoal of Piranha has been established in the Tropical Hall. The older of the two Giant Salamanders died after having been in the Collection for over 45 years.

The Goldfish in the moats surrounding the Camel and Giraffe Section are thriving and breeding rapidly, as are the Tench, Rudd and Orfe which are also being reared in these moats.

Insect House In addition to the usual routine breeding of various insect species, including mantids, stick-insects and many exotic Lepidoptera, the Insect House has also had some success with arachnids. Among those bred have been the scorpion *Hadogenes bicolor*, from Africa, the Palm Spider, *Poecilotheria fasciata*, from Ceylon and *Tapinauchenius plumipes*, from the West Indies.

Reptile House After consultation with the appropriate authorities, a new and vastly improved snake bite procedure has been brought into operation. This has involved installing a snake bite alarm system, and the Middlesex Hospital has agreed to deal with any emergency should it arise.

When the alterations were made to the laboratory accommodation on the top floor of the Reptile House, the facilities for keeping small species in reserve were also improved. A new sound-absorbing ceiling has been installed in the public area of the House.

The most interesting arrivals during 1970 were a Gila Monster, *Heloderma suspectum*, two Boipevussu Snakes, *Leiosophis gigas*, from Paraguay, the first of this species kept here since 1948, and a Horned Puff Adder, *Bitis caudalis*, a species new to the Collection. Seven New Guinea Skinks, a species not often kept in captivity, were born in March.

The Reptiliary near the Main Gate was closed in October, and then demolished to make way for the renovations to the Main Gate area which form part of the new Primate House complex.

VETERINARY AND PATHOLOGY REPORTS

Including those referred from Whipsnade Park and the Research Institutes, the number of animals which received veterinary attention during the year was 513. There was a decrease in the number of deaths compared with previous years. Thirty-eight new arrivals underwent the usual clinical screening in the Veterinary Hospital to detect any conditions of significance, or any diseases transmissible to other animals or man.

The practice, established in 1967, of carrying out clinical and radiological surveys of cases admitted to hospital, and of admitting selected animals for survey, has been continued. This procedure is costly, but has enabled accurate health control to be maintained. The morbidity of small ungulates in the neonatal period is being specially investigated. The hospital x-ray film library now contains films of 1,700 normal and diseased animals.

The animals in the Collection are in very good health; there have been no outbreaks of infectious disease and there is little evidence of serious nutritional disorder. A food supplement, designed to provide the mineral and vitamin requirements, so far as they are known, of four main classes of stock (primates, carnivores, ruminants and omnivores),

is now on trial for its nutritional adequacy, palatability and ease of feeding. Injuries (fractures, rupture of abdominal muscle, bite wounds, eye injuries) were again an important cause of admission to hospital, but following corrective surgery, very few animals failed to respond to treatment.

Details of the post-mortem examinations and the research carried out by the Pathology Department are given in the Society's biennial Scientific Report.

A new unit has been set up within the Pathology Department in order to carry out investigations on diseases of fish. Mr David Conroy, MIBiol, FIST, and Mr David McGregor, BSc, LIBiol, have joined the unit, and their research, which is being financed by the Natural Environment Research Council, will be supervised by Dr I. F. Keymer, the Society's Pathologist, and Dr R. J. Roberts, BVMS, MRCVS, University of Glasgow Veterinary School.

Five veterinary students from three universities have spent various periods in the Hospital as part of their vacation training programme.

Animals of all kinds (except fish and invertebrates) at the London Zoo

	<i>In the Collection on 1 January 1970*</i>	<i>Received in 1970 by presentation, exchange, deposit, purchase and transfer from Whipsnade</i>	<i>Born and hatched in the Menagerie in 1970</i>	<i>Died, sold, exchanged, returned to depositors and transferred to Whipsnade</i>	<i>In the Collection on 31 December 1970</i>
Mammals	881	74	223	369	809
Birds	1,369	225	128	366	1,356
Reptiles and Amphibians	652	390	11	346	707
	2,902	689	362	1,081	2,872

* 1969 Figures adjusted to take account of animals held in mixed collections or in hospital and unrecorded.

Estimated numbers of fish and invertebrates in the Collection at 31 December 1970

Fish	3,000	Invertebrates (excluding locusts, ants and bees)	1,200
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CATERING

The special winter scheme for members of youth groups and of organizations for the physically handicapped enabling them to purchase a combined voucher, at specially favourable rates, for admission to the Gardens and for lunch in the Regent Cafeteria, continues to grow, and many grateful letters have been received.

Zoo Restaurants Limited catered for 146 evening functions during 1970, including four well-supported evening openings of the Gardens for Members and their guests.

Among many interesting functions was a party held in the Elephant and Rhino Pavilion on the 12th November 1970 to launch the Reader's Digest book *The Living World of Animals*.

WHIPSNADE PARK

Visitors during the year 474,840
Visitors to the Children's Zoo 162,280
Cars brought into the Park 41,600

GENERAL DEVELOPMENT

The new long-term Development Plan, prepared by the Society's Architect, which had been approved by Council in 1969, formed the basis of the proposals for capital expenditure submitted to, and approved by, the Ministry of Public Building and Works. The implementation of part of this plan over the next four years should change the face of Whipsnade in a dramatic way.

The Plan, which is shown between pages 8 and 9, seeks first, to change the English parkland scene into 'habitat exhibits' showing the animals of various regions of the world. Secondly, it aims to make a visit to the Park easier and more satisfying for the average visitor by setting up a main centre of activity where many features and services are combined, while placing other special exhibits at strategic points round the Park. The whole effect will be to provide great variety of interest based on Whipsnade's prime achievement – the contribution it makes to the cause of wildlife conservation by the breeding and rearing of exotic hoofed animals.

The work undertaken at Whipsnade during 1969 and 1970 has been in line with the general proposals of this plan. The Chimpanzee House in 1969 was the first of the new special exhibits; it should be followed in 1973 and 1974 by separate buildings for gorillas and orang-utans, so that the final result will be a display of high quality and, even more important, a series of valuable breeding units.

In 1970 the major item of development has been the opening up of the area set aside for an African Plains exhibit for the largest herd of White Rhinoceros outside Africa. The herd arrived at Whipsnade on 5th August after one of the most highly organized animal transport operations ever carried out by a zoo. It was bought as the result of an agreement between the Natal Parks Board in South Africa and the Society, the aim of which is to further the conservation of the White Rhinoceros.

As a result of careful management and a protection policy, this species has been brought from near extinction in southern Africa at the turn of the century to so stable and safe a situation that the Natal Parks Board, to whom the credit for this impressive achievement must go, decided that the interests of conservation would best be served by the establishment, outside Africa, of large breeding groups. The herd sent to

Whipsnade is the first of these. No White Rhino has yet been bred in captivity outside Africa, almost certainly because, up to now, it has been possible to keep only pairs or small groups in relatively small areas. At Whipsnade there are 22 animals in an enclosure of some 30 acres, where the natural behaviour of the White Rhino, including the establishment of individual territories, can be allowed full scope. If breeding is successful, the Whipsnade herd will not only be an insurance against catastrophe on the home range of the White Rhino in Africa, but should also in time provide the replacement demands of zoological collections in Europe.

As a separate idea, but coincidentally with the opening up of the White Rhino project, a group of railway enthusiasts, led by Mr W. H. McAlpine, proposed to the Society the laying of a light railway line at Whipsnade, as an attraction for visitors as well as a means of getting closer to some of the paddock animals. The result of negotiations between the Society and the Company, Pleasurerail Limited, formed for the purpose, was that a three-quarter-mile track was laid into the new Rhino enclosure from a station next to the Children's Zoo, under an agreement which allows the Company to run for two seasons on a trial basis. Although operations began only on 26th August, this short period gave reasonable promise of future success.

Several other changes at Whipsnade during the year are worthy of note, all making for better management or improving the facilities offered to the public. The installation of a new oil-fired central heating system for the Hippo houses was followed by the addition of a covered viewing area to the Pygmy Hippo house. With a new bridge over the ponds leading to the house, visitors can now see Pygmy Hippos during the winter when the animals must be kept inside for several months. An extra stall has been added to the Musk Ox stable to ease the management of this successful group, and for the same reason modifications were made to the reserve quarters of the Chimpanzee House. The speed with which cars entering the Park can be dealt with on crowded days has been much increased by the installation of lanes and separate pay booths at the Car Gate. Some overdue repairs were made to staff houses at Whipsnade (there are 23 in all), both to keep them in good order and to convert them to modern standards.

THE COLLECTION

The arrival in August of the 20 White Rhinoceroses in a balanced group of all ages, from fully adult to newly-weaned young, was clearly the big event of the year. Joined by the pair of White Rhino which were already resident, the group of 22 animals has from the start shown a docility which is in complete contrast to the picture of power and aggression which their size and shape suggest as they lumber around their 30 acre paddock. After some six weeks in crates – from the time of their capture in the Umfolozi Game reserve, through a long Atlantic sea journey, made even longer by a dock strike in Britain – the animals thundered out into the Whipsnade dusk as naturally and easily as if suddenly disturbed by a tourist car on an African plain. Within days they were as controllable as a herd of cattle; in daylight they roam round the enclosure and at night shelter in the fine new house which was built for them.

As already noted in the chapter on Regent's Park, Whipsnade acquired another big new herd, 17 Bactrian Camels, during the year. At the same time there was some

thinning out of other herds and a reduction in the number of domestic animals, in order to work towards the correct balance of numbers and species for the future.

It has been a better than average year for breeding in the herds, the most important successes being three European Bison, three Père David's Deer, two Przewalski's Horses, two Reindeer, four Brindled Gnu, three Swamp Deer, five Blesbok and two Thomson's Gazelle.

The now famous Cheetah 'Juanita', who produced cubs in 1967 and 1968, but not in 1969, gave birth to another two in February. The latest pair have developed into healthy animals, and the male is now at Regent's Park with a female of the previous litter. The male from another litter was sent, on deposit, to Jersey Zoo to make up a pair.

On 25th November a Black Rhino male calf was born; this follows the successful birth of a female calf at Regent's Park almost exactly a year earlier. As a result we shall have another breeding pair in the future.

Some changes were made to the bird collection during the year. Small groups of owls were introduced, an innovation at Whipsnade, and the Rhesus Monkey enclosure was emptied of monkeys to make way for a group of vultures. These will spend the 1970-71 winter at Regent's Park while the enclosure is being converted. Three Humboldt's Penguins were hatched and reared to maturity, and a special exhibit of British water-fowl is being developed on the Spicer's Field pond with the acquisition, among other birds, of Eider Duck, Scaup and Garganey.

Although not up to the outstanding home-bred figure of 80% for mammals, Whipsnade's equivalent figure for birds is more than 50%, which is also a sound achievement.

VETERINARY REPORT

Following the review of the diets of carnivores and browsing herbivores which was carried out in 1969, various changes were made and some new food supplements were introduced. As a result there has been a noticeable improvement in the condition of the animals and a decrease in the number of deaths.

An important factor in maintaining the health of animals kept in grassed paddocks is the regular examinations of faecal samples to monitor the level of helminth infestation. Two hundred and forty-one anthelmintic treatments were carried out as a result of these examinations.

Two hundred and three mammals and six birds were sedated during the year. A Paxarm rifle has been borrowed from the Nature Conservancy; this instrument, which has a longer range than the Cap Chur weapons, may well solve many problems associated with the immobilization of herd animals.

Animals of all kinds (except fish and invertebrates) at Whipsnade Park

	<i>In the Collection on 1 January 1970</i>	<i>Received in 1970 by presentation, exchange, deposit, purchase and transfer from Regent's Park</i>	<i>Born and hatched in the Park in 1970</i>	<i>Died, sold, exchanged, returned to depositors and transferred to Regent's Park</i>	<i>In the Collection on 31 December 1970</i>
Mammals	908	66	356	352	978
Birds	1,197	118	168	355	1,128
Reptiles	2	—	—	—	2
	2,107	184	524	707	2,108

SCIENTIFIC ACTIVITIES

SCIENTIFIC MEETINGS

Most of the papers given at the eight meetings held during the year were published in the *Journal of Zoology*, being the Proceedings of the Society. Among the contributions not intended for publication were: 'The development of branchiopod Crustacea' by Dr D. T. Anderson; 'Effects of fire on vegetation and biomass in the Akagera Park, Rwanda' by Dr C. A. Spinage; 'The natural regulation of ungulate populations in East Africa by their food supply' by Mr A. R. Sinclair. Dr M. J. Coe spoke on 'Aspects of small mammal ecology on Mount Nimba, Liberia', and Mr L. M. Gosling on 'Territory in Coke's Hartebeest in Nairobi National Park, Kenya'; Dr J. E. Paling showed a film on 'The infection of sea cucumbers by the pearl fish *Carapus*', and Miss D. Kershaw showed some film of feeding behaviour of the fish *Arapaima gigas*.

SYMPOSIA

Two symposia were held:

May 28th/29th 'Regional variation in Indian Ocean coral reefs' organized by Dr D. R. Stoddart and Sir Maurice Yonge, CBE, FRS., in association with The Royal Society.

October 22nd/23rd 'Conservation and productivity of natural waters' organized by Professor R. W. Edwards and Mr D. J. Garrod in association with the British Ecological Society.

PUBLICATIONS

Journal of Zoology

Transactions of The Zoological Society of London

Symposia of The Zoological Society of London

Zoological Record

Nomenclator Zoologicus

Editor : Dr H. G. Ververs

Assistant Editor : Miss M. A. Edwards

Journal of Zoology Volumes 160, 161 and 162 together containing 100 papers, were published. The Council is most grateful to the many zoologists who, by giving their valuable time to referee the contributions submitted to the Society, ensure the high standard of our published papers.

Transactions Volume 32, part 2 'Maturation of the male rabbit flea (*Spilopsyllus cuniculi*) and the oriental rat flea (*Xenopsylla cheopis*): some effects of mammalian hormones on development and impregnation' by Miriam Rothschild, Bob Ford and Malcolm Hughes, was published in June.

Symposia Three volumes were published: Number 25, 'The biology of the Porifera' edited by Mr W. G. Fry; Number 26, 'Variation in mammalian populations' edited by Dr R. J. Berry and Mr H. N. Southern; Number 27, 'The haemostatic mechanism in man and other animals' edited by Professor R. G. Macfarlane, FRS.

Zoological Record Volume 103 (literature for 1966) was completed with the publication of the Sections 'Insecta' and 'List of New Generic and Subgeneric Names'.

Of Volume 104 (literature for 1967) all the Sections except 'Insecta' and 'List of New Generic and Subgeneric Names', have been published. Nine Sections of Volume 105 (literature for 1968) have also been published, and 4 are in the press. Five Sections of Volume 106 (literature for 1969) are in the press.

During the year a list was compiled of serials regularly scanned for the *Record*. It was based on computer print-out from punched cards, and copies have been printed for distribution. Some 6,000 serial titles are listed. At present, about 40,000 articles are indexed in each complete volume of the *Record*.

A study on the desirability of using computers to aid production of the *Record* was carried out by a team from Aslib (The Association of Special Libraries and Information Bureaux). Their report recommended that a decision on the use of computers should be postponed for a year, so that the effect of the recently introduced revised manual system could be assessed.

The Council is most grateful to the Director and the Chief Librarian of the British Museum (Natural History) and the Director of the National Lending Library, for providing accommodation and help for the Recorders and Searchers, and also to the many people who help with the compilation of the *Record*, as well as those whose donations to the Zoological Record Fund are listed in Appendix 7.

International Zoo Yearbook

Editor: Mr J. Lucas *Advisory Editor*: Dr H. G. Vevers

Volume 10 was published early in the year and was very well received. It is increasingly clear that the *Yearbook* is making a real contribution to the improvement of standards of animal care. At the meeting of the International Union of Directors of Zoological Gardens held in New York it was resolved that '... the Editor and the Council of the Zoological Society of London be congratulated on the high standard of the *International Zoo Yearbook* and that all members wished to express their thanks for the accomplishment of such a book'.

There were also many reviews. The reviewer in 'Science', the Journal of the American Association for the Advancement of Science, wrote '*The International Zoo Yearbook*, now in its tenth triumphant year, gets better and better, growing in quality rather than size. As it receives more support from academic zoologists, it begins to provide the practical zoo man with the intellectual ballast his profession sorely needs ...'

Volume 11 (1971) was published in March. The special subject is Marsupials in captivity and consists of 22 papers. The Consultant Editor for this volume was Dr Peter Crowcroft, Director of Chicago Zoological Park, Brookfield, and many of the articles were specially commissioned by him. As a result, a number of the contributors are from outside the zoo field, but with wide experience of marsupial husbandry in universities and government establishments. The section includes papers on the keeping of kangaroos in captivity by J. H. Calaby and W. E. Poole; anaesthetics for kangaroos by C. R. R. Watson and J. S. Way; breeding Sugar Gliders by M. J. Smith; breeding the Fat-tailed Marsupial Mouse by G. K. Godfrey and W. P. Crowcroft; bandicoots by A. G. Lyne; the Scaly-tailed Possum by Ella Fry, and the maintenance of the Common Opossum by H. I. Fritz.

Section 2, covering new developments in the zoo world, contains 79 papers and reports on various aspects of zoo management, such as Architecture and Display Techniques, Breeding, Conservation, Education, Husbandry and Research, and Veterinary Work and Zoos. Section 3, the reference section, contains a supplementary list of zoos and aquaria of the world; zoo federations and associations; numbers and species of wild vertebrates bred by zoos and research institutions in 1969; a census of the numbers and species of rare animals in captivity in 1970; and a list of rare animal studbook keepers. The cumulative index, introduced in Volume 10, has met with approval from a large number of readers, and is therefore continued in the current volume.

LIBRARY

Work has continued on the re-cataloguing of the stock of the Library, using the new Anglo-American cataloguing rules.

The Library has continued to provide a bibliographical service to members of the Society and to research workers in the Society's laboratories, as well as providing information to the general public. A number of black and white photographs from the extensive collection have been sold for publication.

The use of the comparatively new and well-equipped meeting rooms is increasing, and many important biological societies now hold their meetings regularly in the Society's rooms.

RESEARCH

Only a brief review of the research carried out by the Society is given below since a detailed report for the period 1967-69 was published during the year. The latter gives a summary of the research carried out at the Animal Hospital, Pathology Department, Whipsnade Park, Curators' Departments, the Wellcome Institute of Comparative Physiology, and the Nuffield Institute of Comparative Medicine. A list of the publications by members of the Society's staff and Research Workers is given in Appendix 4.

Dr H. G. Vevers has continued his work on invertebrate pigments in collaboration with Dr G. Y. Kennedy of the Cancer Research Laboratory, Sheffield. A paper is in preparation on the red fluorescent pigment in the shell or test of the echinoid *Arbacia lixula*. Other echinoids will also be examined.

A preliminary investigation is being made into the pigments in the green eggshells of Aracauna fowls, which were obtained from the Gene Bank at Whipsnade over the last few years, and the dark brown shells produced by Maran fowls.

Mr P. J. Olney, the Curator of Birds, is continuing his studies on the feeding habits of various Anatidae, and extending this work in order to compare the diets in the wild, especially seasonal changes, with diets in captivity. He is also investigating the foods and feeding habits of the Snipe *Capella gallinago* and other Charadriiformes.

THE NUFFIELD INSTITUTE OF COMPARATIVE MEDICINE

Staff

Director: L. G. Goodwin, MB, BS, MRCP, BPharm, BSc, FIBiol. *Biochemistry*: M. A. Crawford, PhD. *Infectious Diseases*: G. R. Smith, PhD, MRCVS, DVSM, DipBact. *Pathology*: R. N. T-W-Fiennes, MA, MRCVS. *Research Assistant Infectious Diseases*: D. E. Bidwell, BSc. *Laboratory Superintendent*: P. R. E. Wallace, FIST. *Administrative Assistant*: Miss P. E. Wright. *Visiting Graduates*: P. K. C. Austwick, BSc; P. A. J. Ball, MD, MRCP; M. J. M. Barker, MB, BS; G. H. du Boulay, MB, BS, MRCP, DMRD, FFR; T. Cartwright, PhD; Miss J. Davies, BSc; J. D. Gatenby Davies, MB, BS; D. A. Dyson, BVet Med, MRCVS, Dip Trop Vet Med; Miss C. M. Hawkey, PhD; R. T. Herbert, BSc; B. R. Manawadu, MB, BS (Ceylon), MSc (Lond.); D. Reichl, Ingchem, csc (Prague); R. C. Siddons, PhD; A. Voller, DSc; D. B. Yates, BPharm, MSc; A. S. Young, PhD; D. A. B. Young, DPhil, PhD; Mrs R. J. Zalin, BSc.

In 1970 there were 53 members of staff, of whom 18 were graduates whose work was supported by grants received from outside organizations. These grants, amounting to £90,000, covered 70% of the total operating costs of the Institute.

Mr P. K. C. Austwick, Mr D. A. Dyson and Dr B. R. Manawadu joined the staff, with support from the Nuffield Foundation, the Overseas Development Administration and the British Council respectively.

Mr D. B. Yates and Mrs R. Zalin have taken up appointments elsewhere.

Dr A. Voller has been awarded the degree of DSc and Dr A. S. Young the degree of PhD of London University.

As from January 1971 the Wellcome Trust Research Laboratories in Nairobi will come under the general supervision of the Institute, and Dr J. D. Gatenby Davies has been appointed the local Director.

Research Projects The Department of Pathology has concentrated on haematology and nutritional bone disease. Dr C. M. Hawkey investigated coagulation, fibrinolysis and platelet aggregation in mammals, including baboons at the Nairobi Unit, and, in collaboration with Dr K. Dormandy (Royal Free Hospital), has studied anti-haemophilic factor inhibitors. The latter present a serious problem in the treatment of human haemophilia.

Miss J. Davies has studied the cells that cause haemostasis in crabs. Dr M. J. M. Barker and Mr R. T. Herbert are investigating the dietary requirements of South American monkeys by biochemical, histological and radiological methods.

The Infectious Diseases Department has made immunological studies on infections caused by *Mycoplasma* and *Aspergillus* spp. (Dr G. R. Smith and Mr D. A. Dyson), parasitic nematodes (Dr P. A. J. Ball) and protozoans (Dr A. Voller and Dr B. R. Manawadu). Mr D. E. Bidwell has studied arbovirus infections in the tissues of their invertebrate hosts. Dr L. G. Goodwin and Mr D. B. Yates have continued to investigate the pathology of trypanosome infections.

In the Biochemistry Department, Dr M. A. Crawford has studied the effect on the blood vessels, muscles and brain of changes in dietary fat and associated vitamins, and Dr D. Reichl has continued his work on lipoprotein lipase activity. Mrs R. Zalin has completed her study on the synthesis of aminoacids in ruminants, and Dr D. A. B. Young has investigated the nature and mode of action of insulin inhibitor.

In the Radiology Department, Dr G. du Boulay, with Mr L. Symon and Dr S. Shah (National Hospital, Queen's Square) has studied the reactivity of the cerebral circulation to changes in the partial pressures of blood gases. The collection of radiographs of normal and diseased animals continues to expand.

THE WELLCOME INSTITUTE OF COMPARATIVE PHYSIOLOGY

Staff

Senior Research Fellow: I. W. Rowlands, PhD. *Research Fellows*: Miss B. J. Weir, MA, PhD; W. H. Tam, PhD; Russell C. Jones, PhD. *Research Students*: Miss C. M. Roberts, BSc; A. P. Gulamhusein, BSc. *Research Assistant*: P. A. Racey, MA. *Senior Technician*: G. Nevill.

Mr H. R. H. Tripp, who left at the end of 1969, obtained his PhD for a thesis on reproduction in Elephant Shrews. Mr P. A. Racey was awarded a Ford Foundation Fellowship tenable at the Unit of Reproductive Biology, Life Science Building, Liverpool in September, but will remain at the Institute for a period to complete his PhD thesis on reproduction in bats.

Research projects Dr Rowlands and Dr Tam have investigated the effect of lactation and of oxytocin on the secretion of progesterone in the domestic Guinea-pig and, with Dr Weir, have carried out a histological and chemical study of the ovary of the wild Guinea-pig, *Galea musteloides*, which in captivity becomes heavily infiltrated with fat.

Dr Weir has continued her work on the breeding patterns of several hystricomorph rodents, and also on various projects connected with the physiology of their reproduction. Except in the case of the Tuco-tuco (*Ctenomys*) breeding among other species has been maintained. About one hundred Tuco-tucos and 50 *Galea*, together with a pair of Mountain Viscacha (*Lagidium boxi*) and a small group of an octodontid rat, probably *Octodontomys gliroides*, were trapped by Dr Weir and Dr Rowlands in Argentina during the summer. The Wellcome Trust generously provided a grant for this expedition, the principal object of which was to collect material for a laboratory investigation into the development of symptoms of diabetes mellitus in captive Tuco-tucos.

Dr Tam has also continued his studies on the biosynthesis of steroid hormones, and in particular has studied the secretion rates of progesterone in the Chinchilla and Viscacha (*Lagostomus*), and in two species of wild Guinea-pig.

Dr Russell C. Jones has tested various methods of collecting semen for the preservation of spermatozoa and the preparation of these cells for electron microscopy. Comparative studies have been made of the development of spermatozoa in the testes and changes occurring in the head of spermatozoa during their passage through the epididymis. Observations on ultrastructural changes that occur in ram and boar spermatozoa during dilution and processing are continuing.

Mr P. A. Racey has found that breeding successes in captive noctule bats have been offset by several aborted pregnancies, possibly due to some dietary deficiency. Breeding was, however, recorded for the first time in a group of pipistrelles that had been born in the laboratory. Studies on the testis cycle and on factors affecting gestation during hibernation have continued, and further observations made on the induction of ovulation.

Miss C. M. Roberts has studied various aspects of the embryology of hystricomorph rodents, particularly the rates of embryonic growth and development of the foetal membranes in Viscacha (*Lagostomus*), Coypu, Chinchilla, Degu and Cuis (*Galea* and *Cavia*) and of foetal resorption in the Viscacha.

Mr A. P. Gulamhusein has taken over the breeding colony of stoats. Four litters were born but only five young survived. One of the two young female survivors and four adult females mated during the summer. Studies have been made on ovarian and vaginal changes taking place during the breeding cycle, and of uterus-embryo relations during the period of delayed implantation.

Sixty specimens were added to the Reference Collection of Reproductive Organs.

EDUCATIONAL ACTIVITIES

EDUCATION PROGRAMME FOR SCHOOLS

With the exception of the Spring Term, attendances during the year all showed an increase over those for 1969. The comparative figures were:

		1969	1970
Regent's Park	Spring Term (Secondary schools)	15,030	14,694
	Summer Term (Primary schools)	18,399	19,474
	Autumn Term (Secondary schools)	17,149	18,979
Whipsnade Park	Summer Term (Secondary schools)	3,111	4,618
		53,689	57,765

Because of variations in the length of terms, direct comparisons are not easily made. For example, in 1970 Easter was early, and the Spring Term was short, and although the attendance during that term was lower than in 1969, the average attendance per week was higher, imposing some strain on our resources. Total attendances continued to increase, being nearly 8% higher than in 1969. The programme was therefore expanded in September and an increased number of sessions offered, so that more pupils could be accommodated without the size of each party being conducted round the Zoo becoming impossibly large.

The range of topics offered to schools was also increased during the year. Both at Regent's Park and Whipsnade lecture/demonstrations on conservation, arranged to coincide with European Conservation Year, were very popular.

OTHER COURSES

Lectures and demonstrations were held for various parties of students from universities, colleges of education, and technical colleges. During the Easter vacation a short course for university students was held, and the Council is grateful to Professor A. d'A. Bellairs, Dr N. B. Marshall, FRS, Dr M. Rose, and Dr Barbara Weir for lecturing at this course.

Two symposia for sixth form pupils were held. The first, entitled 'The Natural History of Hormones', took place in March, and was organized by Professor E. J. W. Barrington, FRS. Dr C. G. Butler, FRS, Professor R. B. Clark, Professor J. Dodd, and Dr K. C. Highnam also took part. The second symposium, held in December, was organized by Professor Don R. Arthur and entitled 'The Natural History of Parasites'. The speakers were Dr F. E. G. Cox, Professor C. Ellenby, Dr J. Llewellyn, and Dr K. M. Lyons. The aim of these symposia is to give sixth form pupils a foretaste of the advanced studies which will open up for those who are planning to enter a university, and there is no doubt that they meet a very real need. Applications for places for the first two symposia far exceeded the supply. The Council is grateful to the professional zoologists who have so generously cooperated to make these symposia possible.

CHRISTMAS LECTURES

During the Christmas period three meetings were held for the children and young friends of members of the Society.

Mr P. J. Olney gave a talk on 'The Food of Birds', Mr A. P. Watson, GM, gave a talk on 'Studying Bats in Flight', and the film 'Serengeti Shall Not Die' was shown. These meetings were well attended and were much appreciated.

YOUNG ZOOLOGISTS' CLUB

Club activities continue to receive considerable support from members. In particular, the activities connected with European Conservation Year proved to be very popular. A visit to the Nature Trail at Tring Reservoirs had to be repeated six times in order to accommodate all those wishing to attend. Similarly, two visits were made to the Wildlife Park at Great Witchingham, where members met the Director, Mr Philip Wayre, and saw many species of European animals. Other meetings have included film shows and guided tours of both Whipsnade and Regent's Park Zoos.

GENERAL MATTERS

PUBLICITY

In cooperation with the World Wildlife Fund, three exhibitions were mounted in the London Zoo to mark European Conservation Year, the theme being the role of zoos in conservation. A special exhibition on the breeding of rare animals in captivity was held at Whipsnade.

On 11th June 1970, an Open Day was held at Regent's Park at which the work of the Society's Research Institutes (the Nuffield Institute of Comparative Medicine and the Wellcome Institute of Comparative Physiology) and the Animal Hospital was shown to some 200 visitors. Numerous reports in the scientific and medical press indicated considerable interest in the work, and films were taken by various television companies and by the Central Office of Information.

Exhibits were also prepared by the Research Institutes for the British Medical Association's Scientific Exhibition at Harrogate in July, and were awarded a Certificate of Merit. An additional certificate was awarded for Dr C. M. Hawkey's demonstration of Comparative Haematology.

The Television and Film Unit has assisted in the preparation of a wide range of films and television programmes. Among the programmes in which the Society featured were the 'Money Programme' (in November); the popular science programme 'Horizon' (both on BBC 2) and the one hour Thames Television documentary 'The Zoo in Springtime', which was shown twice during the early part of the year. In addition, the London Zoo featured largely in the National Geographic Society's one-hour documentary 'Zoos of the World' which, unfortunately, has not yet been seen in this country.

The Unit has also provided numerous lengths of film and colour transparencies to the Education Department for a new series of lectures to schools.

The library of colour transparencies and of black and white photographs has been substantially increased, and the Society has entered into an agreement with Scala Fine Arts Inc. of New York to sell the reproduction rights of its material in the USA.

COOPERATION WITH OTHER ORGANIZATIONS

In common with the many national organizations recognized as authorities in their own field, the Society's staff are constantly consulted by individuals and organizations requiring information, advice or help in one way or another.

The enquiries dealt with each year are numbered in many tens of thousands. They vary from a schoolchild's question on how to feed a pet, to requests for technical information from government departments, research establishments, museums, professional bodies, publishers, as well as other zoos. Highly specialist advice on veterinary, zoological and animal husbandry matters, such as the diagnosis of disease, the special equipment and drugs needed in the handling and treatment of wild animals, their housing and practical management on a day-to-day basis, is frequently sought. There is no department which is not involved in helping to provide these services, although naturally the weight falls most heavily on the Curators, the Veterinary staff, the Library and the Public Relations Department.

The Society is glad to cooperate in this way, and itself benefits a great deal from the interchange of information which frequently follows the initial enquiry. It is also particularly glad to help with the training of zoo staff from overseas, which is often arranged in cooperation with the British Council.

STAFF

At the end of the year the permanent staff of the Society totalled 555, twenty-two fewer than at the end of 1969. A list of senior members is given in Appendix 3.

Organization

As referred to in an earlier section, a series of wage awards in the various public services have been applied to the Society's staff. The increases were substantial, and a continuous effort is being made to contain wage costs by securing the most efficient and flexible use of manpower. This involves reorganization, redeployment, and training to improve efficiency and skills. Wherever possible such steps have been taken, the main example being the menagerie reorganization based on a new career structure, to which reference was made in the 1968 Report, and which was successfully completed by the end of 1970.

Training

A good start was made with the new keepers' training courses in Zoo Animal Management, organized in conjunction with Paddington Technical College. The Council is very grateful to Mr S. F. Everiss and his colleagues for their interest and cooperation in the organization of these courses. All 17 of the menagerie staff who completed the first year were successful in the end of year examination, and are now undertaking the

second and final year of the first course. Ten staff began the first Senior Course in October.

Keeper R. R. Smith of the Monkey House qualified for the Associateship of the Institute of Animal Technicians. Mr R. N. Cinderey, Laboratory Technician, Pathology Department, gained a second Science Laboratory Technicians' Advanced Certificate (Zoology) with credit. Mr M. W. Guy, Laboratory Technician, Nuffield Institute of Comparative Medicine, gained a Science Laboratory Technicians' Advanced Certificate in Histology.

In July Keeper J. M. Irwin of the Monkey House was seconded for 6 months to the Zoological Society of Jos, Nigeria to assist in the staff training and development of their Zoo. Mr S. A. Adeyi of Jos, supported by a British Council bursary, spent a similar period gaining experience in all the various sections at London and Whipsnade.

The training scheme for the catering staff continues to make good progress. Mr E. Brauer (Chef de Cuisine) and Mr R. Gay (Training Instructor) gained the Instructors' Certificate of the Hotel and Catering Industry Training Board, and many members of staff gained the 'On Job Trainers' certificate.

Mr P. E. Fisher, Catering Staff Manager and Training Officer, has been elected a Fellow of the Hotel and Catering Institute. Mr E. Brauer was awarded a Silver Medal and Mr F. Clarke, Chef Patissier, a Certificate of Merit at the International Hotel and Catering Exhibition.

Much time and energy has been spent by the Catering Department's Training Section on decimalization training, which they have undertaken for all of the Society's staff who handle cash.

Medals

The Society's Bronze Medal was awarded to Mr R. Barrow, Head Keeper, Pheasantry and Ostrich House, for assiduous work in the care and breeding of birds, and to Mr P. B. Partridge, Senior Chauffeur, Regent's Park, who retired in September 1969 after many years of devoted service.

Retirements and Resignations

Dr Fae Hall resigned to take up a research appointment, and Mr W. N. Hill, FHCI, General Manager, Catering, who joined the Society in 1946 as Catering Manager, Regent's Park, retired in June. At the request of the Society he continued, on a part-time basis, to supervise the catering activities at Whipsnade until the end of the year. Mr H. Vinall, Overseer of Mammals, retired after 42 years' service, and Mr A. Wilson, Superintendent of the Hospital, after 44 years' service. Other retirements included Mr H. W. Styles, Head Keeper, Small Mammals; Mr J. Pullen, Assistant Gardens Executive; Mr B. Simmons, Head Keeper of the Pheasantry at Whipsnade Park; Mr A. Turvey, Building Craftsman, Whipsnade Park, all of whom had served for 40 years or longer, and Mr F. J. Harvey, Chef, Whipsnade Park, Mr W. Read, Gatekeeper, Whipsnade Park, Mr J. A. Myers, Building Craftsman, Regent's Park, and Mr J. Reynolds, Hall Porter, Regent's Park. Mr H. J. Senior, Hospital Technician, resigned on his appointment as Superintendent at Chessington Zoo.

Appointments and Promotions Regent's Park

Mr D. Ball *Overseer of Reptiles*

Mr A. Fitzgerald *Senior Hospital Technician*

Mr J. Lambden *Overseer of Mammals*

Mr J. McCorry *Assistant Gardens Executive*

Mr D. Clarke *Head Keeper, Small Mammals*

Mr E. Brauer *Chef de Cuisine*

Obituary

It is with great regret that we record the deaths of Miss Clare Kempson, Membership Secretary, Mr W. Fanger, Building Craftsman, and Mr R. Lanigan, Gardener. While this report was being prepared we heard, with very great sorrow, of the death of Miss Grace E. Gay. Miss Gay joined the staff in 1917, and during most of her 53 years' service had been secretary to the Secretaries of the Society. She retired in 1967, but continued to help, on a part-time basis, until the end of December, to reorganize the historical records.

ACKNOWLEDGMENTS

The Council records its gratitude for the invaluable assistance given by the members of the various committees, whose expert advice is of the greatest help in carrying through the work of the Society.

The Council is also indebted to the many Fellows who have sent specimens for the Collection, both at Regent's Park and Whipsnade. Many other interesting animals have also been received, in exchange, from zoological societies and institutions, recorded in Appendix 6. Senhora Hermione Blandy de Freitas Martins and Senhor João de Freitas Martins of Madeira, a Corresponding Member of the Society, have continued to take a lively interest in the Aquarium, and have sent valuable collections of marine animals.

We are constantly in touch with the British Museum (Natural History) and wish to record our thanks to Dr G. Corbet, Mr C. Frith, Mr J. E. Hill and Mr D. T. Holyoak and also to Mrs H. Morriss for the help they have given.

The Council also gratefully acknowledges the assistance of the many scientists, veterinarians, departments, organizations and firms for their ready cooperation. In particular we wish to express our thanks for the help given to:

The Education Department by the Minnesota Mining and Manufacturing Company Ltd for their gift of an overhead projector and heat copier;

The Nuffield Institute of Comparative Medicine by Professor H. Baum, Dr N. Brown, Dr K. Dormandy, Dr M. Eadie, Dr R. Finlayson, Mr J. Ganz, Dr T. Gillman, Dr F. Klein, Dr L. Lelijveld, Dr J. H. E. Meuwissen, Dr D. C. B. Mills, Dr J. S. Porterfield, Dr D. S. Robinson, Dr M. Sandler, Dr H. Sissons, Dr C. Symons, Dr R. J. Terry, Dr W. W. Walther and the Director, The Royal Botanic Gardens, Kew;

The Pathologist by Dr E. C. Appleby, Professor J. J. Buckley, Dr K. P. Carpenter, Dr P. Cavanagh, Dr H. P. Chu, Dr T. Clay, Professor E. Cotchin, Dr E. Elkan, Mr J. Faragher, Dr R. Finlayson, Professor P. C. C. Garnham, Dr L. F. Khalil, Dr P. H. Lamont, Dr S. P. Lapage, Dr B. R. Laurence, Miss G. Lewis, Dr M. J. Mitchinson, Dr Joan Taylor, Dr L. E. Mawdesley Thomas, Mr E. W. Trow, Dr L. H. Turner and Dr M. G. R. Varma;

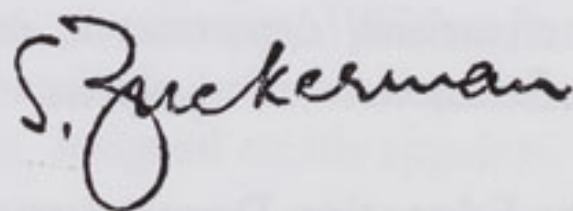
The Supplies, Shipping and Transport Sections by the Board of Trade and HM Customs and Excise, Carworth Europe and University College Hospital (Zoology Department), the many people who have offered Evergreen Oak for feeding purposes, Mr Barry Hilton and the Polkerris Boy Scout Troop; Aer Lingus Airlines, Air Canada, Air France, Air India, American Express Company Inc, Frederick Attwood & Son, Blue Star Line, British European Airways, British Overseas Airways Corporation, British Rail, British United Airways, El Al Israel Airlines, KLM Royal Dutch Airlines, Henry Langridge & Company, London Transport Executive, Lufthansa German Airlines, J. F. Obree & Sons Ltd, Pan American World Airways, Qantas Airways, Scandinavian Airlines Systems, Seaboard World Airlines, South African Airways, Trans World Airlines, United Shipping Company Ltd, Yugoslav Airlines. Special reference must be made to the Union-Castle Mail Steamship Co. and Rennie Hogg Ltd for their very generous assistance in transporting the twenty White Rhinoceros from Durban to Whipsnade Park.

The Veterinary Officer by Mr N. Bonner, Dr Y. M. Clayton, Mr G. L. Gallamore, Mr P. Lane, Miss G. Lewis, Dr P. Marshall-Jones, and Mr W. L. Whitehouse;

The Wellcome Institute of Comparative Physiology by Mr C. Avery, Mr M. Gosling, Dr N. MacIndoe, Dr O. P. Pearson, Mr H. V. Thompson, Mr J. Tretheway and by the Meat and Livestock Commission, the Medical Research Council, the Ministry of Overseas Development and the Wellcome Trust;

Whipsnade Park by Mr J. E. D. Keeling, Dr A. C. Palmer, Mr N. Sloan and by the Animal Health Trust Equine Research Station, Baywood Chemicals Ltd, Cyanamid of Great Britain Ltd, Janssen Pharmaceutica, the Natal Parks, Fish and Game Preservation Board, the Nature Conservancy, Reckitt & Sons Ltd, the Royal Veterinary College, London and Sterling Poultry Products Ltd.

Finally, we wish to thank the press representatives and photographers for their cooperation and interest in the Collection.



SECRETARY

Appendices

Appendix A: The Council

1. The Council

The Council shall be composed of the following members: the President, the Vice President, the Secretary, the Treasurer, and the members of the Executive Committee.

The Council shall meet at least once a year, and may meet more frequently if necessary.

2. Powers and Duties

The Council shall have the following powers and duties: to manage the affairs of the Association, to adopt and amend the Bylaws, to elect and remove officers and members of the Executive Committee, and to do all such other things as may be necessary or proper.

The Council shall also have the power to delegate its authority to any committee or subcommittee, and to report back to the Council on the results of its work.

The Council shall also have the power to call special meetings of the Association, and to set the agenda for such meetings.

The Council shall also have the power to suspend or expel any member of the Association, and to restore any member who has been suspended or expelled.

The Council shall also have the power to adopt and amend the rules of procedure for the Association, and to enforce such rules.

The Council shall also have the power to enter into contracts and agreements on behalf of the Association, and to execute such contracts and agreements.

3. Officers and Members

The Council shall elect and remove the officers and members of the Executive Committee, and shall set the terms of their office.

The Council shall also have the power to elect and remove any other officers or members of the Association, and to set the terms of their office.

The Council shall also have the power to suspend or expel any officer or member of the Association, and to restore any officer or member who has been suspended or expelled.

4. Meetings

The Council shall meet at least once a year, and may meet more frequently if necessary. The Council shall also have the power to call special meetings of the Association, and to set the agenda for such meetings.

5. Amendments to the Bylaws

The Council shall have the power to amend the Bylaws of the Association, and to report back to the Association on the results of its work.

APPENDIX 1

REGULATIONS

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

New Regulation 8

£1 out of the annual subscription of £5 shall be remitted in the case of Associates resident within the British Isles but outside a radius of 50 miles from Charing Cross.

Existing Regulations 8-34 are numbered 9-35 respectively and the revised numbering is used for the following amended Regulations:

Regulation 13 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 £8 out of the annual subscription of £10 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 £8 out of the annual subscription of £10 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*, £7 out of the annual subscription of £9 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, £7 out of the annual subscription of £9 shall be remitted, except in respect of the year in which he leaves the British Isles.
- (v) 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, £3 out of the annual subscription of £5 shall be remitted, except in respect of the year in which he leaves the British Isles.
- (vi) Any Fellow or Associate registered on the Overseas List who resides in the British Isles for a continuous period of more than six months shall in that calendar year become liable for the full subscription applicable to Fellows or Associates in the same category resident in the British Isles: except that when the period does not fall within one calendar year the Fellow or Associate shall be liable for the full subscription for the second year only.

Regulation 14 Life Fellows

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

Age Group	21-30	31-40	41-50	51-60	61-70	71 & over
Ordinary Fellow	£210	£190	£160	£140	£100	£50
Scientific Fellow	£185	£165	£140	£120	£80	£40

provided that any Fellow who has reached the age of sixty-five and has at least thirty years' continuous membership may compound his future subscription by making a single payment of £25.

Regulation 16

Membership cards shall be issued annually to Fellows and Associates, who shall produce them when entering the Zoological Gardens, Regent's Park, and Whipsnade Park, or any enclosure within either for which an entrance fee is charged to the public. Fellows and Associates shall sign the admission book at the entrance gates.

Regulation 22 Use of the Members' Restaurant, Regent's Park

Fellows and Associates may, when visiting the Gardens, use and introduce guests to, the Members' Restaurant and Enclosure during the hours when the Gardens are open to the public. The number of guests is not limited, but each guest must have been admitted to the Gardens either as a guest without charge under Regulation 18 or 19, or on submission of guest tickets purchased at the special concessionary rate, or on payment of the normal public admission charge.

COMMITTEES 1970-1971

Gardens and Park Committee

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

Members of Committee:

The Lord Donaldson, OBE
 Sir Dudley Forwood, Bt, *Chairman*
 A. M. Hassell
 The Earl of Mansfield
 Mrs R. Maudling
 The Hon. Ivor Montagu
 Air Vice-Marshal G. Silyn Roberts, CB, CBE,
 AFC, MSc

Geoffrey Schomberg, FLS
 Peter Scott, CBE, DSC
 Lady Daphne Straight
 Lady Anne Tree
 The Marquess of Willingdon
Secretary: C. G. C. Rawlins, OBE, DFC

Animal Welfare and Husbandry Committee

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

Members of Committee:

Professor G. H. Arthur, DVSc, FRCVS
 Peter S. Bridge, MA, BSc, DVSM, MRCVS
 Matthew Crawford, MRCVS
 Francis C. Fraser, CBE, DSc, FRS
 W. Lane-Petter, MA, MB, BChir, FIBiol, *Chairman*
 N. W. Pirie, MA, FRS

John Reid, CB, DVSM, MRCVS
 J. E. N. Sloan, BSc
 H. V. Thompson, BSc, FIBiol
 Professor W. H. Thorpe, ScD, FRS
 W. L. Whitehouse, RD, MB, FRCS, MRCOG
Secretary: M. R. Brambell, MA, PhD, MRCVS, FLS

Breeding Policy Committee

Terms of reference: To report on the breeding records of animals in the Society's Collections and to make recommendations about any measures whereby the breeding of rare and other animals can be improved, and to advise Council on all matters relating to breeding research, including the appointment of research staff at the Wellcome Institute of Comparative Physiology.

Members of Committee:

Professor J. M. Dodd, PhD, FIBiol, FRSE
 J. F. D. Frazer, MA, DM, PhD
 Professor R. J. Harrison, MA, MD, DSc, MB, BChir.
 Professor H. R. Hewer, CBE, MSc, ARCS
 Professor P. J. Huntingford, MD, FRCOG
 Professor D. Lacy, MA, PhD
 W. Lane-Petter, MA, MB, BChir, FIBiol

J. S. Perry, PhD
 R. V. Short, PhD, ScD, BVSc, MRCVS
 H. V. Thompson, BSc, FIBiol, *Chairman*
 Professor A. N. Worden, MA, MRCVS, FRIC,
 FIBiol, FLS
Secretary: I. W. Rowlands, PhD

Committee of the Nuffield Institute of Comparative Medicine

Terms of reference: To advise on all matters relating to research in comparative medicine; to receive and approve the Director's Annual Report to Council and the Statement of Accounts; and to advise on the appointment of research staff.

Members of Committee:

Professor A. O. Betts, MA, PhD, MRCVS
 Professor G. R. V. Born, MB, ChB, DPhil

Professor G. M. Bull, MD, FRCP
 Raymond Greene, MA, DM, FRCP, *Chairman*

Committee of the Nuffield Institute of Comparative Medicine continued

W. Lane-Petter, MA, MB, BChir, FIBiol
Professor G. S. Nelson, MD, DSc, MB, ChB
N. W. Pirie, MA, FRS
J. E. N. Sloan, BSc
C. E. Gordon Smith, CB, MD, FRCP, FRCPath

Professor R. H. S. Thompson, MA, DM, DSc,
FRCP, FRCPath, LMSSA
Dame Janet Vaughan, DBE, DM, FRCP
C. A. Wright, DSc, PhD, FIBiol
Secretary: L. G. Goodwin, MB, BS, MRCP,
BPharm, BSc, FIBiol

Education Committee

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

Members of Committee:

Professor W. S. Bullough, DSc, *Chairman*
J. D. Carthy, MA, PhD, FIBiol
J. H. Elgood, MA
Miss Barbara M. Gilchrist, PhD
Oliver Impey, MA, DPhil
A. G. Leutscher, BSc

John Napier, MRCS, LRCP
Geoffrey Schomberg, FLS
Mrs P. C. G. Arthur
T. A. Burdett
P. G. Carter
Secretary: M. K. Boorer, BSc, DipEd

Publications Committee

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

Members of Committee:

Professor E. H. Ashton, PhD
Professor E. J. W. Barrington, MA, DSc, FRS,
Chairman
Professor A. d'A. Bellairs, DSc, MRCS
W. Nigel Bonner, BSc
Professor A. J. E. Cave, MD, DSc, FRCS, PLS
Francis C. Fraser, CBE, DSc, FRS
Martin Holdgate, BA, PhD

N. B. Marshall, MA, ScD, FRS
N. D. Riley, CBE
H. N. Southern, MA
Professor J. E. Webb, DSc, PhD
C. A. Wright, DSc, PhD, FIBiol
Secretary: H. Gwynne Vevers, MBE, DPhil, FLS,
FIBiol

Zoological Record Committee

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

Members of Committee:

P. Freeman, DSc, ARCS, FIBiol
Francis C. Fraser, CBE, DSc, FRS, *Chairman*
Professor J. Green, PhD
J. P. Harding, PhD
R. A. Neal, DSc, PhD
J. G. Sheals, PhD

John Smart, DSc
Sir James Stubblefield, DSc, FRS
Errol White, CBE, DSc, FRS
Secretary: H. Gwynne Vevers, MBE, DPhil, FLS,
FIBiol

International Zoo Yearbook Committee

Terms of reference: To advise on the general policy, production, promotion and finance of the *Yearbook*.

Members of Committee:

Professor E. J. W. Barrington, MA, DSc, FRS
Professor F. Bourlière, MD, LSc
William G. Conway
The Earl of Cranbrook, CBE, MA, FLS, *Chairman*
Francis C. Fraser, CBE, DSc, FRS
Geoffrey R. Greed

W. Lane-Petter, MA, MB, BChir, FIBiol
Raymond E. Legge
Peter Scott, CBE, DSC
Walter Van den bergh
Secretary: J. Lucas, BSc, MIBiol

The President, Treasurer and Secretary are *ex officio* Members of all Committees.

APPENDIX 3

STAFF

Headquarters

Director of Administration: Miss E. M. Owen,
OBE
Director of Zoos: C. G. C. Rawlins, OBE, DFC
Architect: J. W. Toovey, AADipl(Hons), FRIBA
Building Manager: L. G. Taverner
Chief Accountant: W. N. Pickford, MM, ACIS
Education Officer: M. K. Boorer, BSc, DipEd
Establishment Officer: M. E. McInerney
Catering Manager: G. A. J. Perkins, MHCI
Public Relations Officer: J. A. Dale, MIPR

Scientific

Director of Science: L. G. Goodwin,
MB, BS, MRCP, BPharm, BSc, FIBiol
Assistant Director of Science: H. Gwynne Vevers,
MBE, DPhil, FLS, FIBiol
(See also Publications Department and London Zoo)
Nuffield Institute of Comparative Medicine: See
page 24
Wellcome Institute of Comparative Physiology: See
page 25
Pathologist: I. F. Keymer, PhD, MRCVS
Veterinary Officer: J. M. Hime, MRCVS, DVR
Senior Hospital Technician: A. K. Fitzgerald
Librarian: R. A. Fish, FLA
Publications Department: See pages 22, 23

London Zoo

*Curator of Aquarium and Invertebrates, Acting
Curator of Reptiles*: H. Gwynne Vevers, MBE,
DPhil, FLS, FIBiol
Curator of Birds: P. J. Olney, BSc, DipEd, FLS
Curator of Mammals: M. R. Brambell, MA, PhD,
MRCVS, FLS
Assistant to Curator of Aquarium: G. J. Ashby
Gardens Executive: J. Ward
Head Gardener: H. Hemmings
Overseer of Birds: D. G. Newson
Overseers of Mammals: T. Sangster, J. Lambden
Overseer of Reptiles: D. Ball, AIAT
Supplies Officer: C. H. Johns, DPA

Head Keepers

Aquarium: R. Dumbelton
Aquatic Birds and Birds of Prey: A. E. Scrivener,
AIAT
Bears: S. Morton
Bird House: W. G. R. Daines

Head Keepers continued

Children's Zoo: H. C. Dean
Elephant Pavilion and Aquatics: W. G. Crompton,
G. E. Hughes
Insects: R. P. Humphrys, AIAT
Lion House: G. A. S. Figgitt
Monkeys: G. Callard
Parrot House and Eastern Aviary:
A. F. Shambrook
Pheasantry and Ostrich House: R. Barrow
Ungulates: H. G. N. Robinson
Small Mammals: D. Clarke

Whipsnade Park

Curator: V. J. A. Manton, MRCVS
Park Manager: O. C. Chamberlain
Veterinary Officer: D. M. Jones,
BSc, BVetMed, MRCVS
Catering Manager: J. Boswood
Assistant Accountant and Office Manager: B. J.
Iken
Head Gardener: J. Folds
Senior Overseer: F. L. Gladman
Overseer: G. Stanbridge

Head Keepers

Central Ungulate Section: H. Stevens
Southern Ungulate Section: A. W. Billington
Northern Ungulate Section: A. G. Thorne
Carnivore Section: F. Hughes
Elephant Section: J. Datlen
Bird Section: R. Hazzard
Children's Zoo: P. C. Milne

CONSULTING STAFF

Consulting Architect: Sir Hugh Casson,
MA, RDI, FRIBA, FSIA
Consulting Landscape Architect: Peter F.
Shepherd, BArch, PRIBA, AMTPI, FILA
Honorary Herpetologist: Professor A. d'A.
Bellairs, DSc, MRCS
Honorary Helminthologist: Professor J. J. C.
Buckley, DSc
Adviser on Labour Relations: E. Bishop, OBE
Medical Referee: J. P. Horder, OBE, MA, MB,
BCh, MRCP
Honorary Consultant Photographer:
W. G. Vanderson
Consultant Typographers: Colin Banks, MSIA,
John Miles

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APPENDIX 5

LIST OF ANIMALS RECEIVED

(presented, purchased, received in exchange, deposited or born in the Menagerie)

Key

G Genus new to the Collection

S Species new to the Collection

SS Subspecies new to the Collection

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

In the column 'Total number acquired', the figures in brackets indicate animals which have been transferred between the Society's two Collections.

In the column 'Number born or hatched in the menagerie', the figures in brackets indicate the number which have died.

		Total number acquired	Number born or hatched in the Menagerie
REGENT'S PARK	Mammals		
	MARSUPIALIA		
	<i>Protemnodon rufogrisea</i>	2 (1)	1
	INSECTIVORA		
	<i>Elephantulus brachyrhynchus</i>		
	s <i>Crocidura luna</i> (Dollman) Africa		
	CHIROPTERA		
	<i>Pteropus giganteus</i>	1	1 (1)
	PRIMATES		
	<i>Tupaia glis</i>	10	10 (2)
	<i>Perodicticus potto</i>	1	1
	<i>Galago crassicaudatus</i>	4	1
	<i>Galago senegalensis</i>	6	
	<i>Aotus trivirgatus</i>	1 (1)	
	<i>Callicebus moloch</i>	1	1
	<i>Cebus albifrons</i>	1	
	<i>Saimiri sciureus</i>	1	
<i>Callithrix argentata</i>	3	3	
<i>Leontocebus oedipus</i>	6	6 (2)	
<i>Macaca nemestrina</i>	2	2	
<i>Macaca maurus</i>	1	1 (1)	
<i>Papio anubis</i>	3	3 (1)	
<i>Pongo pygmaeus</i>	1	1 (1)	
<i>Pan troglodytes</i>	1	1	
EDENTATA			
<i>Cabassous centralis</i>	1		
LAGOMORPHA			
<i>Lepus europaeus</i>	1		

		Total number acquired	Number born or hatched in the Menagerie
RODENTA			
<i>Cynomys ludovicianus</i>	Prairie Marmot	2	2
<i>Tamias sibiricus</i>	Siberian Chipmunk	1	
<i>Castor canadensis</i>	Canadian Beaver	2	
<i>Peromyscus leucopus</i>	Deer Mouse	2	
<i>Tatera afra</i>	African Gerbil	9	9
<i>Meriones unguiculatus</i>	Clawed Jirds	3	3 (3)
<i>Apodemus sylvaticus</i>	Field Mouse	9	9
<i>Rhabdomys pumilio</i>	Four-striped Rat	10	8 (2)
<i>Mus minutoides</i>	Pygmy Mouse	2	2 (2)
<i>Mus triton</i>	Larger Pygmy House	1	
<i>Acomys dimidiatus</i>	Arabian Spiny Mouse	8	8
<i>Beamys major</i>	East African Long-tailed Pouched Rat	1	
s <i>Dendromus mesomelas</i> (Brants) Africa	Chestnut Tree Mouse	1	
<i>Muscardinus avellanarius</i>	Common Dormouse	6	
<i>Graphiurus murinus</i>	Bushy-tailed Dormouse	5	2
<i>Hystrix indica</i> × <i>H. cristata</i>	Hybrid Porcupine	3 (3)	
<i>Atherurus africanus</i>	African Brush-tailed Porcupine	3	3
<i>Cuniculus paca</i>	Spotted Paca	1	
<i>Myoprocta pratti</i>	Green Acouchy	16	16 (12)
<i>Lagostomus maximus</i>	Viscacha	5	
<i>Chinchilla laniger</i>	Chinchilla	2	2
CARNIVORA			
<i>Canis familiaris</i>	Dingo × Singing Dog	4	4
<i>Fennecus zerda</i>	Fennec Fox	3	3 (1)
<i>Ursus arctos</i>	Brown Bear	1	1
<i>Thalarctos maritimus</i>	Polar Bear	2	2 (1)
<i>Genetta maculata</i>	Spotted Genet	1	
<i>Suricata suricatta</i>	Slender-tailed Meerkat	2	
<i>Felis bengalensis</i>	Leopard Cat	3	3
<i>Felis lynx</i>	Northern Lynx	1	
<i>Felis serval</i>	Serval	7 (2)	5 (5)
<i>Felis concolor</i>	Puma	3	3
<i>Panthera tigris</i>	Tiger	1	
<i>Pantherus pardus</i>	Leopard	2 (2)	
	(Chinese) Leopard	2	2
<i>Acinonyx jubatus</i>	Cheetah	2 (2)	
PINNIPEDIA			
<i>Zalophus californianus</i>	Californian Sea Lion	1	1 (1)
PROBOSCIDEA			
<i>Elephas maximus</i>	Indian Elephant	1	
HYRACOIDEA			
<i>Procavia capensis</i>	Roch Hyrax	4	
PERISSODACTYLA			
<i>Equus burchelli</i>	Common Zebra	2	

		Total number acquired	Number born or hatched in the Menagerie
ARTIODACTYLA			
<i>Sus scrofa</i>	Wild Boar	18	18
<i>Tayassu tajacu</i>	Collared Peccary	1 (1)	
<i>Lama glama</i>	Llama	2 (2)	
<i>Lama guanicoe</i>	Guanaco	2 (1)	1
<i>Camelus bactrianus</i>	Bactrian Camel	6	6 (1)
<i>Camelus dromedarius</i>	Arabian Camel	1	1 (1)
<i>Cervus timorensis</i>	Timor Deer	2	2 (1)
<i>Cervus elaphus</i>	Red Deer	5	5 (1)
<i>Tragelaphus strepsiceros</i>	Greater Kudu	1	1 (1)
<i>Taurotragus oryx</i>	Eland	2	
<i>Bos grunniens</i>	Yak	2	2 (1)
<i>Bison bison</i>	American Bison	1	1
<i>Connochaetes taurinus</i>	Brindled Gnu	2	2
<i>Antilope cervicapra</i>	Blackbuck	13	13 (4)
<i>Ammotragus lervia</i>	Barbary Sheep	17	17 (10)
<i>Ovis musimon</i>	Mouflon	8	8 (3)
<i>Ovis canadensis</i>	Big-horned Sheep	1	1 (1)
DOMESTIC			
	Pigs	3	
	Cattle	1	
	Goats	14	13 (8)
	Bagot Goats	2	2
	Sheep	10	10 (6)
Birds			
SPHENISCIFORMES			
<i>Spheniscus demersus</i>	Black-footed Penguin	3	3 (1)
PELECANIFORMES			
<i>Sula bassanus</i>	Gannet	1	
CICONIIFORMES			
<i>Ardeola ibis</i>	Cattle Egret	4	4
<i>Nycticorax nycticorax</i>	Night Heron	2	2
<i>Threskiornis aethiopica</i>	Sacred Ibis	8	8 (2)
<i>Guara rubra</i>	Scarlet Ibis	3	
<i>Phoenicopterus ruber roseus</i>	Greater Flamingo	6	
ANSERIIFORMES			
<i>Anser caerulescens atlanticus</i>	Greater Snow Goose	2 (2)	
<i>Branta canadensis</i>	Canada Goose	9	9 (1)
<i>Branta sandvicensis</i>	Hawaiian Goose	1	
<i>Chloephaga poliocephala</i>	Ashy-headed Goose	1	
<i>Anas flavirostris oxyptera</i>	Sharp-winged Teal	1	
<i>Anas platyrhynchos laysanensis</i>	Laysan Duck	1	1 (1)
<i>Anas undulata undulata</i>	African Yellow-billed Duck	1	
<i>Anas georgica spinicauda</i>	Chilean Pintail	1	
<i>Oxyura jamaicensis jamaicensis</i>	North American Ruddy Duck	2	
FALCONIFORMES			
<i>Gyps africanus</i>	African White-backed Vulture	2	

		Total number acquired	Number born or hatched in the Menagerie
<i>Gyps rueppellii</i>	Ruppell's Griffon Vulture	3	
<i>Torgos tracheliotus</i>	Lappet-faced Vulture	1	
<i>Terathopius ecaudatus</i>	Bateleur Eagle	3	
<i>Aquila chrysaetos</i>	Golden Eagle	1	
GALLIFORMES			
<i>Penelope purpurascens</i>	Purplish Guan	1	
<i>Coturnix coturnix japonica</i>	Japanese Quail	1	
<i>Coturnix chinensis</i>	Painted Quail	3	
<i>Rollulus roulroul</i>	Red-crested Wood Quail	1	
<i>Bambusicola thoracica</i>	Chinese Bamboo Partridge	1	
<i>Crossoptilon auritum</i>	Pallas's Eared Pheasant	1	
<i>Lophura nycthemerus</i>	Chinese Silver Pheasant	7	7
<i>Gallus sonnerattii</i>	Sonnerat's Jungle Fowl	2	2
<i>Catreus wallichi</i>	Cheer Pheasant	7	7
<i>Phasianus colchicus</i>	Common Pheasant	4	4
<i>Syrmaticus humiae humiae</i>	Hume's Bar-tailed Pheasant	3	3
<i>Syrmaticus mikado</i>	Mikado Pheasant	2	
<i>Syrmaticus reevesii</i>	Reeve's Pheasant	6	6 (1)
<i>Chrysolophus pictus</i>	Golden Pheasant	1	1
<i>Chrysolophus amherstiae</i>	Lady Amherst's Pheasant	2	2
<i>Polyplectron emphanum</i>	Palawan Peacock Pheasant	1	1
<i>Pavo cristatus</i>	Common Peafowl	2	2
GRUIFORMES			
<i>Grus vipio</i>	Japanese White-necked Crane	1	
<i>Grus antigone</i>	Sarus Crane	1	1
<i>Anthropoides paradisea</i>	Stanley Crane	2	
<i>Tribonyx mortierii</i>	Tasmanian Waterhen	1	1
<i>Porphyrio porphyrio poliocephalus</i>	Grey-headed Gallinule	2	2 (1)
CHARADRIIFORMES			
<i>Haematopus ostralegus</i>	Oystercatcher	1	
<i>Larus argentatus</i>	Herring Gull	2	2
<i>Larus marinus</i>	Great Black-backed Gull	3	3
<i>Uria aalga</i>	Guillemot	1	
COLUMBIFORMES			
s <i>Treron olax</i> (Temminck) S. Asia	Little Green Pigeon	2	
<i>Treron vernans</i>	Pink-necked Green Pigeon	1	
ss <i>Ducula badia griseicapilla</i> (Walden) South Asia	Mountain Imperial Pigeon	1	
ss <i>Ducula badia badia</i> (Raffles) South Asia	Mountain Imperial Pigeon	1	
s <i>Macropygia ruficeps</i> (Temminck) South Asia	Little Cuckoo Dove	3	
<i>Streptopelia vinacea vinacea</i>	Vinaceous Dove	9	9 (1)
<i>Streptopelia chinensis suratensis</i>	Spotted Dove	2	
<i>Streptopelia chinensis tigrina</i>	Malayan Necklace Dove	2	1
<i>Geopelia striata striata</i>	Zebra Dove	3	
<i>Chalcophaps indica</i>	Emerald Dove	2	
<i>Ocyphaps lophotes</i>	Crested Pigeon	2	2
PSITTACIFORMES			
<i>Cacatua alba</i>	White-crested Cockatoo	1	
<i>Nymphicus hollandicus</i>	Cockatiels	6	6
<i>Aratinga canicularis canicularis</i>	Petz's Conure	1	

		Total number acquired	Number born or hatched in the Menagerie
<i>Brotogeris versicolurus versicolurus</i>	White-winged Parrakeet	1	
<i>Brotogeris versicolurus chiriri</i>	Canary-winged Parrakeet	1	
<i>Brotogeris chrysopterus chrysopterus</i>	Golden-winged Parrakeet	1	
<i>Poicephalus senegalus senegalus</i>	Yellow-vented Senegal Parrot	1	
<i>Psittacula eupatria nipalensis</i>	Alexandrine Parrakeet	1	
<i>Psittacula krameri manillensis</i>	Indian Ring-necked Parrakeet	1	
<i>Agapornis roseicollis</i>	Rosy-faced Lovebird	2	
<i>Psephotus haematonotus</i>	Red-rumped Parrakeet	2	
<i>Melopsittacus undulatus</i>	Budgerigar	65	33 (5)
CUCULIFORMES			
<i>Tauraco leucotis leucotis</i>	White-cheeked Turaco	1	1
STRIGIFORMES			
<i>Tyto alba alba</i>	Barn Owl	2	2
<i>Bubo africanus cinerascens</i>	Abyssinian Spotted Eagle Owl	2	2
<i>Ketupa zeylonensis</i>	Brown Fish Owl	1	
<i>Pulsatrix perspicillata perspicillata</i>	Spectacled Owl	1	1
<i>Athene noctua vidalii</i>	Little Owl	1	
APODIFORMES			
G <i>Sappho sparganura</i> (Shaw) South America	Red-tailed Comet	1	
CORACIIFORMES			
<i>Ispidina picta</i>	Pygmy Kingfisher	2	
G <i>Nyctyornis amicta</i> (Temminck) S. E. Asia	Red-bearded Bee-eater	1	
<i>Coracias benghalensis</i>	Indian Roller	5	
<i>Upupa epops</i>	Hoopoe	2	
<i>Phoeniculus purpureus</i>	Wood Hoopoe	2	
<i>Torkus erythrorhynchus</i>	Red-billed Hornbill	2	
PICIFORMES			
<i>Eubucco bourcierii</i>	Red-headed Barbet	1	
<i>Pteroglossus viridis inscriptus</i>	Lettered Aracari	2	
PASSERIFORMES			
<i>Pitta cucullata</i>	Hooded Pitta	2	
<i>Cichladusa guttata</i>	Spotted Morning Warbler	1	
<i>Garrulax striatus</i>	Striated Thrush	6	
<i>Serinus mozambicus</i>	Green Singing Finch	7	
<i>Hypargos niveogutatus</i>	Peter's Twinspot	2	
<i>Uraeginthus bengalus</i>	Cordon-bleu	3	
<i>Estrilda melpoda</i>	Orange-cheeked Waxbill	5	
<i>Estrilda troglodytes</i>	Common or Red-eared Waxbill	6	
<i>Estrilda astrild</i>	St. Helena Waxbill	1	
<i>Estrilda rhodopyga</i>	Red-rumped Waxbill	2	
<i>Lagonosticta senegala</i>	Common Fire Finch	2	
<i>Amandava amandava</i>	Avadavat	1	
<i>Amandava subflava</i>	Golden-breasted Waxbill	2	
<i>Ortygospiza atricollis</i>	Quail Finch	1	
<i>Neochmia ruficauda</i>	Star Finch	1	
<i>Poephila guttata castanotis</i>	Zebra Finch	19	
<i>Lonchura malabarica cantans</i>	African Silverbills	3	

		Total number acquired	Number born or hatched in the Menagerie
<i>Lonchura striata</i> var.	Bengalese Finch	6	
<i>Lonchura punctulata</i>	Nutmeg Finch	1	
<i>Lonchura malacca atricapilla</i>	Black-headed Mannikin	2	
<i>Amadina fasciata</i>	Cut-throat Finch	1	
<i>Niltava sundara</i>	Chestnut-bellied Niltava	2	
<i>Amblyospiza albifrons</i>	Grosbeak Weaver	2	
<i>Euplectes afer</i>	Napolean Weaver	1	
<i>Euplectes orix</i>	Orange Bishop	3	
Sp. inc.	Weaver	3	
<i>Spreo superbus</i>	Superb Glossy Starling	2	
<i>Cosmopsarus regius</i>	Royal Starling	2	
<i>Leucopsar rothschildi</i>	Rothchild's Grackle	3	
<i>Gracula religiosa intermedia</i>	Nepal or Greater Hill Mynah	4	
<i>Buphagus erythrorhynchus</i>	Red-billed Oxpecker	3	
<i>Pyrhacorax pyrrhacorax</i>	Chough	1	
<i>Corvus frugilegus</i>	Rook	1	
Reptiles			
TESTUDINES			
<i>Macrolemys temminckii</i>	Alligator Snapper	1	
<i>Staurotypus triporcatus</i>	Three-keeled Terrapin	1	
G <i>Claudius angustatus</i> Cope (Central America & Mexico)			1
<i>Hardella thurjii</i>	Diadem Terrapin	1	
<i>Chrysemys picta dorsalis</i>	Southern Painted Terrapin	1	
<i>Chrysemys picta belli</i>	Western Painted Terrapin	1	
<i>Pseudemys scripta scripta</i>	Yellow-bellied Terrapin	2	
<i>Pseudemys scripta elegans</i>	Red-eared Terrapin	19	
<i>Pseudemys ornata</i>	Ornate Terrapin	2	
<i>Pseudemys ornata callirostris</i>	Ornate Terrapin	2	
<i>Ocadia sinensis</i>	Bennett's Terrapin	1	
<i>Malayemys subtrijuga</i>	Siamese Terrapin	1	
<i>Siebenrockiella crassicollis</i>	Thick-necked Terrapin	1	
<i>Clemmys caspica rivulata</i>	Western Caspian Terrapin	1	
<i>Clemmys caspica leprosa</i>	Spanish Terrapin	5	
<i>Clemmys guttata</i>	Spotted Terrapin	1	
<i>Geoemyda grandis</i>	Burmese Terrapin	1	
<i>Cyclemys dentata</i>	Oldham's Terrapin	2	
<i>Cuora amboinensis</i>	Amboina Box Tortoise	1	
<i>Geoemyda spinosa</i>	Spiny Terrapin	5	
<i>Kinixys homeana</i>	Home's Hinged Tortoise	3	
<i>Testudo graeca</i>	Spur-thighed Mediterranean Tortoise	9	
<i>Testudo hermanni</i>	Hermann's Tortoise	1	
<i>Geochelone elegans</i>	Starred Tortoise	4	
<i>Psammobates geometrica</i>	Geometric Tortoise	1	
<i>Psammobates oculifer</i>	Kuhl's Tortoise	2	
<i>Pelomedusa subrufa</i>	Helmeted Terrapin	5	
CROCODILIA			
<i>Crocodylus acutus</i>	American Sharp-nosed Crocodile	1	
<i>Caiman crocodilus</i>	Spectacled Cayman	1	

		Total number acquired	Number born or hatched in the Menagerie
SAURIA			
<i>Gecko sp. inc.</i>		15	
<i>Teratoscincus scincus</i>	Turkestan Gecko	4	
<i>Hemidactylus fasciatus</i>	Banded Gecko	2	
<i>Eublepharis macularius</i>	Leopard Ground Gecko	2	
<i>Anolis equestris</i>	Greater Cuban Anolis	1	
<i>Iguana iguana</i>	Iguanas	2	
<i>Ceratophora stoddarti</i>	Stoddart's Lizard	6	
<i>Cophotis ceylanica</i>		2	
<i>Calotes versicolor</i>	Indian Changeable Lizard	1	
<i>Calotes mystaceus</i>	Moustached Agama	1	
<i>Calotes nigrilabris</i>	Black-lipped Agama	4	
<i>Physignathus cocincinus</i>	Cochin China Water Dragon	2	
<i>Uromastyx aegyptius</i>	Egyptian Dabb-lizard	1	
<i>Uromastyx hardwickii</i>	General Hardwicke's Dabb Lizard	4	
<i>Chamaeleo chamaeleon</i>	Common Chameleon	3	
<i>Chamaeleo bitaeniatus hoehnelii</i>	High-casqued Chameleon	1	
<i>Chamaeleo jacksoni</i>	Kikuyu Three-horned Chameleon	4	
<i>Tiliqua gigas</i>	Great Moluccan Skink	7	7
<i>Chalcides ocellatus</i>	Eyed Skink	5	
<i>Gerrhosaurus vallidus</i>	Robust Plated Lizard	1	
<i>Lacerta vivipara</i>	Viviparous Lizard	13	
<i>Tupinambis nigropunctatus</i>	Black-pointed Tegu	1	
<i>Varanus griseus</i>	Grey Monitor	1	
<i>Varanus exanthematicus</i>	Bosc's Monitor	4	
<i>Varanus exanthematicus albigularis</i>	White-throated Monitor	2	
<i>Varanus flavescens</i>	Yellow Monitor	1	
<i>Varanus niloticus</i>	Nile Monitor	3	
<i>Heloderma suspectum</i>	Gila Monster	1	
<i>Anguis fragilis</i>	Slowworm	3	
<i>Cordylus giganteus</i>	Lord Derby's Zonure	8	
SERPENTES			
Snakes sp. inc.		2	
<i>Python reticulatus</i>	Reticulated Python	1	
<i>Python sebae</i>	African Python	1	
<i>Python regius</i>	Royal Python	1	
<i>Corallus enydris enydris</i>	Garden Tree-boa	1	
<i>Corallus caninus</i>	Green Tree-boa	1	
<i>Boa constrictor</i>	Boa Constrictor	1	
<i>Natrix natrix persa</i>	Grass Snake (S.E. form)	8	
<i>Thamnophis sirtalis</i>	Common Garter Snake	5	4
<i>Thamnophis sirtalis sirtalis</i>	Eastern Garter Snake	1	
<i>Lycodonomorphus rufulus</i>	Rufous Snake	2	
<i>Lamprophis aurora</i>	Aurora Snake	2	
<i>Elaphe obsoleta</i>	American Rat Snake	4	
<i>Elaphe radiata</i>	Eastern Copperhead	2	
<i>Coluber gemonensis</i>	European Whip-snake	6	
<i>Coluber viridiflavus</i>	Dark Green Snake	1	
<i>Coluber najadum</i>	Dahl's Whip-snake	1	
<i>Philothamnus semivariatus semivariatus</i>	Variiegated Bush Snake	1	
<i>Leiosophis gigas</i>	Boipevussu Snake	2	

		Total number acquired	Number born or hatched in the Menagerie
	<i>Coronella austriaca</i>		
s	<i>Liopeltis major</i> (Gunther) (S.E. Asia (Taiwan))	1	
	<i>Dasypeltis scabra</i>	3	
	<i>Herpeton tentaculatum</i>	1	
	<i>Telescopus semianulatus</i>	2	
	<i>Boiga cynodon</i>	1	
	<i>Boiga dendrophila</i>	2	
	<i>Crotaphopeltis hotamboeia</i>	1	
s	<i>Psammophylas tritaeniatus</i> (Gunther) (South Africa)	2	
	<i>Malpolon moilensis</i>	2	
	<i>Psammophis subtaeniatus</i>		
		1	
	<i>Psammophis sibilans</i>	2	
	<i>Ahaetulla prasina</i>	1	
	<i>Chrysopelea paradisi</i>	1	
s	<i>Bungarus multicinctus</i> Blyth (S.E. Asia (Taiwan))	2	
	<i>Naja haje</i>	2	
	<i>Naja nivea</i>	1	
	<i>Naja melanoleuca</i>	1	
	<i>Naja naja sputatrix</i>	2	
	<i>Hemachatus haemachatus</i>	4	
	<i>Dendroaspis jamesoni kaimosae</i>		
		1	
	<i>Dendroaspis angusticeps</i>	1	
	<i>Vipera ammodytes</i>	5	
	<i>Vipera russelii</i>	1	
s	<i>Bitis caudalis</i> (Smith) (Southern Angola and western Rhodesia)	1	
	<i>Bitis gabonica</i>	6	
	<i>Cerastes cerastes</i>	1	
	<i>Agkistrodon hypnale</i>	2	
	<i>Agkistrodon rhodostoma</i>	34	
s	<i>Trimeresurus stejnegeri</i> Schmidt (Taiwan)	1	
	<i>Trimeresurus wagleri</i>	1	
Amphibians			
	<i>Bufo regularis</i>	5	
s	<i>Bufo camerunensis</i> Parker (W. & C. Africa)	4	
	<i>Bufo carens</i>	2	
	<i>Bufo garmani</i>	2	
	<i>Bufo melanostictus</i>	3	
	<i>Bufo asper</i>	1	
	<i>Hyla arborea</i>	2	
s	<i>Ceratophrys calcarata</i> Boulenger (Colombia, South America)	3	
	<i>Rana hexadactyla</i>	1	
	<i>Rana temporaria</i>	50	
	<i>Pyxicephalus adspersa</i>	2	
	<i>Pyxicephalus delalandii</i>	4	
	<i>Rana erythraea</i>	4	
s	<i>Hyperolius picturatus</i> Peters (Nigeria)	3	
	<i>Kaloula pulchra</i>	4	

Total
number
acquired

Number born
or hatched
in the
Menagerie

Fishes new to the collection

Megalamphodus megalopterus Eigenmann (South America)
Megalamphodus sweglesi Gery (South America)
Tilapia leucosticta Trewavas (East Africa)
Botia modesta Bleeker (South-east Asia)
Rasbora kallachroma (Bleeker) (South-east Asia)

WHIPSNADE
PARK

Mammals

MARSUPIALIA

Protemnodon rufogrisea

Red-necked Wallaby 75 75 (4)

PRIMATES

Galago crassicaudatus

Thick-tailed Bushbaby 1 1

Macaca mulatta

Rhesus Macaque 1 1

Pan troglodytes

Chimpanzee 1 (1)

RODENTIA

Tamias sibiricus

Siberian Chipmunk 4

Glis glis

Fat Dormouse 3

Dolichotis patagonum

Mara 4 4 (2)

Dasyprocta punctata

Central American Agouti 1 1

CARNIVORA

Canis lupus

Canadian Timber Wolf 7 7

Vulpes vulpes

Red Fox 1

Ursus arctos

Brown Bear 6 6

Thalarctos maritimus

Polar Bear 1 1 (1)

Mustela putorius

Polecat 3

Felis lynx

Northern Lynx 1

Felis serval

Serval 2 (1) 1

Felis concolor

Puma 1 1 (1)

Panthera leo

Lion 1 (1)

Acinonyx jubatus

Cheetah 2 2

PERISSODACTYLA

Equus przewalskii

Przewalski's Horse 2 2

Asinus hemionus

Persian Onager 1 1

Equus burchelli

Turkmen Wild Ass 1 1

Diceros simus

Common Zebra 1 1

Diceros bicornis

White Rhinoceros 20

Black Rhinoceros 1 1

ARTIODACTYLA

Tayassu tajacu

Collared Peccary 5 4 (1)

Choeropsis liberiensis

Pygmy Hippopotamus 1

Lama glama

Llama 10 10 (1)

Lama guanicoe

Guanaco 8 6 (2)

Camelus bactrianus

Bactrian Camel 17 (17)

Camelus dromedarius

Arabian Camel 2 2

Muntiacus reevesi

Reeves Muntjac 10 7

Dama dama

Fallow Deer 30 30 (7)

Axis axis

Spotted Deer 13 13 (7)

		Total number acquired	Number born or hatched in the Menagerie
<i>Axis porcinus</i>	Hog Deer	9	9 (2)
<i>Cervus duvauceli</i>	Barasingha	7	7 (4)
<i>Cervus nippon</i>	Japanese Sika Deer	8	3 (2)
	Formosan Sika Deer	26	26 (16)
<i>Cervus elaphus</i>	Red Deer	16	16 (2)
	Wapiti	4	4
<i>Elaphurus davidianus</i>	Pere David's Deer	5	5 (2)
<i>Odocoileus virginianus</i>	White-tailed Deer	1	1 (1)
<i>Rangifer tarandus</i>	Reindeer	4	4 (2)
<i>Hydropotes inermis</i>	Chinese Water Deer	20	20 (1)
<i>Tragelaphus spekei</i>	Sitatunga	2	2 (2)
<i>Boselaphus tragocamelus</i>	Nilgai	3	3 (2)
<i>Bos grunniens</i>	Yak	1 (1)	
<i>Bison bonasus</i>	European Bison	3	3
<i>Bison bison</i>	North American Bison	4	4
<i>Damaliscus dorcas</i>	Blesbok	5	5
<i>Connochaetes taurinus</i>	Brindled Gnu	4	4
<i>Gazella thomsoni</i>	Thomson's Gazelle	8	8 (6)
<i>Ovis musimon</i>	Mouflon	13	13 (4)
DOMESTIC			
	Ponies	6	6 (1)
	Pygmy Donkey	1	1
	Pitman Moore Miniature		
	Swine	1	
	Ankole Ox	5	5
	Windsor White Goats	17	17 (6)
	Four-horned Sheep	12	12 (7)
Birds			
SPHENISCIFORMES			
<i>Spheniscus humboldti</i>	Humboldt's Penguin	3	3
<i>Spheniscus demersus</i> × <i>S. humboldti</i>	Black-footed × Humboldt's Penguin	1	1
CICONIIFORMES			
<i>Egretta garzetta</i>	Little Egret	3 (3)	
<i>Ardeola ibis</i>	Cattle Egret	1 (1)	
<i>Threskiornis aethiopica</i>	African Sacred Ibis	9 (9)	
<i>Phoenicopterus ruber roseus</i>	Greater Flamingo	6	
<i>Phoenicopterus ruber ruber</i>	Rosy Flamingo	12	
ANSERIFORMES			
<i>Cygnus atratus</i>	Black Swan	3	3
<i>Anser caerulescens caerulescens</i>	Lesser Snow Goose	5	5 (5)
<i>Branta canadensis</i>	Canada Goose	26 (9)	17
<i>Branta ruficollis</i>	Red-breasted Goose	15	15
<i>Cereopsis novae-hollandiae</i>	Cereopsis Goose	4	3 (1)
<i>Chloephaga poliocephala</i>	Ashy-headed Goose	2	
<i>Chloephaga picta leucoptera</i>	Upland Goose	1	1
<i>Tadorna tadorna</i>	Common Shelduck	4	
<i>Anas penelope</i>	Common Wigeon	3	3
<i>Anas sibilatrix</i>	Chiloe Wigeon	4	
<i>Anas querquedula</i>	Garganey	2	

		Total number acquired	Number born or hatched in the Menagerie
<i>Somateria mollissima</i>	Eider Duck	4	
<i>Netta rufina</i>	Red-crested Pochard	4	
<i>Aythya marila</i>	Common Scaup	2	
<i>Aix sponsa</i>	Carolina Duck	4	4 (3)
GALLIFORMES			
<i>Lophura nycthemerus</i>	Chinese Silver Pheasant	2	2
<i>Catreus wallichi</i>	Cheer Pheasant	17 (2)	15 (3)
<i>Syrnaticus reevesi</i>	Reeves's Pheasant	1	1 (1)
<i>Chrysolophus pictus</i>	Golden Pheasant	14	13 (3)
<i>Pavo cristatus</i>	Common Peafowl	2	1 (1)
<i>Numida meleagris</i>	Helmeted Guineafowl	50	50 (16)
<i>Meleagris gallopavo</i>	North American Turkey	22 (1)	21 (19)
GRUIFORMES			
<i>Grus antigone</i>	Eastern Sarus Crane	3 (2)	
<i>Anthropoides virgo</i>	Demoiselle Crane	5	
<i>Psophia crepitans crepitans</i>	Grey-winged Trumpeter	4	
<i>Psophia viridis viridis</i>	Green-winged Trumpeter	1	
<i>Ardeotis kori</i>	Kori Bustard	2	
<i>Porphyrio porphyrio poliocephalus</i>	Grey-headed Gallinule	7 (3)	
CHARADRIIFORMES			
<i>Larus ridibundus</i>	Black-headed Gull	3	
<i>Larus marinus</i>	Great Black-backed Gull	3 (3)	
<i>Larus fuscus fuscus</i>	Scandinavian Lesser Black-backed Gull	1	
<i>Larus fuscus graellsii</i>	British Lesser Black-backed Gull	1	
<i>Larus argentatus</i>	Herring Gull	5 (2)	
PSITTACIFORMES			
<i>Trichoglossus haematod moluccanus</i>	Swainson's Lorikeet	1	1
<i>Nymphicus hollandicus</i>	Cockatiel	2	1
<i>Brotogeris versicolurus chiriri</i>	Canary-winged Parrakeet	1	
<i>Amazona aestiva aestiva</i>	Blue-fronted Parrot	1	
<i>Psittacula krameri manillensis</i>	Indian Ring-necked Parrakeet	5	2 (2)
<i>Psephotus haematonotus</i>	Red-rumped Parrakeet	2	
STRIGIFORMES			
<i>Tyto alba alba</i>	Barn Owl	2	
<i>Strix aluco sylvatica</i>	Tawny Owl	2	
PASSERIFORMES			
<i>Gracula religiosa indica</i>	Southern Hill Mynah	3	
DOMESTIC			
	Budgerigar	2	2
	Swallow Pigeon	4	4 (2)

LIST OF DONORS OF ANIMALS TO THE SOCIETY

REGENT'S PARK

- Ansell, Mr, 1 Chestnut Tree Mouse, 2 Four-striped Rats, 3 Bushy-tailed Dormice
 Ansell, Patrick, 1 East African Long-tailed Pouched Rat, 1 Short-snouted Elephant Shrew, 1 Larger Pygmy Mouse, 1 Blue-grey Musk Shrew
 Axter, Mrs B., 1 Mediterranean Spur-thighed Tortoise
 Bailey, Miss, 2 Yellow-bellied Terrapins
 Bamberger, Mrs E., 1 Hermann's Tortoise
 Banks, Mr T., 1 Oystercatcher
 Barret, M. G. T., 1 Tropical House Spider
 Beig, Mrs S., 1 Mediterranean Spur-thighed Tortoise
 Bellairs, Professor A. d'A., 1 Egyptian Dabb Lizard
 Bennett, P., 5 Common African Toads, 50 Common Frog Tadpoles
 Bishop, Mr H., 2 Grosbeak Weavers, 1 St Helena Waxbill, 1 Cut-throat Finch, 1 Quail Finch, 1 Star Finch, 1 Bengalese Finch
 Blades, Mr L., 1 cockroach
 Blaydes, Mr D., 1 Red-headed Barbet
 Boston, Mr P., 3 Scorpions, 13 Millipedes, 1 Polydesmid Millipede, 2 Centipedes, 1 Grasshopper, Termites
 Brace, Mr P. A., 1 Barbel
 Bradfield, Mr C. S., 1 American Catfish
 Bray, R., 1 Giant Catfish
 Bristow, Mr V., 2 Jockey Spiders
 British Waterways Board, 2 Mirror Carp, 4 Bream, 2 Tench, 2 Goldfish, 1 Perch, 1 Crucian Carp, 3 Roach
 Buchanan-Jones, Mr M., 1 Wagler's Pit-viper
 Busy, Mr C. W., 4 cockroaches
 Campbell-Johnson, Mrs, 1 White-crested Cockatoo
 Clapham, Mrs, 1 Guillemot
 Clarke, Mrs P. M., 1 Eastern Garter Snake
 Cleary, Mrs E., 2 Red-eared Terrapins
 Coulth, J., 17 crayfish
 Craft, Mrs, 3 Spur-thighed Mediterranean Tortoises, 34 Goldfish, 1 Golden Orfe, 4 Shubunkins, 3 Green Tench
 Crawford, Mrs, 1 British Hare
 Culley, Mr, 8 diving beetles
 Dangerfield, Mr G., 1 Senegal Bushbaby
 Edwards, D., 1 Fire Salamander
 Edward Wilson Primary School, 1 Spanish Terrapin
 Eldershaw, Mr K. M., 1 Spur-thighed Mediterranean Tortoise
 Ellis, Mrs, 2 Green Singing Finches
 Eton, Mr D. L., 1 Giant Gourami
 Feldhammer, Mr Bruce, 3 Home's Hinged Tortoises, 3 Helmeted Terrapins, 2 Banded Geckos, 1 Bosc's Monitor, 1 Nile Monitor, 1 Royal Python, 1 African Sand Snake, 4 Cameroon Toads, 3 *Hyperolius picturatus*
 Fenn, Mrs G., 6 Red-eared Terrapins
 Fonthill Aquaria, 4 Spiny Terrapins
 Fowler, Mr S., and Meridith, Mr S., 2 Piranhas, 2 Leeri Gourami, 1 Brown Acara
 Frankland, Mrs T., 1 Weaver (Sp. inc.), 1 Napoleon Weaver, 3 Green Singing Finches, 1 Avadavat, 2 Common Waxbills, 2 Bengalese Finches, 3 Indian Silverbills, 2 Orange-cheeked Waxbills, 1 Nutmeg Finch, 5 Zebra Finches, 2 Golden-breasted Waxbills
 Gamarra, Mr and Mrs Lopez de, 1 Common Chameleon
 Gibson, Mr P. G., stick insects
 Gould, Mrs, 1 High-casqued Chameleon
 Gray, A. K., 4 Common Waxbills, 2 Cordon Bleu, 2 Black-headed Mannikins, 3 Orange Weavers, 1 Zebra Finch, 3 Bengalese Finches
 Green, Mr I., 2 Iguanas
 Gumbrell, Mr R. R., 2 Deer Mice
 Hardman, Mr, 1 Long Horned Grasshopper, 1 Crab Spider
 Harman, Mr A., 5 Salamanders, 2 Edible Frogs
 Harper, L/Corp. J. A., 2 Turkestan Geckos, 1 Horned Cerastes-viper, 1 *Agama mutabilis*, 15 *Gecko* sp., 8 desert beetles, 1 desert scorpion
 Heath, Mrs J., 4 Red-eared Terrapins
 H.M. Customs, 2 Thick-tailed Bushbabies
 Hill, Mr L., 1 Red-bearded Bee-eater
 Hodson, Mr S., 1 Siberian Chipmunk
 Hollis, V. S., 1 White-fronted Capuchin
 Hughes, Mr K., 1 Squirrel Monkey
 Humbert, Miss C., 1 Flap-necked Chameleon
 Huxley, Sir Julian, 1 Alligator Snapper
 Jewell, Dr, 3 dung beetles
 Jobst, Miss K., 2 Red-eared Terrapins
 Kessler, E. & S., velvet mites
 Kirkwood, Mr T. B. L., 1 Variegated Bush Snake

Kohler, P. & M., 1 Slowworm
 Leslie, Mrs A., 1 Boa Constrictor, 1 Bengal Monitor
 Lancaster, R. S., 1 Nepal Hill Mynah
 Lewis, Mr R., 1 stag beetle
 Link, Mr W. E., 1 Mediterranean Spur-thighed Tortoise
 Macveigh, Mr W. P., 34 Malay Pit-vipers, 1 Reticulated Python, 2 Black-and-gold Tree Snakes
 Mahon, Mr W., stag beetles
 Malleson, Mrs V., 1 Naked-tailed Armadillo
 McDermott, Mr S., 4 Blue Acara
 McHale, Mrs E., 2 European Tree Frogs
 Mckaid, Mr, 2 Moila Snakes
 McWethy, Mr, 2 Green Lizards
 Medical Research Centre, 1 Spotted Genet
 Medway, Lady, 2 Mountain Imperial Pigeons, 3 Little Cuckoo Doves, 2 Little Green Pigeons, 1 Pink-necked Green Pigeon, 3 Zebra Doves, 2 Emerald Doves, 1 Red-crested Wood Quail, 2 Spotted Doves
 Newmark, Mr J. and Mr G., 1 Spotted Morning Warbler, 2 Dendrobates
 Odell, Mr C., 1 Herald Snake
 Oppenheimer, Mrs., 2 Budgerigars
 Oughton, Mr D. J., stick insects
 Payne, Mrs I. M., 2 Mediterranean Spur-thighed Tortoises
 Pepin, John, 1 Marine Toad
 Perkins, Mr C., 1 Spectacled Cayman
 Podesta, Miss J., 1 Poplar Hawk Moth
 Powell, Mr J., 1 Yellow Monitor
 Printon, Mrs A. S., 4 Red-eared Terrapins
 Rawlinson, Miss, 2 Ornate Terrapins
 Riley, Mr A. E., 2 Peter's Twinspots, 2 Green Singing Finches
 Riordan, Mr D., 4 Senegal Bushbabies
 Roffey, Mrs, 1 Nepal Hill Mynah
 Romer, Mr, 4 Millipedes
 Rotterdam Zoo, 6 Gaboon Vipers
 RSPCA, 1 Three-keeled Terrapin, 1 *Claudius angustatus*, 1 Moustached Agama
 Ruffles, Mr W. G., 4 Roman Snails
 Russell, Dr Finlay, 1 Gila Monster
 Russell, Miss M., 1 Marine Toad
 St Anne's College, 1 Ornate Terrapin
 Salmon, Mr J., 1 Indian Ring-necked Parrakeet
 Schlesinger, Mr J., 1 Peter's Long-line Snake
 Sims, Mr K., 2 Malayan Cobras, 1 Indian Changeable Lizard
 Smith, Mr, 1 Rook
 Smith, Mr R., 1 stick insect

Smith, Mr T., 1 Smooth Snake
 Smith, Mrs V., 1 Bushbaby
 Smith, Mr W. T., 1 American Catfish
 Squires, E. O., 2 North American Ruddy Ducks
 Stanbridge, Mr J., 2 Painted Quails, 2 Zebra Finches, 2 Red-rumped Waxbills, 2 Fire Finches, 2 Orange-cheeked Waxbills, 1 Cordon Bleu
 Stimpson, Mr D., 1 brood of desert scorpions
 Storey, Mrs, 1 Ornate Terrapin, 4 Spanish Terrapins, 1 Red-eared Terrapin
 Tinsley, Mrs, 2 Rosy-faced Lovebirds
 Turbertt, Eyre, 1 Grey Monitor
 Vincent, F., 1 tree snail
 Vincent, Mr S. J., 1 Nepal Hill Mynah
 Wahl, Mr J., 1 Goat Moth Caterpillar
 Waller, Mrs, 2 Napoleon Weavers, 11 Zebra Finches
 Warne, Mrs, 1 Nepal Hill Mynah
 Wellcome Institute, 3 Viscachas
 Wesley, Mr J., 4 *Cynolebias whitei*
 Williams, Mr B. C., 1 Common Chameleon
 Williams, Mrs M. A., 1 Alexandrine Parrakeet
 Wiltshire, Mr H., 1 mantid
 Zuurdeeg, Mr, 1 White-winged Parrakeet, 1 Orange-winged Parrakeet, 1 Golden-winged Parrakeet, 1 Chinese Painted Quail, 1 Japanese Quail, 1 Malayan Necklace Dove

WHIPSNADE PARK

Adams, A. J., 1 Indian Ring-necked Parrakeet
 Adams, Miss J., 1 Fat Dormouse
 Boured, W., 1 Southern Hill Mynah
 Burton, M., 1 Red Fox
 Chambers, J. P., 1 Southern Hill Mynah
 Debarbara, J. F., 2 Rex Rabbits
 Faulkner, E., 1 Blue-fronted Parrot
 Foster, Mrs L. S., 2 Tawny Owls
 Fryer, Mrs R. E., 1 Indian Ring-necked Parrakeet
 Halls, T., 1 Black-winged Peafowl
 Heath, Mrs, 1 Goat
 Light, Mrs L., 1 Cockatiel
 Lines, E. S., 1 Golden Pheasant
 Philbeys, R. A., 1 Southern Hill Mynah
 Philip, Mrs A., 1 Reeves Muntjac
 Reed, F. G., 2 Fat Dormice
 Royal Veterinary College, 1 Pitman Moore Miniature Swine
 Rubenis, Mrs J., 3 Black-headed Gulls, 1 Scandinavian Lesser Black-backed Gull, 1 British Lesser Black-backed Gull
 Taylor, Mrs P., 1 European Terrapin
 Watford Constabulary, 2 Reeves Muntjac

DONATIONS TO THE ZOOLOGICAL RECORD FUND

	£
American Entomological Society	20·60
American Museum of Natural History	207·54
American Ornithologists' Union	20·56
American Society of Ichthyologists & Herpetologists	99·86
American Society of Mammalogists	166·50
Anonymous	100·00
Auckland Institute and Museum	5·25
British Museum (Natural History)	1,450·00
British Ornithologists' Club	5·25
British Ornithologists' Union	16·00
British Trust for Ornithology	3·15
California Academy of Sciences	9·79
Challenger Society	5·25
Conchological Society of Great Britain & Ireland	2·00
Duke University, Department of Zoology	20·60
Entomological Society of Alberta	7·93
Entomological Society of America	83·13
Geological Society of London	5·25
Kennicott Club	20·59
Linnean Society of London	20·00
Liverpool School of Tropical Medicine	3·15
London School of Hygiene & Tropical Medicine	2·10
Malacological Society of London	2·10
The Mammal Society of the British Isles	5·00
New York Zoological Society	41·42
Paleontological Society	20·59
Royal Entomological Society	10·00
Royal Society of New Zealand	25·00
Royal Society of Tropical Medicine & Hygiene	5·25
Society of Systematic Zoology	124·94
Transvaal Museum	5·25
Wellcome Research Laboratories	17·50
	£2,531·55

APPENDIX 8

BOOKS PRESENTED TO THE
LIBRARY

- BALL, D.
BRITISH MUSEUM (NATURAL HISTORY), TRUSTEES OF
- DAY, S. B.
- ELKAN, DR E.
GRIFFIN, MISS H.
HARRIS, C. J.
HICKLING, DR C. F.
HINDLE, DR E.
JUBB, R. A.
LANE, F. W.
MORRISON-SCOTT, SIR TERENCE
- OLNEY, P.
- PEROWNE, MISS D. M.
READERS DIGEST ASSOCIATION
- ROYAL COLLEGE OF SURGEONS OF ENGLAND
SCHOMBERG, G.
- SESHADRI, B.
TAYLOR, MISS A. E. R.
- VEVERS, DR H. G.
- WARD, ROWLAND, (PUBLICATIONS) LTD
- WOOD, G.
- ZUCKERMAN, SIR SOLLY
- Tortoises and how to keep them. By Maxwell Knight. 1970.
Bulletin of the British Museum (Natural History). Entomology: Vol. 24, nos. 4-9; Vol. 25, nos. 1-5; Geology: Vol. 18, nos. 6-8; Vol. 19, nos. 1-4; Zoology: Vol. 18, no. 9; Vol. 19, nos. 1-9; Vol. 20, no. 1.
Edward Stevens: gastric physiologist, physician and American statesman. Edited by S. B. Day. 1969.
Fungal parasitism. By Brian Deverall, 1969.
Animal and zoo magazine. 1936-1941.
National geographic magazine. Vols. 91-93, 95. 1947-49.
Exploring the ocean world. Edited by C. P. Idyll. 1969.
Patterns of reproductive behaviour. By D. Morris. 1970.
Freshwater fishes of Southern Africa. By R. A. Jubb. 1967.
The elements rage. By F. W. Lane. 2v. 1968.
Checklist of palaeartic & Indian mammals. By J. R. Ellerman & T. C. S. Morrison-Scott. 1951.
The problems of birds as pests. Edited by R. K. Murton and E. N. Wright. 1968.
Collection of 63 volumes.
Animals through the eyes of an artist. By R. Thompson. 1970.
The living world of animals. 1970.
Descriptive catalogue of the physiological series in the Hunterian Museum. Pt: 1. 1970.
The Penguin guide to British zoos. By G. Schomberg. 1970.
The twilight of India's wild life. By B. Seshadri. 1969.
Symposia of the British Society of Parasitology. Vols. 7-8. 1969-70.
Termites: a study in social behaviour. By P. E. Howse. 1970.
Rowland Ward's records of big game. 13th ed. (Africa). Compiled & edited by G. A. Best & F. Edmond-Blanc. 1969.
The Countryman wild life book. Edited by Bruce Campbell. 1969.
The Guinness book of records. 1970.
Inside safari hunting with Eric Rundgren. By D. Holman. 1969.
Man against Nature. By R. M. Lockley. 1970.
Man and wildlife. By C. A. W. Guggisberg. 1970.
They all ran wild. By E. C. Rolls. 1969.
Tiger in sight. By A. B. Sucksdorff. 1970.
The vanishing jungle. By G. Mountfort. 1969.
The vanishing wild life of Britain. By B. Vesey-Fitzgerald. 1969.
The white impala. By Norman Carr. 1969.
The natural history of the land of the Bible. By A. Alon. 1969.

Meetings during 1971

Scientific Meetings at 5.0 p.m.

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

Symposia

- Thursday and Friday, 20th-21st May, 'Diseases of fish'
- Thursday and Friday, 15th-16th July, 'Climatic physiology of desert animals'

Report of the Auditors

on the accounts of the Zoological Society of London

In accordance with the provisions of Byelaw 33 we report that we have examined the Books and Accounts of the Society for the year ended 31st December 1970, including those relating to the Ford Research Fund, and have found them to be in order. Having received all the information and explanations we have required, we are of the opinion that the attached Balance Sheets, the accompanying Income and Expenditure Accounts and Notes show a true and fair view of the position as shown by the books of the Society. We have verified the Investments and the Cash Balances.

NORTON KEEN & CO *Chartered Accountants*
Finsbury Circus House, Blomfield Street, London EC2
22nd February 1971

Balance Sheet at 31st December 1970

1969			£	£
£	£			
	77,311	Sundry Creditors and Receipts in Advance		96,751
	249,362	Government Loan		—
	752,229	Short term loans and Bank overdraft		200,783
	91	Heer Bequest		91
	5,711	Fantham Bequest (note 1)		5,135
	15,644	Nuffield Institute Fund (note 2)		15,181
	30,435	Wolfson Donation Fund (note 3)		31,919
		Publications Funds (note 4)		
41,254		Zoological Record Fund	25,564	
16,063		Neave Lloyd Fund	15,434	
—	57,317		—	40,998
	17,117	Composition Fund		16,552
	1,156	Staff Benevolent Fund (note 5)		1,039
		Reserves		
140,000		General Reserve (note 6)	89,831	
228,596		Buildings Replacement Fund (note 7)	220,067	
100,000		Pensions Contributions Reserve	100,000	
—	468,596		—	409,898
	120,621	General Purposes Account		120,621
	<u>£1,795,590</u>			<u>£938,968</u>

For the notes which form part of these accounts see pages 62 and 63

1969				
£	£		£	£
		<i>Freehold Property at Cost</i>		
	120,621	Whipsnade Park		120,621
		<i>Stocks (note 8)</i>		
1,000		Scientific Publications (nominal valuation)	1,000	
32,259		Catering Departments – Books, Souvenirs, etc.	25,260	
13,712		– Provisions, etc.	12,234	
<u> </u>	46,971		<u> </u>	38,494
	79,539	Sundry Debtors and Payments in Advance		108,151
	513,622	Investments and deposits at cost (market value £517,844)		464,776
	6,800	Cash in hand		7,800
	1,028,037	Rebuilding Account (note 9)		138,186
	—	Income and Expenditure Account Deficit		60,940
	<u> </u>			<u> </u>
	£1,795,590			£938,968

TERENCE C. S. MORRISON-SCOTT
Treasurer

Income and Expenditure Account for the year ended 31st December 1970

1969		INCOME		
£	£		£	£
28,230		Members' Subscriptions and Entrance Fees	28,105	
4,305		<i>Less transferred to Publications</i>	4,379	
23,925	23,925		23,726	
		Interest and Dividends		
8,940		General (note 10)	27,935	
5,269		Net Income from De Arroyave Fund (note 11)	5,389	
57		Income from Davis Fund (note 12)	57	
14,266	14,266		33,381	
		<i>Scientific</i>		
27,318		Sale of Scientific Publications	30,431	
8,748		Educational Scheme - Visits	8,837	
2,324		Young Zoologists' Club	2,315	
13,188		International Zoo Yearbook	13,653	
51,578	51,578		55,236	
		<i>Regent's Park</i>		
524,719		Admission of Visitors to Gardens	558,122	
29,969		Admission of Visitors to Aquarium	28,367	
20,806		Admission of Visitors to Children's Zoo	19,948	
1,352		Chimpanzees' Tea Party	1,118	
3,420		Riding Receipts	3,636	
3,212		Push Chairs, Hire of	2,872	
47,964		Catering and other services, net income	51,116	
18,774		Zoo Restaurants Ltd.	18,157	
3,121		Television and Film Permits	2,421	
680		Animals	1,091	
4,588		Miscellaneous Receipts	6,126	
658,605	658,605		692,974	
		<i>Whipsnade</i>		
135,135		Admission of Visitors to Park	112,494	
9,170		Admission of Visitors to Children's Zoo	7,866	
38,684		Admission of Cars to Park	33,951	
3,845		Train Receipts	3,496	
1,817		Riding Receipts	2,062	
577		Push Chairs, Hire of	453	
10,555		Car Parks - Parking Fees	8,985	
3,543		Farm, Gardens and Forestry Sales	2,136	
4,836		Animals	5,873	
12,053		Catering and other services, net income	7,639	
1,189		Miscellaneous Receipts	1,095	
221,404	221,404		186,050	
		Deficit carried to Balance Sheet		60,940
53,938				60,940
£1,023,716			£1,052,307	

For the notes which form part of these accounts see pages 62 and 63

1969		EXPENDITURE			
£	£		£	£	£
	81,535	General Administration			83,121
	67,460	Interest on Short Term Loans			32,577
		<i>Pensions</i>			
11,826		Payments to Pensioners		10,145	
33,731		Contribution to Trustees of Pension Fund		35,109	
<u> </u>	45,557			<u> </u>	45,254
		<i>Scientific</i>			
18,111		General Scientific	20,777		
6,953		Contribution to Ford Research Fund	6,535		
36,930		Contribution to Nuffield Institute Fund	38,561		
<u> </u>			<u> </u>	65,873	
16,868		Library		16,944	
18,362		Scientific Publications		22,927	
9,025		Educational Scheme		10,350	
3,912		Young Zoologists' Club		3,972	
9,482		International Zoo Yearbook		11,407	
<u> </u>	119,643			<u> </u>	131,473
		<i>Regent's Park</i>			
		Menagerie			
5,412		Rates and Insurance	6,437		
232,209		Salaries	261,317		
46,671		Provisions	51,697		
43,471		Fuel, Light, Water, Transport	46,757		
26,671		Miscellaneous	27,894		
<u> </u>			<u> </u>	394,102	
		Works			
75,094		General Maintenance	81,315		
5,282		Alterations	1,567		
<u> </u>			<u> </u>	82,882	
19,851		Gardening		20,104	
21,512		Advertising		20,868	
10,348		Purchase of Animals and Exhibits		6,777	
<u> </u>	486,521			<u> </u>	524,733
		<i>Whipsnade</i>			
		Menagerie			
5,781		Rates and Insurance	6,288		
93,881		Salaries	100,839		
35,373		Provisions	37,706		
16,068		Fuel, Light, Water, Transport	16,110		
13,663		Miscellaneous	14,419		
<u> </u>			<u> </u>	175,362	
		Works			
31,540		General Maintenance	28,966		
4,696		Alterations	2,093		
<u> </u>			<u> </u>	31,059	
12,506		Farm, Gardens and Forestry		9,968	
5,934		Advertising		12,772	
3,558		Purchase of Animals		5,988	
<u> </u>	223,000			<u> </u>	235,149
	<u> </u>				<u> </u>
	£1,023,716				£1,052,307

Wellcome Institute of Comparative Physiology

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31st DECEMBER 1970

	£		£	£
Ford Research Fund – interest and dividends	15,466	Salaries (including pension contributions)	25,510	
Research funds transferred from Birmingham University	14,331	Laboratory and other scientific expenses	5,253	
Society's contribution	6,535	Administrative charges	1,794	
		Heating, lighting and miscellaneous	2,895	
		Transfer – Equipment Fund	750	
		Purchase of equipment	130	
	<u>36,332</u>			<u>36,332</u>
Project grants	10,317	Expenditure from project grants:		
		Salaries	3,767	
		Scientific expenses	6,275	
		Other expenses	275	
			<u>10,317</u>	
	<u>£46,649</u>			<u>£46,649</u>

Notes on the Accounts 31st December 1970

1. Fantham Bequest	Balance at 1st January 1970	£	£
	Investment Income		5,711
			<u>603</u>
	Less: Expenditure		6,314
			<u>1,179</u>
	Balance at 31st December 1970		<u>£5,135</u>
2. Nuffield Institute Fund	Balance at 1st January 1970		15,644
	Donations and Grants		96,323
	Society's Contribution		38,561
			<u>150,528</u>
	Less: Salaries (including Pension Contributions)	93,230	
	Scientific Expenses	28,778	
	Other Expenses	13,339	
		<u>135,347</u>	
	Balance at 31st December 1970		<u>£15,181</u>
3. Wolfson Donation Fund	Balance at 1st January 1970		30,435
	Investment Income		1,484
			<u>£31,919</u>
4. Publications Funds			
	Balance at 1st January 1970	<i>Zoological Record Fund</i>	<i>Neave Lloyd Fund (Nomenclator Zoologicus)</i>
	Sales and Donations	41,254	16,063
		52,715	1,430
		<u>93,969</u>	<u>17,493</u>
	Less: Publication and Distribution Costs	68,405	2,059
		<u>£25,564</u>	<u>£15,434</u>
	Balance at 31st December 1970		
5. Staff Benevolent Fund	Balance at 1st January 1970		1,156
	Investment Income		56
			<u>1,212</u>
	Less: Grants		173
			<u>£1,039</u>
	Balance at 31st December 1970		

Ford Research Fund

BALANCE SHEET AT 31st DECEMBER 1970

	£	£		£
Sundry creditors and receipts in advance		895	Sundry debtors and payments in advance	3,582
Capital Account:			Investments at cost (market value £237,996)	235,000
Balance 1st Jan. 1970	235,668		Cash on deposit and in hand	644
Less Loss on investments	30			
	<u>235,638</u>			
Equipment Fund:				
Balance 1st Jan. 1970	2,939			
Add Transfer - Income and Expenditure A/c	750			
	<u>3,689</u>			
Less Maintenance and renewals	996			
	<u>2,693</u>			
		<u>£239,226</u>		<u>£239,226</u>

6. General Reserve Fund	Balance at 1st January 1970	£	£	£
	Fees of deceased Compounders (from Composition Fund)			140,000
				790
				<u>140,790</u>
	Less: Net loss on sale of investments		959	
	Transfer to Rebuilding Account		50,000	
			<u>50,959</u>	
	Balance at 31st December 1970			<u>£89,831</u>
7. Buildings Replacement Fund	Balance at 1st January 1970			228,596
	Less: Expenditure			8,529
	Balance at 31st December 1970			<u>£220,067</u>
8. Stocks	No values are included in the Balance Sheet for:			
	a. Animals		c. Plant, vehicles, fittings and furniture	
	b. Library books and pictures		d. Farm and Garden stocks (Whipsnade)	
9. Rebuilding Account	Balances at 1st January 1970 - Regent's Park			691,460 Dr.
	Whipsnade			336,577 Dr.
				<u>1,028,037 Dr.</u>
	New Works			147,061
				<u>1,175,098 Dr.</u>
	Less: Transferred from General Reserve		50,000	
	Cancellation of Government Loan		249,362	
	Donations and grants (received or due):			
	H.M. Government	650,000		
	H.M. Government (new programme)	8,783		
	Sobell donation (instalment)	52,294		
	Miscellaneous	26,473		
		<u>737,550</u>		
	Balance at 31st December 1970			<u>1,036,912</u>
				<u>£138,186 Dr.</u>
10. Interest and Dividends	No allocation was made to general funds in 1970.			
11. De Arroyave Fund	The capital of the De Arroyave Fund is held by the Official Trustee of Charitable Funds. The income from the Fund was £5,396, and from this £7 was spent on the upkeep of the Lopes grave and mausoleum, in accordance with the terms of the Trust.			
12. Davis Fund	The capital of the Davis Fund is held in trust by the Society, but is not included in the Balance Sheet.			