

The North of England Zoological Society

Annual Report for 1980

Zoological Gardens, Upton-by-Chester
Chester CH2 1LH



**NOTICE OF
THE 47th ANNUAL GENERAL MEETING
OF
THE NORTH OF ENGLAND ZOOLOGICAL SOCIETY**

**To be held on Saturday, 23rd May, 1981, at 3.30 p.m.
at the Russell Allen Lecture Hall
Zoological Gardens, Upton-by-Chester**

PROCEDURE AT THE ANNUAL GENERAL MEETING

- (a) The reading of the Minutes of the previous Annual General Meeting.
- (b) Presentation of the Income and Expenditure Account and Balance Sheet and Auditors' Report thereon.
- (c) Discussion of the Auditors' Report.
- (d) Presentation of the Council's Report.
- (e) Discussion of the Council's Report.
- (f) Re-appointment of Auditors.
- (g) The appointment of Scrutineers and the opening of the Ballot for the election of members of the Council.
- (h) Receiving the Report of the Scrutineers on the Result of the Ballot.

MEMBERS OF THE COUNCIL — 1980

- *PROFESSOR J. O. L. KING, Ph.D., M.V.Sc., B.Sc.(Agric.), F.R.C.V.S., F.I.Biol.
(Chairman)
- *F. MOSFORD
A. J. BLAND, Dipl.Arch., R.I.B.A.
J. N. WILSON
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G. R. PRYOR, C.Eng., Hon.F.I.Prod.E., F.B.I.M.
R. P. OWEN, A.R.I.C.S., Rat.Dip.
MRS. B. H. IRVINE
- *F. S. CARSON, M.C., B.A.(Cantab.)
Dr. J. E. D. CHARLES JONES, M.B., B.S., M.R.C.G.P.
DINAH, LADY TOLLEMACHE
W. KELSALL, O.B.E., Q.P.M.
- *Dr. J. R. BAKER, Ph.D., B.V.Sc., M.R.C.V.S.
L. C. YOUNG, C.B.E., B.Sc.(Econ.)
*I. YULE, E.R.D., J.P.

DIRECTOR

Dr. M. R. BRAMBELL, Ph.D., M.A., Vet.M.B., M.R.C.V.S.

There are five vacancies on the Council. Members indicated thus * offer themselves for re-election.

If any member wishes to be nominated for election to the Council, he/she must find seven fully paid-up members to nominate him/her.

Notice in writing must be received by the Secretary **not later than 14 days** before the Annual General Meeting.

ANNUAL REPORT 1980

The Council of the North of England Zoological Society has pleasure in presenting its Annual Report for 1980.

In compliance with the Companies Act 1967, it is necessary to state here that this Society is a Public Zoological Garden, that no significant changes have occurred in its activity during the year and that the state of the Society's affairs at 31st December, 1980, was satisfactory.

The total receipts for the year are shown in the Income and Expenditure Account but, as the Society is not a profit-distributing concern, no analysis of profitability is relevant. The average weekly number of employees during 1980 was 213 compared with 226 in 1979 and their aggregate gross remuneration amounted to £710,390 (1979: £629,242).

The Society relies almost totally on the income it receives from visiting members of the public paying for admission and purchasing refreshments and souvenirs of their visit. Broadly speaking, ten per cent of the visitors come during the Easter period and 60 per cent during the months of June, July and August, the remaining 30 per cent being distributed unevenly through the other months. Zoo visiting is weather sensitive, and the almost unprecedented wet three months of June, July and August (54 days were recorded as being unseasonal) resulted in a sudden and severe fall-off in the number of visitors, resulting in about 100,000 fewer coming to the Zoo than appeared likely from the pattern in other months of the year. Though there is little consolation to be had from the knowledge that others are also suffering, several equivalent institutions experienced similar shortfalls over the same period. Uncertainty over the weather made it difficult to presume that there would not be a sudden return to a more normal summer.

Inflation has continued to put pressure on our expenditure; fuel costs went up 28 per cent, feeding costs 18½ per cent and wages and salaries 17 per cent. The net amount of V.A.T. paid directly to H.M. Customs and Excise was £136,620 (£107,237 in 1979—a 27 per cent increase).

At the end of the year, expenditure on non-capital items had exceeded income by £188,465.

The need to keep the animals' enclosures and exhibits up-to-date will require a great amount of resources over the next few years. During 1980, the Flamingoes Pond was reshaped, so as to provide a much larger area of water. A new hut for over-wintering these birds was also provided. The Polar Bear Pool underwent considerable

improvement, both of the exhibition area and behind the scenes. Alterations were begun in the Cat House, to improve the viewing as well as the management of the cats.

It was the loss of our last few penguins that highlighted the need for a purpose-built enclosure, in which the birds could have sufficient room and security to encourage breeding and in which they could be protected from injurious objects casually dropped by the public (often without the slightest idea that such things as lollipop sticks look like fish to penguins, which rush to ingest them).

Penguins are extremely popular birds in a zoo; they have been shown to breed well under zoo conditions and they are zoologically and educationally important. The thought of not having penguins at Chester Zoo was unacceptable and, with the help of Mrs. Ena Parkinson and several other well-wishers, an appeal was launched to help fund the building of a properly-designed pool. With an estimated cost of about £55,000, the new pool provides 320 square metres of filtered water up to 1.5 metres deep, with underwater viewing, and a land area, including service building and nursery area, of about 480 square metres. At the time of writing, the appeal has raised over £17,000 in cash, and goods for resale worth a few thousand more. Council wishes to express its deep gratitude to all those people—many of them schoolchildren—who have given, and to Mrs. Parkinson for the work she has done in getting the existence of the appeal more widely known.

As funds become available, it is the Council's intention to provide new housing for Chimpanzee and Gorilla and to extensively refurbish the Orang-utan quarters. Council also intends to up-date the housing of the antelopes and to replace many of the aviaries.

The number of mammals (686) and reptiles (214) remained about the same as last year, but there was a further thinning-out of the bird collection to about 700 animals.

Our female Lowland Gorilla, who went to Bristol Zoo on breeding loan in July, 1978, gave birth to a male baby, "Zachariah". The father is "Samson". We are extremely grateful to Bristol Zoo for the tremendous help they have given us in looking after "Gogal" and her baby.

A baby female, "Bella", was born to our Bornean Orang-utan "Lola"—her third. Five Ring-tail Lemur were among the 11 births in the Monkey House.

"Roger", the Black Rhinoceros born at Bristol 23 years ago, died of old age in June. "Richie", the adult male Giraffe, also died during the year.

Kangaroos and Wallabies also accounted for a number of births: included here were 19 Bennett's Wallaby, two Grey Kangaroo and a Tammar Wallaby—a species new to the Zoo in 1980.

Other births worth mentioning are a female Przewalski's Horse, three Grant's Zebra and a Brazilian Tapir. Our pair of Hippopotamus produced their eighth baby. Four Pere David's Deer were born and the 21st Giraffe was also born. There were also a number of antelope and gazelle. In all, there were over 150 births in the mammal collection during the year.

A number of acquisitions included a pair of Scottish Wildcat, which produced and reared three youngsters late in the year; a pair of Mayotte Lemur and a male Eland to go with our three females. Also purchased were two Camel, and a pair of young Polar Bear from Copenhagen, which were put into the redesigned pool and are proving to be a very entertaining exhibit.

In the Bird Collection, 23 Rhea eggs hatched. In addition, six Emu were hatched, although a number of others died in the shell at a very late stage in their development; fluctuations in humidity are suspected of being the cause. Because of these difficulties, we resorted to the well-tried method of using foster bantams, and one of our notable successes, the rearing of two Crested Curassow, was accomplished by this method.

Other breeding successes of interest were the three clutches of White-crested Laughing Thrush raised in the Tropical House by one pair of birds, producing five young in all. In addition, the Baya Weaver and Crested Bronze Wing Pigeon bred there.

In other parts of the Zoo, two Blue-eyed Cockatoo, five Sacred Ibis and one Night Heron were bred.

A number of birds were exchanged with other zoos to pair off odd birds. We acquired a male Ostrich to join our three females and a number of South American species were added to the Tropical House, the intention being to house only birds of the New World there. Among these are nine Oropendola now at liberty in the house, and, should they breed, we think their long pendulous nests will be a great attraction.

The Reptile Department received three Shingleback Lizard from Adelaide Zoo, to increase our group to seven animals and give us a potential breeding group. A Johnson's River Crocodile was presented from Wassenaar Zoo, to complete a pair. Jersey Zoo sent us three Dominican Boa.

Among births and hatchings, three Lord Derby's Lizard and several Leopard Gecko were bred. Several animals were exchanged, in order to pair up singles.

In the Aquarium, six four-eyed fish were purchased and a pair of Sting Ray were acquired. About 200 Axolotl hatched and were successfully reared, as well as several catfish and cichlids amongst other fish.

More marine fish tanks were set up, following the success of the year before. This section of the Aquarium has settled down very satisfactorily.

The Gardens continued the very high standard of display. The South American Garden had its first full season and over 50 species of plants originating from that continent were exhibited. A floral clock has been installed near to the Oakfield, as an additional memorial to Mr. George S. Mottershead.

Much of the electrical wiring in the Zoo was nearing the end of its useful life, and a considerable effort was put into bringing the wiring up to present standards. In particular, the Aquarium, Lion House, Monkey House and Tropical House were rewired completely, as were several other buildings in the Zoo.

The Society owns several buildings not in the Zoo itself, and some of these are of historical architectural interest locally. The pair of houses known as Upton Heyes Cottages were in danger of losing the brickwork gable at the front, and this had to be rebuilt. The house known as Caughall Farm House, which has been empty and derelict for some years, is too fine a building to be let fall into decay, and Council decided to restore it and make it available as accommodation for single keepers. This work will qualify for an historic building grant, which will ease the cost to the Society.

Miss Elizabeth Angel was appointed Catering Services Manager in March; Miss Angel had been in charge of catering at High Peak College of Further Education. Miss Bella Neate, B.Sc., was appointed Education Officer—also in March. Previously, Miss Neate had been a member of the Keeping Staff at the Zoo. Mr. R. F. Salter, who joined the Gardening Staff in 1953, retired in December, and Miss H. Davies, who had been a gate cashier since 1968, retired in October.

Several members of staff have been giving talks to conservation groups and similar organisations in the district. The Director attended the 150th Anniversary Celebrations of Dublin Zoo, which coincided with the Annual Conference of Zoo Directors.

The Society joined the National Federation of Zoological Gardens of Great Britain and Ireland this year. Council felt that the likelihood of much-needed legislation to cover the operation of zoos demanded that Chester Zoo's voice join with those of other important British zoos, to ensure that any legislation took the needs of zoos fully into account.

To improve the catering service which the Society can offer to its visitors, a new cafeteria building is being planned for completion before Christmas 1981. The building will provide 200 "all weather" seats and space for a further 300 "fair weather" seats. The kitchen will be able to serve cafeteria meals, as well as supply a fast food outlet. Soft drinks and ice-cream will be served from a separate kiosk incorporated within the building. Also included in this scheme is the provision of new toilets.

The Society is very conscious of the help and support it receives from its staff and wishes to thank the Chairman and members of the Staff Association Committee for the constructive advice and criticism given during the year. The Society thanks its professional advisers, as well as members and friends who serve on its committees and help in other ways. Council is grateful for the co-operation the Society receives from its suppliers and for the interest and understanding shown to its affairs by the Press, Radio and Television.

BALANCE SHEET AS AT 31st DECEMBER, 1980

	1980	£	1979	£
FIXED ASSETS				
Freehold Property				
Balance as per Schedule annexed	357810		306639	
Special Buildings, Enclosures and Equipment				
Balance as per Schedule annexed	380690		312138	
Stock of Animals				
Balance as per Schedule annexed	147531		141529	
TOTAL FIXED ASSETS	—	886031	—	760306
CURRENT ASSETS				
Stocks of Feeding Stuffs, Goods for Resale and Fuel at cost	49412		45038	
Stock of Farm Livestock, Produce and Seeds at cost	33293		31653	
Debtors and Prepayments	19892		28695	
Loans—Short Term	—		180000	
Balance at Bank: Current Account	—		7914	
Penguin Appeal Fund	6994		—	
Cash in Hand	5921		3743	
TOTAL CURRENT ASSETS	115512		297043	
<i>Less:</i>				
CURRENT LIABILITIES				
Bank Overdraft	70962		—	
Sundry Creditors	64559	135521	48410	248633
		(20009)	—	—
NET ASSETS		£866,022		£1008939
Financed by:				
LEGACY ACCOUNT as at 31/12/79		22332		22332
PENGUIN APPEAL FUND				
Donations	10527		—	
Profit on Sales (Net)	3665		—	
	—	14192	—	—
CONSERVATION FUND		456		219
CAPITAL RESERVE ACCOUNT as at 31/12/79	32633		32633	
Add Sale of Land at Demage Farm, Upton	26740		—	
	—	59373	—	32633
INCOME AND EXPENDITURE ACCOUNT				
Accumulated Surplus		769669		953755
TOTAL CAPITAL AND RESERVES		£866022		£1008939

Notes:

1. The Society is limited by guarantee and has no share capital.
2. Commitments for capital expenditure (Penguin Enclosure) not provided for in these accounts total £45,000 (1979: Nil).

J. O. L. KING, *Chairman*
M. R. BRAMBELL, *Director*

Report of the Auditors to the Members of the North of England Zoological Society

In our opinion, the annexed Balance Sheet, Income and Expenditure Account and related notes and schedules give, under the historical cost convention, a true and fair view of the state of the Society's affairs at the 31st December, 1980, and of the deficit and source and application of funds for the year ended on that date and comply with the Companies Acts, 1948 to 1980.

AFFORD, BOND AND CO.
Chartered Accountants
23rd February, 1981

31 Wellington Road
Nantwich

**SCHEDULE ANNEXED TO BALANCE SHEET
AT 31st DECEMBER, 1980**

	£	£
FREEHOLD PROPERTY		
Balance at beginning of year at cost		306639
Improvements during year at cost		55487
		<u>362126</u>
Less Sale during year	16000	
Profit on Sale	11684	
		<u>4316</u>
TOTAL AS SHOWN IN BALANCE SHEET		<u><u>£357810</u></u>
SPECIAL BUILDINGS, ENCLOSURES AND EQUIPMENT		
Balance at beginning of year at cost	900953	
Additions during year—cost	115527	
	<u>1016480</u>	
Sales during year	264	1016216
Less Depreciation at beginning of year	588815	
Adjustment re Sales during year	66	
	<u>588749</u>	
Depreciation provided during year	46777	635526
		<u>635526</u>
TOTAL AS SHOWN IN BALANCE SHEET		<u><u>£380690</u></u>
ANIMALS		
Balance at beginning of year at cost less sales		141529
Additions during year—cost		16568
		<u>158097</u>
Sales during year		10566
		<u>147531</u>
TOTAL AS SHOWN IN BALANCE SHEET		<u><u>£147531</u></u>

ACCOUNTING POLICIES

There have been no changes in the accounting policies during the year.

Basis of Accounting

The accounts have been prepared under the historical cost convention using the following accounting policies:—

Turnover: Cash receipts for goods and services.

Fixed Assets: No depreciation has been provided on freehold land or properties. Depreciation written off Special Buildings, Enclosures and Equipment has been provided at varying rates estimated to write off each asset over the term of its useful life. The rates and method of depreciation are consistent with those used in previous years. Animals are not depreciated but the total cost is reduced by sales.

Stock: Valued on a basis consistent with that used in previous years at the lower cost or net realisable value.

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31st DECEMBER, 1980

	1980		1979	
	£	£	£	£
TURNOVER		£1381130		£1214297
		<u> </u>		<u> </u>
DEFICIT FOR THE YEAR		(188465)		(71539)
before charging—				
Auditors' Remuneration	1200		1100	
Depreciation of Fixed Assets	46777		38723	
Loss on Sale of Equipment—Net	16		—	
		<u> </u>		<u> </u>
		47993		39823
		<u> </u>		<u> </u>
DEFICIT		(236458)		(111362)
and before crediting—				
Rents from Houses and Farms	12291		13981	
Investment Income Received (Gross)	23645		39788	
Profit on Sale of Property	11684		—	
Profit on Sale of Equipment	—		1019	
Members' Subscriptions and Entrance Fees	2151		3677	
Donations	2601		630	
		<u> </u>		<u> </u>
		52372		59095
		<u> </u>		<u> </u>
DEFICIT FOR THE YEAR		(184086)		(52267)
Add Balance brought forward from last year		953755		1006022
		<u> </u>		<u> </u>
BALANCE CARRIED FORWARD TO NEXT YEAR		£769669		£953755
		<u> </u>		<u> </u>

STATEMENT OF SOURCE AND APPLICATION OF FUNDS

	Year ended 31st December	
	1980	1979
FUNDS FROM OPERATIONS		
Depreciation of Fixed Assets	46793	37704
Profit on Sale of Property	(11684)	—
	£35109	£37704
	£35109	£37704
FUNDS FROM OTHER SOURCES		
Sale of Fixed Assets	53488	12168
Legacy	—	1057
Conservation Fund	237	219
Penguin Appeal Fund	14192	—
	£67917	£13444
	£67917	£13444
TOTAL INFLOW OF FUNDS	£103026	£51148
APPLICATION OF FUNDS		
Deficit for the year	184086	52267
Purchase of Fixed Assets	187582	140039
	£371668	£192306
	£371668	£192306
	(£268642)	(£141158)
Decrease in Working Capital		
Increased Stocks	6014	21340
Decreased/Increased Debtors	(8803)	6418
Increased Creditors	(16149)	(15637)
	(18938)	12121
Movement in Net Liquid Funds		
Increased Bank and Cash Balances	1258	1721
Decreased Short Term Loans	(180000)	(155000)
Increased Bank Borrowings	(70962)	—
	(£268642)	(£141158)
	(£268642)	(£141158)

SCIENTIFIC COMMITTEE OF THE ZOOLOGICAL SOCIETY'S COUNCIL

Professor J. O. L. King, Ph.D., M.V.Sc., B.Sc.(Agric.), F.R.C.V.S., F.I.Biol. (*Chairman*)
R. Ainsley (*Curator of Reptiles*)
J. R. Baker, Ph.D., B.V.Sc., M.R.C.V.S.
M. R. Brambell, Ph.D., M.A.Vet., M.B., M.R.C.V.S. (*Director*)
T. G. J. Brightmore, M.B., B.S., F.R.C.S.
J. E. D. Charles Jones, M.B., B.S., M.R.C.G.P.
D. C. Dinning (*Laboratory Technician*)
D. B. Edwards, B.V.Sc., M.R.C.V.S.
D. G. Lyon, B.V.Sc., M.R.C.V.S. (*Veterinary Officer*)
P. M. C. Stevens, B.Sc., M.I.Biol. (*Curator of Birds*)
P. A. Wait (*Curator of Mammals*)
Miss A. L. Howard (*Secretary*)

INTRODUCTION

The veterinary work at the Zoological Gardens is contracted to the local veterinary practice of Messrs. Edwards, Edginton and Lyon.

This report has been compiled from clinical case records, laboratory findings and autopsy reports for 1980 by D. C. Dinning and D. G. Lyon. There are two main sections in the report, dealing with (a) Pathology and (b) Medicine and Surgery.

On many occasions, specialised services were provided by the undermentioned, and their help is gratefully acknowledged:—

Histology: Dr. J. R. Baker and Miss Catherine Ellis, Department of Veterinary Pathology, University of Liverpool.

Bacteriology: The Veterinary Investigation Service, Liverpool, Weybridge and Bangor.

Biochemistry: The Veterinary Investigation Centres, Chester and Weybridge; Dr. J. R. Baker, University of Liverpool; Professor J. O. L. King, Department of Animal Husbandry, University of Liverpool.

Toxicology: The Medical Records Department, Associated Octel Co. Ltd., Ellesmere Port, Cheshire; The Haematology and Biochemistry Departments, City Hospital, Chester; The Public Analyst's Laboratory, Chester.

Haematology: Drs. Christine Hawkey and Rachel Fisher, Nuffield Laboratories of Comparative Medicine, Zoological Society of London; Dr. J. R. Baker, University of Liverpool.

Endocrinology: Mr. J. E. F. Rankin and Dr. J. E. Cox, Department of Veterinary Clinical Studies, University of Liverpool.

Parasitology: Dr. W. N. Beesley, Department of Veterinary Parasitology, Liverpool School of Tropical Medicine.

Post-mortem specimens were provided "gratis" to various University, College and School Departments for research and teaching purposes.

PATHOLOGY

During the period 1st January to 31st December inclusive, 284 post-mortem examinations were performed. As can be seen from Table 1, this figure has been sub-divided into three groups, in two classes.

TABLE 1
POST-MORTEM EXAMINATIONS CARRIED OUT DURING 1980

	A	B	TOTAL
MAMMALS	91	20	111
BIRDS	132	16	148
REPTILES	22	3	25
TOTALS	245	39	284*

*From a total of 284 carcasses submitted for post-mortem examination, 34 had been destroyed for humane reasons.

The figures in Column 'A' refer to specimens which have been more than 30 days in the collection; Column 'B' refers to those animals which have been resident for less than 30 days, and includes births in the collection and specimens acquired from outside sources.

The main objects of carrying out post-mortem examinations are:—

- (a) to ascertain the cause of death, to enable suitable action to be taken to prevent further losses; and
- (b) the acquisition of pathological data pertinent to exotic species.

Table 2 summarises the main findings at post-mortem examinations of Mammals, Birds and Reptiles. Each class is discussed separately under the main groups listed in the table, and an account given of findings of particular interest. In the account, the duration of residence of specimens is recorded in figures after the common or scientific name, e.g. Red-necked Wallaby (*Macropus rufogriseus*) 5.8 denotes a residence of five years and eight months. Where doubt exists as to the exact duration of residence of a specimen in the collection, the terms adult, juvenile, etc., are used in the adjective form.

Several of the 284 carcasses were submitted to the Department of Veterinary Pathology for post-mortem examination. The assistance of Dr. J. R. Baker and Miss Catherine Ellis is gratefully acknowledged.

TABLE 2

MAIN GROUPS OF CONDITIONS ENCOUNTERED	MAMMALS		BIRDS		REPTILES	
	Number Affected	% Affected	Number Affected	% Affected	Number Affected	% Affected
Bacterial	41	36.9	32	21.6	14	56.0
Viral	—	—	—	—	—	—
Fungal	1	0.9	3	2.0	—	—
Parasitic	—	—	4	2.7	—	—
Injury/Accident	17	15.3	40	27.0	3	12.0
Metabolic/Nutritional	19	17.1	18	12.8	5	20.0
Debility/Senility	9	8.1	17	11.5	—	—
Neoplasia	5	4.5	2	1.4	—	—
Reproductive	4	3.6	3	2.0	1	4.0
Neo-Natal Death	10	9.0	9	6.0	—	—
No Diagnosis	5	4.5	20	13.5	2	8.0
Totals	111		148		25	

MAMMALS (TABLE 2)

Bacterial: From the total of 41 in this category, 19 were losses from the Society's collection of Red-necked Wallabies (*Macropus rufogriseus*), of which 12 carcasses had chronic mandibular osteitis. Two animals developed toxæmic states as a consequence of sepsis following injury, one specimen was humanely destroyed after developing paraplegia, spinal tuberculosis being found at post-mortem examination, and the remainder succumbed to pneumonic or enteric disease, *Escherichia coli* being the predominant organism isolated.

Johne's disease (*Mycobacterium johnei*) was diagnosed clinically and pathologically in an Ankole cow (*Bos taurus*) 9.0, which was humanely destroyed during terminal illness. Hepatitic tuberculosis (*M. tuberculosis*) was seen on two occasions, viz. a Chinchilla (*Chinchilla laniger*) 5.0 and in an adult Marmot (*Cynomys ludovicianus*). Yersiniosis (*Yersinia enterocolotica*) was seen on one occasion in a Chinchilla 2.0.

Septicaemia caused by *E. coli* and *Streptococcus faecalis* was responsible for the death of a Grevy Zebra (*Dolichohippus grevyi*) 5.0 which had aborted an early term foetus four days prior to death. An *E. coli* septicaemia was also diagnosed in a 48-hours-old Grevy Zebra. A *Streptococcus sp.* was incriminated in chronic bronchitis and pleurisy, which caused the death of a Malayan Tapir (*Tapirus indicus*) 7.0. A 13-month-old Chimpanzee (*Pan troglodytes*) died of pulmonary consolidation with associated pleural adhesions, following several episodes of respiratory infection.

Fungal: Fungal disease was recorded on one occasion during 1980, mycotic rumenitis being diagnosed in a Sika Deer (*Cervus nippon*) 0.2.

Injury/Accident: It is gratifying to record a marked reduction in this category in comparison with previous years; in particular, losses due to predation being recorded in only one instance, viz. a 1980-bred Red-necked Wallaby killed by a fox (*Vulpes vulpes*). Collisions with or ensnarement in perimeter fences resulted in the losses of a Wapiti (*C. canadensis*) 1.0, a Common Zebra (*Hippotigris burchelli*) 1.8 and a Red-necked Wallaby 2.0. The remaining losses in this category were largely due to intro or interspecific aggression.

Metabolic/Nutritional: A Viscacha (*Lagostomus maximus*) 2.0, which died one hour after the induction of Ketamine hydrochloride/Xylazine anaesthesia, was found to have severe fatty infiltration of the liver. Bilateral hydronephroses was found at post-mortem examination of a Genet (*Genetta tigrina*) 12.10 and glomerulonephritis was found histologically in a Jaguarundi (*Felis yagouaroundi*) 4.0, which had been receiving treatment for anaemia. Advanced osteoarthritis was diagnosed clinically in a Collared Peccary (*Tayassu tajacu*) 10.2; the severity of the condition necessitated the humane destruction of the animal. Post-mortem examinations of several ungulates suggested that a wasting syndrome may be associated with muscular dystrophy. Microscopic and enzymes studies have been undertaken to determine the presence of muscular dystrophy. A severe ruminal impaction caused by the ingestion of large numbers of polythene bags caused the death of a Fallow Deer (*Dama dama*) 10.0.

Debility/Senility: Several specimens were lost during 1980 with debilitating symptoms associated with age, including a Black Rhinoceros (*Diceros bicornis*) 22.10, a Black Panther (*Panthera pardus*) 15.3, a Genet 18.7 and a Mongoose (*Herpestes edwardsi*) 12.0.

Neoplasia: A uterine leiomyosarcoma was recorded in a Dwarf Mongoose (*Helogale parvula*) 4.9, a cystic renal adenoma in a Raccoon (*Procyon lotor*) 3.4 and lymphosarcoma in a De Brazza Monkey (*Cercopithecus neglectus*) 10.0.

Reproductive: A 48-hours-old Grevy Zebra died, despite attempted hand-rearing and intensive care. Post-mortem examination revealed an early *E. coli* septicaemia and congenital malformation of the kidneys. An eight-year-old Pere David's Deer died as a result of dystocia. This condition was also recorded in a Chinchilla 2.0.

BIRDS (TABLE 2)

Bacterial: Avian tuberculosis (*Mycobacterium tuberculosis*) was recorded in the following:—a Coscoroba Swan (*Coscoroba coscoroba*) 9.5, an adult Cardinal (*Cardinalis cardinalis*) and a Cheer's Pheasant (*Catreus wallichii*) 5.0. Salmonellosis (*Salmonella typhimurium*) was diagnosed in an adult Quaker Parakeet (*Myiopsitta monachus*) and in a Swainson's Lorikeet (*Trichoglossus haematodus moluccanus*) 1.3. *Escherichia coli* was considered responsible for enteric disease in the following:—a Squatter Pigeon (*Petrophassa scripta*) 1.2, a Bronzewing Pigeon (*Ochyphaps lophotes*) 0.2, a Japanese Quail (*Coturnix japonica*) 1.0, a Crowned Plover (*Stephanibyx coronatus*) 0.7, a Gallinule (*Porphyrio porphyrio*) 0.3, three Tanagers (*Thraupidae* various) 0.4, 0.4, 0.4 and for septicaemic disease in a Quaker Parakeet 0.2. A *Citrobacter* sp. was recovered from the intestinal trace of an African Grey Parrot (*Psittacus erithacus*) 0.1. Several specimens were humanely destroyed, due to the severity of lesions associated with Staphylococcal arthritis and included a San Blas Jay (*Cyanocorax sanblasiana nelsoni*) and a Common Peafowl (*Pavo cristatus*) 1.6. A chronic pericarditis was diagnosed in a Chiloe Wigeon (*Anas sibilatrix*) 1.2. *Streptococcus* sp. was isolated from the lesion.

Fungal: Aspergillosis was recorded on three occasions during 1980, in a Gentoo Penguin (*Pygoscelis papua*) 2.2, and in two Rheas (*Rhea americana*) aged three and five weeks respectively.

Injury/Accident: During 1980, the Society's collection of birds numbered 918, representing 206 species. Of these, 64 species (339 specimens) belonged to the Psittacine family. Some genera, e.g. *Trichoglossus sp.*, *Nymphicus sp.*, *Cyanoliseus sp.* and *Myiopsittus sp.*, have become well-established and breed successfully, and it is within these large groups that aggression injuries are most prevalent—territorial and hierarchical disputes being commonplace during the breeding season. As in the mammal collection, there was a marked reduction in losses due to predation, although sporadic killing by foxes (*Vulpes vulpes*) and possible weasels (*Mustela nivalis*) still occurs.

Metabolic/Nutritional: Fatty degeneration of the liver remains a major "post-mortem" finding at autopsy of many small passerines. As many of these specimens are acquired in adult plumage, it is often difficult to determine the age of the bird, and therefore the attribution of fatty liver syndrome to longevity or dietary inadequacies is speculative. This syndrome was also recorded in several artificially-reared Emus and Rheas which succumbed in the few weeks following hatching; again, the aetiology remains undetermined. Symptoms suggestive of acute toxicity were reported in a Firecrested Pheasant (*Lophura ignita*) 0.2, which died after 36 hours' illness. The bird had ingested paint-flakes. Toxicological analysis of these flakes revealed a lead content of 11.3 per cent. At autopsy the bird was found to have severe fatty degeneration of the liver.

Neoplasia: Two neoplasms were diagnosed during the year, viz. a benign dermal haemangioma in a Budgerigar (*Melopsittacus undulatus*) 2.0 and a lipoma situated in the pectoral musculature of an Indian Ring-necked Parakeet (*Psittacula krameri*) 1.6.

REPTILES (TABLE 2)

Bacterial: Peritonitis, resulting from ruptured developing eggs, was diagnosed in a Leopard Tortoise (*Geochelone pardalis*) 3.5. Losses due to necrotic enterocolitis were recorded in a Cuban Boa (*Epicrates angulifer*) 0.6, a Dominican Boa (*Constrictor arophioides*) 0.6, a Green Tree Python (*Chondropython viridis*) 0.1 and a Children's Python (*Liasis childreni*) 2.0. An Indian Python (*Python molurus*) was humanely destroyed, due to an extensive non-healing infection of the lower mandible. A suppurative pneumonia was responsible for the death of a Diamond Python (*Morelia spilotes*) 2.0; a *Citrobacter sp.* was the predominant organism recovered from cultures of pneumonic exudate. Debilitating mandibular abscesses were responsible for the losses of a Jackson's Chameleon (*Chaemeleo jacksonii*) 0.2, two Bearded Dragons (*Amplibolurus b. barbatus*) 1.11, 2.0, and a Pacific Rattlesnake (*Crotalus viridis helleri*).

Metabolic/Nutritional: Osteomalacia was diagnosed in an Aldabra Tortoise (*Geochelone gigantea*) 1.4. Severe fatty degeneration of the liver was responsible for the death of a Bosc's Monitor (*Varanus exanthematicus*) 0.1. Visceral gout was established as the cause of death of a Common Iguana (*Iguana iguana*) 10.1 and a Leopard Gecko (*Eublepharis macularis*) 8.0. Vitamin A deficiency was suspected in a Shingleback Lizard (*Trachydosaurus rugosus*) 4.7.

MEDICINE AND SURGERY

During 1980, the Veterinary Officer dealt with 256 clinical cases, comprising 192 mammalian, 46 avian and 18 reptilian. Follow-up treatments brought the total number of attendances to 883. This figure does not include advice given regarding husbandry, minor problems, anthelmintic treatment or visit to the Society's Quarantine Premises, where, during the year, two mammals and 11 birds were detained for varying periods.

In order to facilitate examination, surgical procedures or translocation, immobilisation or anaesthesia was carried out on 109 occasions.

Vaccination against feline viral rhinotracheitis, feline calici virus and feline panleucopenia continues as a preventive measure, with all juvenile and newly-acquired Felidae receiving inoculations at 12 and 15 weeks after birth in the former case, and on arrival in the latter.

During the latter summer months of 1980, it was decided to vaccinate animals which might be susceptible to canine parvovirus, due to the incidence of this virus in the locality. Two pairs of Arctic Foxes were vaccinated with dead feline panleucopenia vaccine (1), with an interval of 14 days between first and second inoculation. Blood samples were taken 30 days later to determine antibody levels. High antibody titres were found—in some instances much higher than the levels recorded in domestic species. No side-effects were seen and it is hoped to vaccinate further exotic canine species during 1981. The serological investigations were carried out by the staff of the Canine Infectious Disease Research Unit, University of Glasgow Veterinary School.

The high incidence of mandibular osteitis in the Society's collection of marsupials continued during 1980. Several methods of treatment were used, including prolonged courses of long-acting antibiotics (Oxytetracycline (2), Penicillin (3) and Ampicillin (4)), all of which gave varying degrees of initial success. In many instances, symptoms subsequently recurred. An alternative form of treatment giving Metronidazole (5) by intravenous infusion, whilst the animal was sedated by Ketamine (6), in conjunction with intramuscular long-acting antibiotic, also offered temporary resolution. As previously, those animals presented with continually recurring lesions were culled from the collection.

A male Wildebeeste suffered a fractured horn, which caused extensive exposure of underlying sensitive tissue. The animal was immobilised with Etorphine/Acetylpromazine (7), damaged horn removed and the sensitive tissue, which was greatly swollen, was surgically treated and a tight compression bandage applied to the exposed tissue. The bandage was changed weekly for three weeks. No complications arose and the lesion healed satisfactorily.

A female Squirrel Monkey was presented with dystocia. The animal was anaesthetised with Alphazalone/Alphadolone (8) and a dead youngster removed by caesarian section. No post-operative complications arose. As the animal had a history of dystocia, it was decided that sterilisation be carried out to prevent recurrences. Five weeks later, the animal was anaesthetised as above, and the fallopian tubes were ligatured. No immediate post-operative complications were noted but, six days after the operation, extensive oedema of the right arm, hand and digits, with necrosis of the external nares and ear pinnae occurred. It was felt that these symptoms were anaesthetic sequelae. The lesions resolved satisfactorily following topical and parenteral treatment with steroids and antibiotics.

A sub-adult female Nilgai presented extensive deep lacerations of the metacarpal region of the right foreleg, involving muscle and tendons. Detailed examination of the lesion was performed, following immobilisation with Etorphine/Acetylpromazine and Xylazine (9). Surgical repair was carried out with trepidation, as a large area of skin was missing. Extensive granulation tissue developed during the following ten days over the common extensor tendon, preventing satisfactory healing. It was decided to remove a 10 cm. portion of the extensor tendon in an effort to effect healing. Rapid improvement occurred and no impairment of locomotor function has been noticed to date.

In October, an adult male Kudu developed symptoms of acute ataxia and incoordination, followed by collapse and respiratory embarrassment. Examination of the animal's enclosure revealed that decorative foliage in an adjacent garden had overgrown into the paddock and had been extensively grazed. A tentative diagnosis of plant poisoning was made and, in order to control the acute tetanic convulsions and also facilitate the administration of treatments, sedation with Xylazine was instituted. This enabled the following drug regime to be adopted: intravenous administration of B and C Vitamins (10); long-acting Penicillin (3) to prevent infection of the traumatised skin; Magnesium sulphate (11) and Calcium (12) were also administered by subcutaneous injection in cases where acute mineral deficiency was present. The animal was maintained in sternal recumbency with warmth, and recovery was effected in 18 hours. No further symptoms were noted. The plants which had been grazed included Laurel, Privet, Dogwood, Viburnum, Weigelia, Cotoneaster and Philadelphus.

A Straw-necked Ibis was reported to have difficulty in preening (but not in eating), following a mid-point fracture of the lower mandible. (Approximately 7.5 cms. of lower beak were missing.) Attempted repair with a prosthetic beak was considered, but weight and attachment problems associated with a synthetic material negated this solution. As an alternative, the upper mandible was shortened to the lower existing length and proved effective.

A female Wapiti aborted a half-term foetus. Bacteriological investigation of the foetus for abortion-causing organisms revealed a *Pseudomonas sp.* in foetal stomach contents. Seven days following the abortion the dam developed a metritis, which was successfully treated with the intra-uterine and parenteral administration of antibiotics.

It was decided to carry out serological studies to check the hepatitis history of the group of Chimpanzees, comprising eight males and eight females, ranging in age from three to 35 years. The animals were sedated with either Phencyclidine (13) or Ketamine to facilitate blood-sampling, and results for viral hepatitis B showed that four animals had antibodies, the remainder being clear. None showed positive antigen. Viral hepatitis A tests revealed six animals (including the four mentioned above) to have antibody levels. Again, negative results were obtained for antigen levels. All six animals had been wild caught. It was assumed that the animals had contact with hepatitis A and B before coming to the Zoo, possibly whilst still in Africa.

Several episodes of per-acute and recurring enteritis in the herd of Arabian Gazelles were investigated for bacteriological or parasitic causes. Results proved inconclusive. Nine animals were blood-sampled and complement fixation tests for Johne's disease were negative. Further investigations are being continued in an effort to determine the source of the disease.

During the year, the following were successfully hand-reared: two Arabian Gazelles, a Ring-tailed Lemur, a South American Tapir and an Ankole calf. It was necessary to remove the Ankole calf at birth. The Chester Zoo herd of Ankole cattle consists of one male and three females, all of which are known to have Johne's disease (complement fixation test positive and faecal culture positive). Following consultations with the Ministry of Agriculture, Fisheries and Food, it was agreed that all progeny derived from the herd would be removed at birth, vaccinated with the normal accepted procedure, hand-reared and moved to a clean environment.

On two occasions, milk samples were obtained from maternal parents and the milk analyses are shown below:—

	Orang-utan*	South American Tapir**
Protein %	Under 2	7.15
Fat %	4.5	1.30
Total Solids %	13.01	16.12
Calcium mmol/l	9.6	79.0

*Sample obtained six weeks post-partum

**Sample obtained two weeks post-partum

Routine anthelmintic administration continued as a preventive measure, Thiabendazole (14), Fenbendazole (15) and Levamisole (16) being used as a feed-additive for ruminant stock; Mebendazole (17) for Equidae; Piperazine (18) for Felidae; Levamisole for Birds; and Thiabendazole and Mebendazole suspensions for Reptiles.

1 Panleucopenia vaccine	Feli Pan Vaccine	C-Vet Ltd.
2 Oxytetracycline	Terramycin LA	Pfizer Ltd.
3 Penicillin	Duplocillin	Mycofarm Ltd.
4 Ampicillin	Amfipen LA	Mycofarm Ltd.
5 Metronidazole	Flagyl	May & Baker Ltd.
6 Ketamine	Vetalar	Parke-Davis Ltd.
7 Etorphine/Acetylpromazine	Large Animal Immobilon	Reckitt & Colman Ltd.
8 Alphazalone/Alphadolone	Saffan	Glaxo Laboratories Ltd.
9 Xylazine	Rompun	Bayer Agrochem Ltd.
10 B and C Vitamins	Parentrovite	Beecham Animal Health
11 Magnesium sulphate	Magnesium Sulphate B-Vet C.	Willington Medicals Ltd.
12 Calcium	MFC Solution	May & Baker Ltd.
13 Phencyclidine	Sernylan	Bio-Ceutic Laboratories Ltd.
14 Thiabendazole	Thibenzole	Merck, Sharp & Dohme Ltd.
15 Fenbendazole	Panacur	Hoechst U.K. Ltd.
16 Levamisole	Nilverm	I.C.I. Ltd.
17 Mebendazole	Multispec	Crown Ltd.
18 Piperazine	Coopane	Wellcome Ltd.

The Society gratefully acknowledges the gift of radiographic film-processing equipment from Shell (Medical) U.K. Ltd.

	1 Stock at 1st Jan., 1980	2 Rec'd	3 Births	4 D.N.S. within 30 days	5 Deaths excl. 4	6 Disposal inc. cull	7 Stock at 31st December, 1980		
							M	F	?
MAMMALS									
MONOTREMATA									
<i>Tachyglossus aculeatus</i>		Australian Echidna	2				1	1	
MARSUPIALIA									
<i>Macropus agilis</i>		Agile Wallaby	1				1		
<i>Macropus eugenii</i>		Tammar Wallaby	5	1			2	3	1
<i>Macropus rufogriseus</i>		Red-necked Wallaby	64	19	1	28	11		43
<i>Macropus fuliginosus</i>		Western Grey Kangaroo	4	2			2	2	2
<i>Macropus rufus</i>		Red Kangaroo	3				1	1	
PRIMATES									
<i>Lemur catta</i>		Ring-tailed Lemur	15	5			3	11	6
<i>Lemur macaco mayottensis</i>		Mayotte Lemur						1	1
<i>Nycticebus coucang</i>		Slow Loris	3					2	1
<i>Cebus albifrons</i>		White-fronted Capuchin	7			1		3	3
<i>Saimiri sciureus</i>		Squirrel Monkey	7					4	3
<i>Ateles paniscus</i>		Spider Monkey (black-faced)	1						1
<i>Ateles paniscus</i>		Spider Monkey (red-faced)	1						1
<i>Ateles geoffroyi</i>		Spider Monkey (golden)	1					1	
<i>Macaca silenus</i>		Lion-tailed Macaque	5	1			1	3	2
<i>Macaca nemestrina</i>		Pig-tailed Macaque	2					1	1
<i>Macaca sylvana</i>		Barbary Ape	9	2				5	6
<i>Cynopithecus niger</i>		Celebes Ape	2					2	2
<i>Cercocebus atys</i>		Sooty Mangabey	6				2	2	2
<i>Papio hamadryas</i>		Hamadryas Baboon	10	3	1	1		3	6
<i>Cercopithecus pygerythrus</i>		Vervet Monkey	2					1	1
<i>Cercopithecus aethiops</i>		Griquet Monkey	2					1	1
<i>Cercopithecus albogularis</i>		Sykes Guenon (Moloney's Form)	1						1
<i>Cercopithecus albogularis</i> <i>x bred</i>		Sykes x Moloney's Form	2					1	1
<i>Cercopithecus mona</i>		Mona Monkey	2	2				1	3

	1 Stock at 1st Jan., 1980	2 Rec'd	3 Births	4 D.N.S. within 30 days	5 Deaths excl. 4	6 Disposal inc. cull	7 Stock at 31st December, 1980		
							M	F	?
<i>Cercopithecus neglectus</i>		De Brazza Monkey	4			2		1	2
<i>Cercopithecus nictitans</i>		White-nosed Guenon	3			1			2
<i>Cercopithecus talapoin</i>		Talapoin Monkey	5	1				2	3
<i>Erythrocebus patas</i>		Patas Monkey	8	2				5	5
<i>Hylobates lar</i>		Lar Gibbon	2					2	
<i>Hylobates agilis</i>		Agile Gibbon	2					1	1
<i>Pan troglodytes</i>		Chimpanzee	17			1	1	7	8
<i>Pongo pygmaeus</i>		Orang-utan (Bornean Form)	6	1				4	3
<i>Pongo pygmaeus</i>		Orang-utan (Sumatran Form)	2					1	1
<i>Pongo pygmaeus</i>		Orang-utan (Bornean x Sumatran)	1				1		
<i>Gorilla gorilla</i>		Western Lowland Gorilla	1					1	
<i>Gorilla gorilla</i>		Eastern Lowland Gorilla	1					1	
RODENTIA									
<i>Calloscirtus germani</i>		Siamese Black Squirrel	1					1	
<i>Ratufa bicolor</i>		Malay Giant Squirrel	2					1	1
<i>Funisciurus pyrrhopus</i>		Fire-footed Squirrel	7	1		2		3	3
<i>Cynomys ludovicianus</i>		Prairie Marmot	100	33		2	11		120
<i>Marmota monax</i>		Woodchuck	2					1	1
<i>Castor canadensis</i>		Beaver	2					1	1
<i>Cricetomys gambianus</i>		African Giant Rat	1				1		
<i>Hystrix cristata</i>		African Crested Porcupine	2	1				1	1
<i>Hystrix indica</i>		Indian Crested Porcupine	2					1	1
<i>Hydrochoerus hydrochaeris</i>		Capybara	2	5	5			1	1
<i>Dasyprocta aguti</i>		Golden Agouti	5					2	3
<i>Chinchilla laniger</i>		Chinchilla	5	6		12		1	3
<i>Myocastor coypus</i>		Coypu	4	11		6		2	1
<i>Lagostomus maximus</i>		Plain's Viscacha	6			4	1		1
CARNIVORA									
<i>Canis mesomelas</i>		Black-backed Jackal	3			1		2	
<i>Canis familiaris</i>		Dingo	4			1		1	2
<i>Alopex lagopus</i>		Arctic Fox	4	5		1	4	2	2

	1 Stock at 1st Jan., 1980	2 Rec'd	3 Births	4 D.N.S. within 30 days	5 Deaths excl. 4	6 Disposal inc. cull	7 Stock at 31st December, 1980		
							M	F	?
<i>Fennecus zerda</i>	8	2			1	2	4	3	
<i>Ursus arctos</i>	5					2	1	2	
<i>Thalarctos maritimus</i>	1	2				1	1	1	
<i>Procyon lotor</i>	2	2			1		2	1	
<i>Nasua nasua</i>	5	4			2		2	5	
<i>Potos flavus</i>	6		1				3	3	1
<i>Martes americana</i>	2						2		
<i>Eira barbara</i>	2				2				
<i>Genetta tigrina</i>	6				1		3	2	
<i>Mephitis mephitis</i>		1						1	
<i>Spilogale putorius</i>		2			1		1		
<i>Genetta tigrina</i>	1				1		2	1	
<i>Viverra civetta</i>	3		1	1		1	1	1	
<i>Arctictis binturong</i>	3								
<i>Herpestes edwardsi</i>	1				1				
<i>Helogale parvula</i>	1				1				
<i>Mungos mungo</i>	2				1			1	
<i>Atilax paludinosus</i>		2					1	1	
<i>Felis colocolo</i>	1						1		
<i>Felis wiedi</i>	2						1	1	
<i>Felis wiedi</i>	1	1					1	1	
<i>Felis chaus</i>	1	1					1	1	
<i>Felis sylvestrus</i>	4		3			2	4	1	
<i>Felis bengalensis</i>	2		2		2		1	1	
<i>Felis caracal</i>	1	2					2	1	
<i>Felis lynx</i>	3		2				1	4	
<i>Felis serval</i>	3						2	1	
<i>Felis geoffroyi</i>	2						1	1	
<i>Felis geoffroyi</i>	5		3	3	1		1	3	
<i>Felis yagouaroundi</i>	4						1	3	
<i>Felis concolor</i>	6						1	3	
<i>Panthera leo</i>	4		4	4			3	1	
<i>Panthera tigris</i>	4						2	2	
<i>Panthera tigris</i>	5						2	2	
<i>Panthera pardus</i>	6				2		1	1	
<i>Panthera pardus</i>	4		1						

	1 Stock at 1st Jan., 1980	2 Rec'd	3 Births	4 D.N.S. within 30 days	5 Deaths excl. 4	6 Disposal inc. cull	7 Stock at 31st December, 1980		
							M	F	?
<i>Panthera pardus</i>	3	2					2	3	
<i>Panthera onca</i>	7					4	1	2	
<i>Acinonyx jubatus</i>	2						1	1	
PINNIPEDIA									
<i>Zalophus californianus</i>	2						2		
PROBOSCIDEA									
<i>Elephas maximus</i>	3						1	2	
PERISSODACTYLA									
<i>Equus przewalskii</i>	3		1				2	2	
<i>Asinus hemionus</i>	4						2	2	
<i>Asinus hemionus</i>	4					3	1	1	
<i>Hippotigris burchelli</i>	9		3		1		5	6	
<i>Dolichohippus grevyi</i>	5		1	1	1		1	3	
<i>Tapirus indicus</i>	1						1		
<i>Tapirus terrestris</i>	2				1			1	
<i>Diceros bicornis</i>	5		1				2	4	
<i>Ceratotherium simum</i>	1				1				
<i>Ceratotherium simum</i>	2						1	1	
ARTIODACTYLA									
<i>Tayassu tajacu</i>	3				1		2		
<i>Hippopotamus amphibius</i>	2		1				2	1	
<i>Lama glama</i>	6		2	2		2	2	2	
<i>Lama guanicoe</i>	6		2		1		1	6	
<i>Lama pacos</i>	4		1	1		1	2	1	
<i>Camelus bactrianus</i>	2						1	1	
<i>Camelus dromedarius</i>		2					1	1	
<i>Dama dama</i>	10		2		2		4	5	1
<i>Axis axis</i>	6		2	1			4	2	1
<i>Cervus nippon</i>	4	1			1			4	
<i>Cervus canadensis</i>	7		2		1	1	2	5	

		1 Stock at 1st Jan., 1980	2 Rec'd	3 Births	4 D.N.S. within 30 days	5 Deaths excl. 4	6 Disposal inc. cull	7 Stock at 31st December, 1980		
								M	F	?
<i>Elaphurus davidianus</i>	Pere David's Deer	22		4		2		8	16	
<i>Rangifer tarandus</i>	Reindeer	5		3		1		3	4	
<i>Hydropotes inermis</i>	Chinese Water Deer	1	3	2		1		1	3	1
<i>Giraffa camelopardalis</i>	Giraffe	6		1		1	1		5	
<i>Tragelaphus strepsiceros</i>	Greater Kudu	2	2			2		2		
<i>Taurotragus oryx</i>	Eland	3	1					1	3	
26 <i>Boselaphus tragocamelus</i>	Nilgai	7		1				5	3	
<i>Bos taurus</i>	Ankole Cattle	4		1		1		1	3	
<i>Bison bison</i>	American Bison	6	4	1			4	2	5	
<i>Kobus leche</i>	Red Lechwe	21		6		5	1	5	14	2
<i>Oryx gazella beisa</i>	Beisa Oryx	1						1		
<i>Connochaetes taurinus</i>	Wildebeeste	3		2		1		2	2	
<i>Antelope cervicapra</i>	Blackbuck	4		2		1		1	4	
<i>Gazella arabica</i>	Arabian Gazelle	20		9	3	5		9	12	
<i>Capra hircus</i>	Bagot Goat	2		1		1		1	*1	
<i>Ovis aries</i>	Soay Sheep	17		11		1	16	2	9	
		685	51	173	23	112	88	226	278	182
									686	

		1 Stock at 1st Jan., 1980	2 Rec'd	3 Births	4 D.N.S. within 30 days	5 Deaths excl. 4	6 Disposal inc. cull	7 Stock at 31st December, 1980		
								M	F	Y?
BIRDS										
STRUTHIONIFORMES										
<i>Struthio camelus</i>	Ostrich	3	1					1	3	
RHEIFORMES										
<i>Rhea americana</i>	Common Rhea	7	3	24	4	2	12			16
CASUARIIFORMES										
<i>Casuarius casuarius bicaruntulus</i>	Twin-wattled Cassowary	2					2			
<i>Dromaius novaehollandiae</i>	Emu	4		5		3	2	2	2	
<i>Northoprocta perdicaria</i>	Chilean Tinamou		4							4
27 SPHENISCIFORMES										
<i>Pygoscelis papua</i>	Gentoo Penguin	1				1				
CICONIIFORMES										
<i>Ardea cinerea</i>	Common Grey Heron	2	1							3
<i>Bubulcus ibis</i>	Cattle Egret	1	1							2
<i>Egretta garzetta</i>	Little Egret	1	1			1				1
<i>Nycticorax nycticorax</i>	Night Heron	4		2	1			3	1	1
<i>Threskiornis aethiopica</i>	Sacred Ibis	12		6			2			16
<i>Threskiornis spinicollis</i>	Straw-necked Ibis	5								5
<i>Plegadis falcinellus</i>	Glossy Ibis	1								1
<i>Scopus umbretta</i>	Hammerhead Stork		1					1		
<i>Phoenicopterus ruber roseus</i>	Greater Flamingo	5				1	1	1	2	
<i>Phoenicopterus ruber chilensis</i>	Chilean Flamingo	19						15	4	
<i>Phoenicopterus ruber ruber</i>	Rosy Flamingo	7	1			1		3	4	
ANSERIFORMES										
<i>Dendrocygna bicolor</i>	Fulvous Tree Duck	2								2
<i>Coscoroba coscoroba</i>	Coscoroba Swan	1				1				
<i>Cygnus atratus</i>	Black Swan	3	1			1	1	1	1	

	1 Stock at 1st Jan., 1980	2 Rec'd	3 Births	4 D.N.S. within 30 days	5 Deaths excl. 4	6 Disposal inc. cull	7 Stock at 31st December, 1980		
							M	F	Y?
<i>Cygnus olor</i>	2						1	1	
<i>Anser anser</i>	1						1		
<i>Anser caerulescens</i>	7								7
<i>Anser canagicus</i>	2						2		
<i>Anser fabalis brachyrhynchus</i>	1								1
<i>Anser indicus</i>	6								6
<i>Anser rossii</i>	1								1
<i>Branta canadensis</i>	22				1	9			12
<i>Branta leucopsis</i>	2	1			1				2
<i>Branta sandvicensis</i>	1	2				1	1	1	
<i>Cereopsis novaehollandiae</i>	2	2			1		2	1	
<i>Chloephaga melanoptera</i>	5								5
<i>Tadorna tadorna</i>	1	5							6
<i>Anas acuta</i>	4					2	1	1	
<i>Anas bahamensis</i>	7	1	1		1		2	6	
<i>Anas cyanoptera</i>	3					1	1	1	
<i>Anas penelope</i>	3						1	2	
<i>Anas platalea</i>	4	2					3	3	
<i>Anas platyrhynchos</i> <i>laysanensis</i>	2		3				3	2	
<i>Anas sp.</i>	1					1			
<i>Anas sibilatrix</i>	6						2	4	
<i>Anas strepera</i>	3	1					3	1	
<i>Aythya ferina</i>	2					2			
<i>Aythya fuligula</i>	8					2	4	2	
<i>Netta peposaca</i>	2						1	1	
<i>Netta rufina</i>	2						1	1	
<i>Chenonetta jubata</i>	5	2				1	2	4	
<i>Aix galericulata</i>	7					2	3	2	
<i>Aix sponsa</i>	6					1	2	3	
<i>Cairina moschata Domestic</i>	8		2						10
<i>Anas platyrhynchos Domestic</i>	2								2

	1 Stock at 1st Jan., 1980	2 Rec'd	3 Births	4 D.N.S. within 30 days	5 Deaths excl. 4	6 Disposal inc. cull	7 Stock at 31st December, 1980		
							M	F	Y?
FALCONIFORMES									
<i>Sarcorhamphus papa</i>	2						1	1	
<i>Vultur gryphus</i>	2						1	1	
<i>Trionoceph occipitalis</i>	2						1	1	
<i>Tetathopius ecaudatus</i>	2						1	1	
<i>Aquila audax</i>	2						1	1	
<i>Aquila chrysaetos</i>	2						1	1	
GALLIFORMES									
<i>Crax fasciolata sclateri</i>	2		2				1	1	2
<i>Coturnix japonica</i>	3				1		2		
<i>Crossoptilon auritum</i>	9				2		5	2	
<i>Crossoptilon mantchuricum</i>		2					1	1	
<i>Crossoptilon crossoptilon</i>		2					*1	*1	
<i>Polyplectron emphanum</i>		2					1	1	
<i>Lophura ignita rufa</i>		2			1		1		
<i>Chrysolophus pictus</i>		2					1	1	
<i>Lophura nycthemera</i>	1	1					1	1	
<i>Gallus sonneratii</i>	4						2	2	
<i>Catreus wallichii</i>	1				1				
<i>Phasianus colchicus</i>	3					3			
<i>Pavo cristatus</i>	13	1			2	3	3	4	2
<i>Numida melagris Domestic</i>	3					1			2
<i>Gallus species Domestic</i>	21		20		1	12	4	24	
GRUIFORMES									
<i>Grus antigone</i>	2	3							5
<i>Grus grus lilfordi</i>		2							2
<i>Balearic pavonina</i>	2				1				1
<i>Anthropoides virgo</i>		4				1			3
<i>Aramides ypecaha</i>	1				1				
<i>Gallirallus australis</i>	1								1
<i>Amaurornis phoenicurus</i>	4						2	2	

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								M	F	Y?
<i>Porphyrio porphyrio</i>	Purple Gallinule		4			1				3
<i>Eurypyga helias</i>	Sun Bittern	2						1	1	
<i>Larus modestus</i>	Grey Gull		4					2	2	
CHARADRIIFORMES										
<i>Burhinus magnirostris</i>	Southern Stone Curlew	1								1
<i>Hoplopterus armatus</i>	Blacksmith's Plover	4				1				3
<i>Stephanibyx coronatus</i>	Crowned Plover	4				1				3
COLUMBIFORMES										
<i>Streptopelia chinensis</i>	Chinese Necklaced Dove		1					1		
<i>Streptopelia senegalensis</i>	Laughing Dove	4					1	2	1	
<i>Streptopelia risoria</i>	Barbary Dove	2					2			
<i>Streptopelia Domestic</i>	Java Dove	2				1				1
<i>Geopelia cuneata</i>	Diamond Dove	1				1				
<i>Oena capensis</i>	Cape Dove	2				2				
<i>Turtur tympanistria</i>	Tambourine Dove	1								1
<i>Petrophassa scripta</i>	Squatter Pigeon	2				1				1
<i>Ochyphaps lophotes</i>	Crested Bronzewing Pigeon	7		5	1	1	4	3	2	1
<i>Geotrygon versicolor</i>	Mountain Witch Dove	4				1		2	1	
<i>Gallicolumba jobiensis</i>	White-breasted Dove	2				1				1
PSITTACIFORMES										
<i>Eos bornea</i>	Red Lory	4				1				3
<i>Trichoglossus chlorolepidotus</i>	Scaly-breasted Lorikeet	5		1		2		*2	2	
<i>Trichoglossus haematodus capistratus</i>	Edward's Lorikeet	3						1	2	
<i>Trichoglossus haematodus mitchelli</i>	Mitchell's Lorikeet	4				4				
<i>Trichoglossus haematodus moluccanus</i>	Swainson's Lorikeet	14	2			4				12
<i>Trichoglossus haematodus weberi</i>	Weber's Lorikeet	3						1	1	*1
<i>Trichoglossus ornatus</i>	Ornate Lorikeet	2		2	2			1	1	

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								M	F	Y?
<i>Trichoglossus versicolor</i>	Varied Lorikeet	2				1		1		
<i>Lorius garrulus flavopalliatu</i>	Yellow-backed Chattering Lory	1					1			
<i>Charmosyna papou</i>	Stella's Lory	1				1				
<i>Pseudeos fuscata</i>	Dusky Lory	4						2	2	
<i>Probosciger aterrimus</i>	Palm Cockatoo	1					1			
<i>Calyptorhynchus funereus</i>	Funereal Cockatoo	1							1	
<i>Calyptorhynchus funereus baudinii</i>	White-tailed Black Cockatoo	2						1	1	
<i>Calyptorhynchus funereus magnificus</i>	Red-tailed Black Cockatoo	2				1		1		
<i>Eolophus roseicapillus</i>	Roseate Cockatoo	1					1			
<i>Cacatua galerita</i>	Sulphur-crested Cockatoo	4					1	2	1	
<i>Cacatua leadbeateri</i>	Leadbeater's Cockatoo	2						1	1	
<i>Cacatua moluccensis</i>	Moluccan Cockatoo	1	1					1	1	
<i>Cacatua ophthalmica</i>	Blue-eyed Cockatoo	5		2				2	3	2
<i>Cacatua sulphurea</i>	Lesser Sulphur-crested Cockatoo	1					1			
<i>Cacatua tenuirostris tenuirostris</i>	Slender-billed Cockatoo	2				1		1		
<i>Nymphicus hollandicus</i>	Cockatiel	50	1	5		29	27			
<i>Nestor notabilis</i>	Kea	2				1			1	
<i>Eclectis roratus</i>	Grand Eclectus Parrot	2						1	1	
<i>Eclectus roratus goodsoni</i>	Red-sided Eclectus Parrot	6		1	1	2		3	1	
<i>Aprosmictus erythropterus</i>	Crimson-winged Parrakeet	4						*2	2	
<i>Polytelis swainsoni</i>	Barraband Parrakeet	2				1		1		
<i>Platycercus icterotis</i>	Stanley Parrakeet	1				1				
<i>Platycercus eximius x Platycercus icterotis</i>	Cross-bred Rosella Parrakeet	2				1	1			
<i>Psephotus haematonotus</i>	Red-rumped Parrakeet	4				1	2			1
<i>Neophema pulchella</i>	Turquoise Parrakeet	3					3			
<i>Neophema splendida</i>	Splendid Parrakeet	3				1	2			
<i>Neophema splendida x pulchella</i>	Splendid x Turquoise	1				1				
<i>Melopsittacus undulatus</i>	Budgerigar	39				8	29			2

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							M	F	Y?
<i>Poicephalus ruppeli</i>	1	1					1	1	
<i>Poicephalus senegalus</i>	2						1	1	
<i>Psittacus erithacus</i>	4	2			3	2			1
<i>Agopornis fischeri</i>	12	1			5	8			
<i>Agopornis roseicollis</i>	22					22			
<i>Agopornis tararanta</i>	2				2				
<i>Psittacula alexandri</i>	2	1						3	
<i>Psittacula cyanocephala</i>	2				2				
<i>Psittacula derbiana</i>	4		2				1	5	
<i>Psittacula krameri</i>	4	3			2		2	3	
<i>Ara maracana</i>		2				2			
<i>Anodorhynchus hyacinthinus</i>	2						*1	1	
<i>Ara ararauna</i>	4						2	2	
<i>Ara chloroptera</i>	2					2			
<i>Ara macao</i>	2						1	1	
<i>Aratinga acuticauda</i>	1				1				
<i>Aratinga aurea</i>	1	1					1	1	
<i>Aratinga erythrogenys</i>	2						1	1	
<i>Aratinga guarouba</i>	2						1	1	
<i>Aratinga solstitialis</i>	6						3	3	
<i>Nandayus nenday</i>	12					12			
<i>Cynaoliseus patagonus</i>	22	1	3			4			22
<i>Pyrrhura melanura</i>	5						3	2	
<i>Pyrrhura rhodogaster</i>	4						2	2	
<i>Enicognathus leptorhynchus</i>	2	2					2	2	
<i>Myiopsitta monachus</i>	26		7		8	14			11
<i>Forpus xanthrops</i>		4			3			1	
<i>Pionopsitta pileata</i>	2						1	1	
<i>Amazona species</i>	1					1			
<i>Amazona aestiva</i>	4						2	2	
CUCULIFORMES									
<i>Corythaixoides concolor</i>	3				2				1
<i>Carpococcyx renauldi</i>	2						1	1	

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							M	F	Y?
STRIGIFORMES									
<i>Tyto alba</i>	7		11			9			9
<i>Bubo africanus</i>	4						2	2	
<i>Bubo bubo</i>	7					3	2	2	
<i>Bubo virginianus</i>	2						1	1	
<i>Scotopelia bouvieri</i>	1							1	
<i>Scotopelia ussheri</i>		2							*2
<i>Pulsatrix perspicillata</i>	2						1	1	
<i>Nyctea scandiaca</i>	2						1	1	
<i>Ninox novaeseelandiae</i>	2						1	1	
<i>Athene noctua</i>	2	4					1	1	
<i>Strix aluco</i>		1			1	2			3
									1
CORACIIFORMES									
<i>Halcyon smyrnensis</i>	2				1		1		
<i>Dacelo novaeguineae</i>	1	1					1	1	
<i>Upupa epops longirostris</i>	1				1				
<i>Aceros leucocephalus</i>	1					1			
<i>Anthraceros malabaricus</i>	2				1			1	
<i>Buceros bicornis</i>	1						1		
<i>Bucorvus abyssinicus</i>	1						1		
PICIFORMES									
<i>Eubucco bourcierii</i>		4					2	2	
<i>Aulacorhynchus haematopygus</i>		6					3	3	
<i>Ramphastos toco</i>		2					1	1	
PASSERIFORMES									
<i>Pycnonotus species</i>	2					1			1
<i>Cossypha albicapilla</i>		5			2	1	1	1	
<i>Catharus ustulatus</i>	2				2				
<i>Turdus merula alba forma</i>	2				1	1			
<i>Garrulax chinensis</i>	2					1			1

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								M	F	Y?
<i>Garrulax erythrocephalus</i>	Red-headed Laughing Thrush	4		1		1		1	1	2
<i>Garrulax leucalophus</i>	White-crested Laughing Thrush	2		5				1	1	5
<i>Leiothrix lutea</i>	Pekin Robin	3	3			2		2	2	
<i>Pheucticus melanocephalus</i>	Black-headed Grosbeak	2				2				
<i>Tangara gyroca</i>	Bay-headed Tanager		4			1	1			2
<i>Tangara arthus</i>	Black-eared Golden Tanager		9			5	1			3
<i>Psarocolius decumanus</i>	Crested Oropendola		9							9
<i>Agelaius icterocephalus</i>	Yellow-headed Troupial		4					1	3	
<i>Icterus gularis</i>	Altimira Oriole	1								1
<i>Cassidix mexicanum</i>	Boat-tailed Grackle	2				1		1		
<i>Pseudoleistes virescens</i>	Brown and Yellow Marshbird		3			1				2
<i>Serinus mozambicus</i>	Green Singing Finch	1					1			
<i>Carpodacus erythrinus</i>	Common Rosefinch	2	1					1	1	1
<i>Estrilda melpoda</i>	Orange-cheeked Waxbill	20				3	9			8
<i>Estrilda troglodytes</i>	Red-eared Waxbill	20				8	4			8
<i>Amandava amandava</i>	Red Avadavat	4					2			2
<i>Poephila guttata</i>	Zebra Finch	37				1	33			3
<i>Lonchura maja</i>	White-headed Nun	2					1			1
<i>Lonchura m. malabarica</i>	Silverbill	21				1	14			6
<i>Lonchura malabarica cantans</i>	African Silverbill	2								2
<i>Lonchura malacca</i>	Black-headed Nun	1								1
<i>Lonchura punctulata</i>	Spice Bird	1								1
<i>Padda oryzivora</i>	Java Sparrow	3								3
<i>Vidua macroura</i>	Pin-tailed Whydah	3					3			
<i>Vidua paradisea</i>	Paradise Whydah	1						1		
<i>Ploceus bojeri</i>	Golden Weaver	18				1				17
<i>Ploceus cucullatus</i>	Rufous-necked Weaver	1					1			
<i>Ploceus philippinus</i>	Baya Weaver	5		4		1				8
<i>Quelea quelea</i>	Red-billed Weaver	11	1			2				10
<i>Euplectes afer</i>	Napolean Weaver	2						2		
<i>Lamprotornis caudatus</i>	Long-tailed Glossy Starling	4						2	2	
<i>Lamprotornis iris</i>	Emerald Starling		4			4				
<i>Lamprotornis nitens</i>	Glossy Starling	3								3

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								M	F	Y?
<i>Saroglossa spiloptera</i>	Spotted-wing Stare	2						1	1	
<i>Sturnus burmanicus</i>	Jerdon's Starling	5				1	2			2
<i>Sturnus erythropygius andamanensis</i>	Andaman Starling	1								1
<i>Leucopsar rothschildi</i>	Rothschild's Mynah	3		2		2	1	1	1	
<i>Acridotheres fuscus</i>	Jungle Mynah	5				1				4
<i>Acridotheres tristis</i>	Common Mynah	2								2
<i>Gracula religiosa</i>	Hill Mynah		2			1				1
<i>Cyanocorax chrysops</i>	Plush-crested Jay	1				1				
<i>Cissa chinensis</i>	Hunting Cissa	2						1	1	
<i>Urocissa erythrorhyncha occipitalis</i>	Occipital Blue Pie	2	1			1				2
<i>Corvus corax</i>	Raven	1					1			
		918	148	116	9	175	298	189	192	319
								700		

36

	1 Stock at 1st Jan., 1980	2 Rec'd	3 Births	4 D.N.S. within 30 days	5 Deaths excl. 4	6 Disposal inc. cull	7 Stock at 31st December, 1980		
							M	F	Y?
REPTILES									
AMPHIBIA									
<i>Bufo Marinus</i>			Giant Toad	2					
<i>Litoria caerulea</i>	2	10	Australian Tree Frog		4	2			7
<i>Hyla sepenrionalis</i>	4		Cuban Tree Frog			1			4
<i>Hyla c. cinerea</i>		2	Marsh Frog			2			
REPTILIA									
RHYNCHOCEPHALIA									
<i>Sphenodon punctatus</i>	2		Tuatara				1	1	
TESTUDINATA									
<i>Geochelone emys</i>	1	2	Burmese Brown Tortoise				1	2	
<i>Geochelone gigantea</i>	6		Aldabra Giant Tortoise		1				5
<i>Geochelone pardalis</i>	6		Leopard Tortoise		1	2	1	2	
<i>Geochelone sulcata</i>	9		Spurred Tortoise				1	1	7
<i>Pelusios nigricans</i>	2	1	Blackish Mud Terrapin			1			2
<i>Chelus fimbriatus</i>	1		Matamata Turtle					1	
<i>Trionyx triunguis</i>	1		Soft-shelled Turtle				1		
<i>Trionyx triunguis, white variety</i>	1		Soft-shelled Turtle, White					1	
SAURIA									
<i>Gecko gecko</i>	5		Tocko Gecko						7
<i>Phelsuma cepediana</i>	4		Day Gecko			1			3
<i>Eublephans macularis</i>	12	1	Leopard Gecko	27	1	15			24
<i>Tarentola mauritanica</i>		2	Moorish Gecko			2			
<i>Pachydactylus bibronii</i>		2	Bibron's Gecko			2			
<i>Heloderma horridum</i>	2		Mexican Bearded Lizard				1	1	
<i>Heloderma suspectum</i>	1		Gila Monster					1	
<i>Gerrhosaurus flavigularis</i>	3		Plated Lizard			3			
<i>Cordylus giganteus</i>	1	3	Zonure	3	1				4
<i>Anolis e. equestris</i>	3		Anolis Lizard			1		1	
<i>Iguana iguana</i>	3	4	Common Iguana			2		3	

37

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							M	F	Y?
<i>Cyclura cornuta</i>	8		Rhinoceros Iguana				3	5	
<i>Amplibolurus b. barbatus</i>	2		Bearded Lizard, Common		2				
<i>Physignathus cocincinus</i>	3		Thailand Water Dragon				1	2	
<i>Physignathus l. lesuerii</i>	3		Eastern Water Dragon		1		1	1	
<i>Chameleo jacksonii</i>		3	Jackson's Chameleon		2		1		
<i>Egernia cunninghami</i>	2		Cunningham's Skink				1	1	
<i>Egernia major</i>	1		Major Skink						1
<i>Trachydosaurus rugosus</i>	6	3	Shingleback Lizard		1	1	1	6	
<i>Tiliqua gerrardii</i>	2		Pink-tongued Skink						2
<i>Tiliqua gigas</i>		2	New Guinea Blue-tongued Skink				1	1	
<i>Tiliqua occipitalis multifasciata</i>	1		Central Blue-tongued Skink						1
<i>Tiliqua scincoides</i>	5		Blue-tongued Skink			3	1	1	
<i>Corucia zebrata</i>	11		Prehensile-tailed Skink				4	7	
<i>Diploglossus costatus</i>	4		Haitian Giant Skink						4
<i>Varanus prasinus</i>	2		Green Tree Monitor				1	1	
<i>Varanus bengalensis</i>	2	1	Bengal Monitor			2			1
<i>Varanus exantheticus</i>		1	Bosc's Monitor		1				
<i>Varanus gouldii</i>	3		Gould's Monitor		1		1	1	
<i>Varanus niloticus</i>	1	1	Nile Monitor		1	1			
<i>Varanus salvator</i>	2		Salvator Monitor						2
<i>Varanus timorensis</i>	2		Timor Monitor				1	1	
<i>Ophisaurus apodus</i>	1		Glass Snake						1
SERPENTES									
<i>Liasis childreni</i>	3		Children's Python		1		1	1	
<i>Liasis fuscus albertsii</i>	3	1	D'Alberti's Python		1				3
<i>Liasis mackloti</i>	2		Macklot's Python				1	1	
<i>Morelia spilotes</i>	2		Diamond Python		1		1		
<i>Morelia spilotes variegata</i>	3		Carpet Python				1	2	
<i>Python curtus</i>	1		Blood Python						1
<i>Python molurus</i>	2	3	Indian Python		1	1	1	2	
<i>Python reticulatus</i>	2		Reticulated Python		1				1
<i>Python sebae</i>	3		African Python			1	1	1	

	1 Stock at 1st Jan., 1980	2 Rec'd	3 Births	4 D.N.S. within 30 days	5 Deaths excl. 4	6 Disposal inc. cull	7 Stock at 31st December, 1980		
							M	F	Y?
<i>Chondropython viridis</i>	2	2			1		1	2	
<i>Eunectes murinus</i>	2						1	1	
<i>Boa constrictor</i>	4						1	3	
<i>Epicrates cenchris</i>	3					3			
<i>Epicrates angulifer</i>		3			1		1	1	
<i>Constrictor arophies</i>		3			1		2		
<i>Candoia carinata</i>	2							2	
<i>Sanzinia madagascariensis</i>	3						1	1	1
<i>Boiga dendrophila</i>	2	1				3			
<i>Boiga irregularis</i>		4					4		
<i>Dispholidus typus</i>	2								2
<i>Naja melanoleuca</i>	2								2
<i>Dendroaspis angusticeps</i>	2								2
<i>Cerastes cerastes</i>		2							2
<i>Bitis gabonica</i>	1				1				
<i>Agkistrodon contortix</i>	2	1					3		
<i>Crotalus atrox</i>									
	2						1	1	
	1							1	
<i>Crotalus baliliscus</i>	1					1			
<i>Crotalus horridus</i>	1				1			1	
<i>Crotalus viridus helleri</i>	2					2	2	2	
<i>Sistrurus miliarius</i>	5		1						
LORICATA									
<i>Alligator mississippiensis</i>	3						2	1	
<i>Osteolaemus tetraspis</i>	3								3
<i>Crocodylus johnstoni</i>	1	1					1	1	
<i>Crocodylus niloticus</i>	2						1	1	
<i>Tomistoma schlegeli</i>	3								3
	203	59	33	1	31	49	53	66	95
							214		

AQUARIUM

No.

FISH		No.
Acipenseridae		
Sterlet	<i>Acipenser ruthenus</i>	3
Osteoglossidae		
South American Arowana	<i>Osteoglossum bicirrhosum</i>	1
Asiatic Arowana	<i>Scleropages formosus</i>	1
Notopteridae		
African Knife Fish	<i>Xenomystus nigri</i>	12
Clown Knife Fish	<i>Notopterus chitala</i>	1
Mormyriadae		
Long Nosed Elephant Trunkfish	<i>Gnathonermus petersi</i>	2
Round Nosed Elephant Trunkfish	<i>Gnathonermus stanleyanus</i>	1
Anguillidae		
Common Eel	<i>Anguilla anguilla</i>	1
Characidae		
Silver Dollar	<i>Metynnis calichromus</i>	3
Silver Dollar	<i>Metynnis roosevelti</i>	2
Red-eyed Tetra	<i>Moenkhausia sanctae filomenae</i>	10
Black Widow Tetra	<i>Gymnocorymbus ternetzi</i>	18
Glowlight Tetra	<i>Hemigrammus erythrozonus</i>	30
Neon Tetra	<i>Hyphessobrycon innesi</i>	30
Lemon Tetra	<i>Hyphessobrycon pulchripinnis</i>	11
Rosy Tetra	<i>Hyphessobrycon rosaceus</i>	1
Blind Cave Fish	<i>Anoptichthys jordani</i>	3
Silver Tetra	<i>Stenobrycon spilurus</i>	1
Cardinal Tetra	<i>Cheirodon axelrodi</i>	16
Red-eyed Characin	<i>Arnoldichthys spilopterus</i>	9
Long-finned Characin	<i>Alestes longipinnis</i>	5
Congo Tetra	<i>Micralestes interruptus</i>	16
Red Phantom Tetra	<i>Megalampodus sweglesi</i>	1
Pacu	<i>Colossoma nigripinnis</i>	3
Serpae Tetra	<i>Hyphessobrycon serpae</i>	1
Pretty Tetra	<i>Hemigrammus pulcher</i>	24
Piranha	<i>Rooseveltiella nattereri</i>	5
Penguin Fish	<i>Thayesia obliqua</i>	6
Blue Tetra	<i>Mimagoniates microlepis</i>	3
Silver Lipped Tetra	<i>Hemigrammus nanus</i>	2
Platinum Tetra	<i>Gephyrocharax atacaudatus</i>	12
Bleeding Heart Tetra	<i>Hyphessobrycon rubrostigma</i>	12
Anostomidae		
Marbled Headstander	<i>Abramites microcephalus</i>	6
Striped Anostomus	<i>Anostomus anostomus</i>	10
Three Spot Anostomus	<i>Anostomus trimaculatus</i>	1
	<i>Leporinus affinus</i>	1
	<i>Leporinus striatus</i>	5
Hemiodontidae		
Pencilfish	<i>Nannostomus anomalus</i>	1

Citharinidae		
	<i>Distichodus affinis</i>	1
	<i>Distichodus sexfasciatus</i>	1
Gasteropelecidae		
Marbled Hatchetfish	<i>Carnegiella strigata</i>	2
Silver Hatchetfish	<i>Gasteropelecus levis</i>	10
Cyprinidae		
Bream	<i>Abramis brama</i>	3
Mirror Carp	<i>Cyprinus carpio</i>	2
Golden Orfe	<i>Idus idus</i>	11
Golden Rudd	<i>Scardinius erythrophthalmus</i>	8
Tench	<i>Tinca tinca</i>	1
Varieties of Goldfish	<i>Carassius auratus</i>	324
Koi Carp	<i>Cyprinus carpio</i>	8
White Cloud Mountain Minnow	<i>Tanichthys albonubes</i>	5
Silver Shark	<i>Balantiocheilus melanopterus</i>	1
Zebra Danio	<i>Brachydanio rerio</i>	4
Giant Danio	<i>Danio malabaricus</i>	18
Red-tailed Black Shark	<i>Labeo bicolor</i>	2
Black Shark	<i>Morulus chrysophekadion</i>	2
Festive Shark	<i>Labeobarbus festiva</i>	4
Bony Lipped Barb	<i>Osteochilus hasselti</i>	1
Arulius Barb	<i>Barbus arulius</i>	3
Rosy Barb	<i>Barbus conchoni</i>	11
Cumings Barb	<i>Barbus cumingi</i>	7
Clown Barb	<i>Barbus everetti</i>	7
Striped Barb	<i>Barbus fasciatus</i>	6
Filament Barb	<i>Barbus filamentosus</i>	2
Spanner Barb	<i>Barbus lateristriga</i>	1
Nigger Barb	<i>Barbus nigrofasciatus</i>	14
Red Cheek Barb	<i>Barbus orphoides</i>	2
Scissor Tail Rasbora	<i>Rasbora trilineata</i>	4
Tiger Barb	<i>Barbus tetrazona</i>	16
Golden Barb	<i>Barbus shurberti</i>	22
Tinfoil Barb	<i>Barbus schwanenfeldi</i>	2
Yellow Barb	<i>Barbus species</i>	1
Cherry Barb	<i>Barbus titteya</i>	16
Harlequin Fish	<i>Rasbora hetromorpha</i>	6
Red-tailed Scissor Tail	<i>Rasbora caudimaculata</i>	1
Flying Fox	<i>Epalzeorhynchus kallopterus</i>	4
Gyrinocheilidae		
Sucking Loach	<i>Gyrinocheilus aymonieri</i>	40
Cobitidae		
Skunk Botia	<i>Botia horae</i>	2
Red-tailed Botia	<i>Botia lecontei</i>	2
Clown Botia	<i>Botia macracanthus</i>	5
Hemiramphidae		
Half-beak	<i>Dermogenys pusillus</i>	4
Centrarchidae		
Black-banded Sunfish	<i>Mesogonistius chaetodon</i>	1
Centropomidae		
Indian Glassfish	<i>Chanda ranga</i>	12

Cichlidae		
Blue Acara	<i>Aequidens pulcher</i>	1
Oscar or Marbled Cichlid	<i>Astronotus ocellatus</i>	7
Texas Cichlid	<i>Cichlasoma cyanoguttatum</i>	4
Convict Cichlid	<i>Cichlasoma nigrofasciatum</i>	8
Albino Convict Cichlid	<i>Cichlasoma nigrofasciatum</i>	16
Banded Cichlid	<i>Cichlasoma severum</i>	1
Blue-eyed Cichlid	<i>Cichlasoma spilurum</i>	6
Red Devil Cichlid	<i>Cichlasoma erythroeam</i>	60
Varieties of Angelfish	<i>Pterophyllum scalare</i>	10
Discus	<i>Symphysodon discus</i>	7
Burton's Mouthbrooder	<i>Haplochromis burtoni</i>	8
Jewel Cichlid	<i>Hemichromis bimaculatus</i>	18
Maria's Tilapia	<i>Tilapia maria</i>	12
Mozambique Mouthbrooder	<i>Tilapia mossambica</i>	6
Zillis Tilapia	<i>Tilapia zilli</i>	5
	<i>Pseudotropheus pindanni</i>	2
Rainbow Cichlid	<i>Herotilapia multispinosa</i>	8
Eledridae		
Chameleon Goby	<i>Hyperselectris species</i>	8
Broad-headed Sleeper Goby	<i>Dormitator latifrons</i>	2
Ophicephalidae		
Snake-head	<i>Ophicephalus micropeltes</i>	1
Anabantidae		
Comb-tailed Paradise Fish	<i>Belontia signata</i>	25
Opaline Gourami	<i>Trichogaster trichopterus sumatranus</i>	2
Giant Gourami	<i>Osphronemus goramy</i>	2
Pearl Gourami	<i>Trichogaster leerii</i>	15
Moonlight Gourami	<i>Trichogaster microlepis</i>	3
Three-spot Gourami	<i>Trichogaster trichopterus</i>	8
Croaking Gourami	<i>Trichopsis vittatus</i>	16
Tail-spot Climbing Perch	<i>Ctenopoma kingsleyae</i>	4
Eye-spot Climbing Perch	<i>Ctenopoma ocellatum</i>	1
Golden Gourami	<i>Trichogaster trichopterus</i>	6
Sparkling Gourami	<i>Trichopsis pumilis</i>	2
Atherinidae		
Australian Rainbow Fish	<i>Melanotaenia nigrans</i>	24
Synbranchia		
Eel	<i>Synbranchus marmoratus</i>	1
Siluridae		
Glass Catfish	<i>Kryptopterus macrocephalus</i>	2
Helicopter Catfish	<i>Ompok pabda</i>	2
Bagridae		
Bumblebee Catfish	<i>Leiocassis poecilopterus</i>	4
Catfish	<i>Parauchenoglanis macrostoma</i>	1
Chacidae		
Frogmouth Catfish	<i>Chaca chaca</i>	3
Schilbeidae		
Congo Catfish	<i>Etropiella debauwi</i>	16

Clariidae Albino Clarias Catfish	<i>Clarias batrachus</i>	2
Mochokidae Upside-down Catfish	<i>Synodontis species</i>	8
Pimelodidae Catfish Shovel-nose Catfish Tiger Shovel-nose Catfish	<i>Pimelodella pictus</i> <i>Sorubim lima</i> <i>Pseudoplatystoma fasiatum</i>	4 3 1
Melapterusidae Electric Catfish	<i>Malapterurus electricus</i>	1
Callichthyidae Bronze Catfish Agassiz's Catfish Leopard Catfish Albino Bronze Catfish Peppered Catfish Reticulated Catfish Porthole Catfish	<i>Corydoras aeneus</i> <i>Corydoras agassizi</i> <i>Corydoras julii</i> <i>Corydoras aeneus</i> <i>Corydoras paleatus</i> <i>Corydoras reticulatus</i> <i>Hoplosternum species</i> <i>Corydoras metae</i> <i>Corydoras arcuatus</i>	10 6 4 6 60 2 1 4 6
Loricasiidae Plecostomus Catfish Bristle-nosed Plecostomus Clown Plecostomus Royal Plecostomus Whip-tailed Catfish	<i>Hypostomus plecostomus</i> <i>Xenocara species</i> <i>Plecostomus species</i> <i>Panaque nigrolinatus</i> <i>Loricasia filamentosa</i>	4 2 2 1 5
Cyprinodontidae Guppy Liberty Molly Berlin Swordtail Green Swordtail Red Swordtail Red Wagtail Platy Golden Medeka Four-eyed Fish	<i>Lebistes reticulatus</i> <i>Mollienesia sphenops</i> <i>Xiphophorus helleri</i> <i>Xiphophorus helleri</i> <i>Xiphophorus helleri</i> <i>Xiphophorus maculatus</i> <i>Oryzias latipes</i> <i>Anableps anableps</i>	60 70 40 100 30 50 12 6
Doradidae Talking Catfish Spotted Talking Catfish Striped Talking Catfish Driftwood Catfish Two-spot Catfish	<i>Doras hancocki</i> <i>Doras pectinifrons</i> <i>Doras species</i>	1 2 1 2 3
Ctenoluciidae Pike Characin	<i>Boulengerella lucius</i>	1
Dipnoi African Lung Fish	<i>Protopterus annectens</i>	1
Rhinomuraenidae Black Ribbon Eel	<i>Rhinomuraena quaesita</i>	1

Ophichthyidae		
Banded Snake Eel	<i>Myrichthys colubrinus</i>	1
Black Spotted Snake Eel	<i>Myrichys species</i>	1
Muraenidae		
Moray Eel	<i>Gymnothorax undulatus</i>	1
Banded Moray Eel	<i>Gymnothorax undulatus</i>	1
Pomacentridae		
Common Clownfish	<i>Amphyrion ocellaris</i>	2
White-tailed Humbug Damsel Fish	<i>Dascyllus aruanus</i>	5
Electric Blue Damsel Fish	<i>Abudefduf uniocellatus</i>	2
Green Chromis	<i>Chromis caeruleus</i>	5
Scatophagidae		
Scat	<i>Scatophagus argus</i>	3
Australian Scat	<i>Solenotoca multifaciasta</i>	3
Platacidae		
Long-finned Batfish	<i>Platax teira</i>	1
Scoridae		
Princess Parrot Fish	<i>Scarus taeniopterus</i>	1
Siganidae		
Fox Face	<i>Lo vulpinus</i>	1
Tetraodontidae		
Hush Puppy Puffer Fish	<i>Anthron species</i>	1
Ostraciidae		
Cow Fish	<i>Lactoria cornuta</i>	1
Pseudochromidae		
Bi-colour Dottyback	<i>Pseudochromis paccagnellae</i>	2
Pomacanthidae		
Queen Angel Fish	<i>Holocanthus ciliaris</i>	1
Plotosidae		
Marine Catfish	<i>Plotosus anguillaris</i>	1
Chaetodontidae		
Long-nosed Butterfly Fish	<i>Forcipiger flavissimus</i>	1
Labridae		
Six-barred Wrasse	<i>Thalassoma hardwicki</i>	1
Clown Wrasse	<i>Coris formosa</i>	1
Brown-striped Wrasse		1
Bird-mouth Wrasse	<i>Gomphosus varius</i>	1
Lyre-tailed Wrasse	<i>Thalassoma lunare</i>	1
Scorpaenidae		
Scorpion Fish	<i>Pterois volitans</i>	1
Freshwater Stingray	<i>Potamotrygon species</i>	1

INVERTEBRATES		
Crustacea		
Banded Coral Shrimp	<i>Stenopus hispidus</i>	1
Anemone Shrimp	<i>Periclimenes brevicarpalis</i>	1
Decorator Crab	<i>Majidae species</i>	1
Common Lobster	<i>Homarus vulgaris</i>	1
Echinoderms		
Red-spined Starfish	<i>Pentoceraster mammillatus</i>	1
Coelenterates		
Beadlet Anemone	<i>Actina equina</i>	75
Sea Anemone	<i>Stoichactis species</i>	3
Sea Anemone	<i>Radianthus ritteri</i>	1
Branched Sea Anemone	<i>Lebrunia danae</i>	2
Ringed Sea Anemone	<i>Bartholomea annulata</i>	1
OTHER VERTEBRATES		
Amphibia		
Black Axolotl	<i>Amblystoma mexicanum</i>	20
White Axolotl	<i>Amblystoma mexicanum</i>	23
South African Clawed Frog	<i>Xenopus laevis</i>	6
Nigerian Clawed Frog	<i>Xenopus tropicalis</i>	2
Italian Crested Newt	<i>Triturus cristatus carnifex</i>	2
Japanese Fire-bellied Newt		4
Reptilia		
Red-eared Terrapin	<i>Pseudemys scripta elegans</i>	4
Brown Terrapin		1
TROPICAL HOUSE		
Bream	<i>Abramis brama</i>	1
Hi-goï Carp	<i>Cyprinus carpio</i>	9
Mirror Carp	<i>Cyprinus carpio</i>	16
Goldfish	<i>Carrassius autatus</i>	60
Golden Orfe	<i>Idus idus</i>	13

The number of specimens in the Collection at 31st December, 1980, was as follows:—

	Species	Specimens
Mammals	123	686
Birds	191	700
Reptiles and Amphibians	69	214
Fish	206	2000

THE MEMBERSHIP OF
THE NORTH OF ENGLAND ZOOLOGICAL SOCIETY
AS AT 31st DECEMBER, 1980

Patrons	153
Honorary Members	8
Annual Members	426
	—
	587
	—
Junior Members	21

The following table shows the number of visitors to the Gardens and summarises the expenditure during the last two years:—

	1979	1980
Visitors to the Gardens	880,763	854,431
Visitors to the Aquarium	220,523	209,617
Visitors to the Tropical House	312,491	335,204
 Direct Expenditure	 1979	 1980
	£	£
Animal Welfare	323,613	382,895
Gardens	88,072	102,693
Maintenance of Buildings and Grounds, including costs and repairs of Vehicles and Boats	114,129	164,261

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