

The North of England Zoological Society

Annual Report for 1979

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

**NOTICE OF
THE 46th ANNUAL GENERAL MEETING
OF
THE NORTH OF ENGLAND ZOOLOGICAL SOCIETY
To be held on Saturday, 31st May, 1980 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 — 1979

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
J. A. KILPATRICK, M.B., Ch.B., F.R.C.S.E.
*H. D. COOPER, F.I.M., F.I.F.F., Cert. A.I.B.
*G. R. PRYOR, C.Eng., Hon.F.I.Prod.E., F.B.I.M.
R. P. OWEN, A.R.I.C.S.
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, B.Sc. (Econ.)

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

There are six 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 1979

The Council of the North of England Zoological Society has pleasure in presenting its Annual Report for 1979.

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, 1979 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 1979 was 226 compared with 228 in 1978 and their aggregate gross remuneration amounted to £629,242 (1978 £559,885).

The year has been one of appraisal of the state of the Zoo and its operations, against the background of the hardest winter since most of the buildings were put up, followed by an indifferent summer. Added to the weather the economic climate depressed personal spending power, especially with the rise in the cost of petrol and the 7% increase in V.A.T. This latter event increased the Society's liability by £49,000 — almost the full amount of the deficit incurred during the year.

The only new exhibits during the year were three displays for Rhinoceros Iguanas, Anolis Lizards and Solomon Island Skinks in the Tropical House. The almost opaque fibre glass ridging of the Tropical House itself was replaced by metal framed reinforced glass rooflights. The effect of this alteration, to be followed in future years by replacing the rest of the fibre glass panels in the building, was to increase markedly the light reaching the plants, with a consequential increase in the growth of plants.

In the Reptile collection there were many reproductive successes, the most notable being the African Spurred Tortoises *Geochelone sulcata*, Last year we hatched and raised seven young.

In the Bird collection, a new fully automatic incubator was purchased. As a result we were able to hatch out ten Rheas and seven Blue Eared Pheasants as well as several species of duck. We also bred for the first time in the Zoo a Long-tailed Glossy Starling. We have been able to introduce a group of Weavers into the Tropical House, as the repair to the roof has made it now once again possible to keep such small birds confined.

In the Aquarium seventeen Pikeheads *Luciocephalus pulchra* were bred. A tank for tropical marine invertebrates was introduced and is doing very well.

The small collection of insects has developed during the year and it is hoped eventually to transfer it from the Tropical House to an exhibition area of its own.

Among the Mammal Collection a Przewalski's Horse Foal was born, the first reared at Chester Zoo. We also had four Père David Deer born. These two species are among the few which exist only in captivity. Among the other births was a litter of ten Arctic Foxes, a Chimpanzee, eight Red Lechwe and seven Arabian Gazelles.

The Bear Pits beside the Jubilee Garden became vacant and were demolished as being outdated. The site is being developed as a botanical exhibit: a garden in the shape of South America and planted only with plants originating from that Continent.

A safety fence was placed round the Polar Bear pond. Here we experienced great difficulties in managing the water, which became heavily overgrown with algae. We feel this problem was due partly to the old age of the polar bears who were not as actively agitating the water as previously and partly to a less vigorous growth of Daphnia than usual. This exhibit, as are several in the collection, is approaching the time it needs to be refurbished. It is one of the oldest but also most spectacular of Chester Zoo's exhibits and deserves to be preserved.

The small Nocturnal House and adjacent crocodile area have been closed in the Tropical House as they do not come up to the standards we expect from the rest of that building. Such closures to be followed by redevelopment are an integral part of an established zoo and they should be borne in mind in the light of the great wealth of the other exhibits there are at Chester Zoo.

One of the most important developments in the year was the provision of a main service supply between the area of the Giraffe House and the Cafeteria. In this are provisions for electricity, gas, mains water, well water, drainage and communication cables. Much of the services went barely concealed on the surface and the only way to prevent water from freezing in winter had been to keep it running around the clock. We now have an adequate supply of services available for new projects in this part of the Zoo.

On the 19th May, Mrs. King, wife of our Chairman, formally opened the garden laid out beside Oakfield in memory of our Founder and first Director, George Mottershead.

During the year we were saddened by the death of three members of staff. Mr. Arthur Chesterman of the Accounts Department died after a very short illness in January and Mrs. Norah Sleightholme also of the Accounts Department died very suddenly on her 69th birthday in October. Later that month Mr. Tommy Johnson a very promising 21 year old keeper in the Aquarium was tragically killed in a road accident.

Mr. Richard Green of the Mammal staff, reached the semi-final in B.B.C.'s Mastermind, and several members of staff appeared in various television programmes. Mr. Worth, the

Head Gardener, and Mr. Wait, Curator of Mammals as well as Dr. Brambell gave several talks to audiences in and around Chester.

Mr. W. H. Timmis, Curator of Birds, left to manage the bird collection at Harewood House. Mr. Peter Bloomfield, Assistant Curator of Birds, managed our collection for six months, until Mr. P. M. C. Stevens took up his post as the new Curator of Birds. Mr. Stevens was previously the Conservation Director of the Norfolk Naturalist Trust.

At the end of the year Mr. Charles Leach, our first Education Officer left to take up a teaching post with Cheshire County Council. We are very grateful for the pioneering work Mr. Leach did while he was with us.

The Director, on behalf of the Society, attended the Conference of Directors of British Zoos in London in May. In October he attended two Conferences organised by the International Union of Directors of Zoological Gardens. The first, on the use of studbooks, was in Copenhagen and was followed by the Annual Conference in Warsaw. Later in the year we were pleased to hear that the Director had been elected as a member of I.U.D.Z.G. and that Chester Zoo is once again represented in the body of which Mr. Mottershead had been President for three years. In March the Director went to Costa Rica as one of the party representing the United Kingdom Government at the Conference of the International Convention to Control International Trade in Endangered Species, C.I.T.E.S.

Legacies amounting to £1057.95 were received from the Estates of Mrs. K. M. Barker-Jones, Mrs. A. C. M. Cooper and Mrs. A. J. Full.

To help finance the extra costs incurred in maintaining reproductively viable groups of endangered species, vis-a-vis the cost of maintaining an adequate exhibit, we have established a Conservation Fund. We are grateful to Mr. Ian Pillow who organised a Musical Evening given by fellow members of the Royal Liverpool Philharmonic Orchestra in aid of the Fund.

In 1979, 880,763 visitors came to the Gardens including 2,043 Educational Parties and 1,124 other organised parties. During the year there were six Members Meetings including the Annual General Meeting in May and an Extraordinary General Meeting in November to approve changes in the subscriptions.

The Society wishes to thank the help and support given to it by all its staff. It is most grateful to its professional advisors, by those firms contracted to it for supplies and services and by the membership and the general public, and it wishes to record its appreciation of co-operation afforded to it by other zoos, both at home and abroad.

BALANCE SHEET AS AT 31st DECEMBER, 1979

	1979		1978	
	£	£	£	£
FIXED ASSETS				
FREEHOLD PROPERTY				
Balance as per Schedule annexed	306,639		306,639	
SPECIAL BUILDINGS, ENCLOSURES AND EQUIPMENT				
Balance as per Schedule annexed	312,138		222,272	
STOCK OF ANIMALS				
Balance as per Schedule annexed	141,529		141,228	
TOTAL FIXED ASSETS		760,306		670,139
CURRENT ASSETS				
Stocks of Feeding Stuffs, Goods for resale and Fuel at cost	45,038		39,160	
Stock of Farm Livestock, Produce and Seeds at cost	31,653		16,191	
Debtors and Prepayments	28,695		22,277	
Loans — Short Term	180,000		335,000	
Balance at Bank	7,914		7,690	
Cash in Hand	3,743		2,246	
TOTAL CURRENT ASSETS	297,043		422,564	
Less:				
CURRENT LIABILITIES				
Sundry Creditors	48,410		32,773	
NET ASSETS		£1,008,939		£1,059,930
Financed by:				
LEGACY ACCOUNT as at 31/12/78	21,275		20,517	
Received during year	1,057		758	
		22,332		21,275
CONSERVATION FUND		219		—
CAPITAL RESERVE ACCOUNT as at 31/12/78		32,633		32,633
INCOME AND EXPENDITURE ACCOUNT — Accumulated Surplus				
Balance as at 31/12/78	1,006,022		1,029,639	
Less: Net deficit for year	(52,267)		(23,617)	
		953,755		1,006,022
TOTAL CAPITAL AND RESERVES		£1,008,939		£1,059,930

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, 1979 and of the deficit and source and application of funds for the year ended on that date and comply with the Companies Acts 1948 and 1967.

31 Wellington Road,
Nantwich.

AFFORD, BOND AND CO.,
Chartered Accountants,
5th March, 1980

**SCHEDULE ANNEXED TO BALANCE SHEET
AT 31st DECEMBER, 1979**

	£	
FREEHOLD PROPERTY		
Balance at beginning of year at cost		306,639
		<u>306,639</u>
TOTAL AS SHOWN IN BALANCE SHEET		£306,639
		<u><u>£306,639</u></u>
SPECIAL BUILDINGS, ENCLOSURES AND EQUIPMENT		
Balance at beginning of year at cost	757,679	
Balance at beginning of year at valuation	17,460	
Additions during year — cost	130,930	
	<u>906,069</u>	
Sales during year	5,116	
	<u>900,953</u>	
		900,953
Less Depreciation at beginning of year	552,867	
Adjustment re: Sales during year	2,775	
	<u>550,092</u>	
Depreciation provided during year	38,723	
	<u>588,815</u>	
		588,815
TOTAL AS SHOWN IN BALANCE SHEET		£312,138
		<u><u>£312,138</u></u>
ANIMALS		
Balance at beginning of year at cost less sales		141,228
Additions during year — cost		9,109
		<u>150,337</u>
Sales during year		8,808
		<u>141,529</u>
TOTAL AS SHOWN IN BALANCE SHEET		£141,529
		<u><u>£141,529</u></u>

ACCOUNTING POLICIES

There have been no changes in the accounting policies during the year. 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 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. Animals are not depreciated but the total cost is reduced by sales.

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

**INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR
ENDED 31st DECEMBER, 1979**

	1979	1978
	£	£
TURNOVER	£1,214,297	£1,132,722
	<u> </u>	<u> </u>
DEFICIT FOR THE YEAR	(71,539)	(46,320)
before charging —		
Auditors' Remuneration	1,100	950
Depreciation of Fixed Assets	38,723	27,079
	<u> </u>	<u> </u>
	39,823	28,029
	<u> </u>	<u> </u>
DEFICIT	(111,362)	(74,349)
and before crediting		
Rents from Houses and Farms	13,981	13,949
Investment Income Received (Gross)	39,788	31,615
Profit on Sale of Equipment — Net	1019	7
Members' Subscriptions and Entrance Fees	3,677	2,039
Donations	630	3,122
	<u> </u>	<u> </u>
	59,095	50,732
	<u> </u>	<u> </u>
DEFICIT FOR THE YEAR	(52,267)	(23,617)
Add: Balance brought forward from		
last year	1,006,022	1,029,639
	<u> </u>	<u> </u>
BALANCE CARRIED FORWARD		
TO NEXT YEAR	£953,755	£1,006,022
	<u> </u>	<u> </u>

STATEMENT OF SOURCE AND APPLICATION OF FUNDS

	Year ended 31st December	
	1979	1978
SOURCE OF FUNDS		
Depreciation of Fixed Assets (less profit on sales) ..	37,704	27,072
Sale of Fixed Assets	12,168	6,135
Legacy	1,057	758
Conservation Fund	219	—
Decrease in Net Current Assets (see below)	141,158	24,129
	<u> </u>	<u> </u>
	£192,306	£58,094
	<u> </u>	<u> </u>
APPLICATION OF FUNDS		
Deficit for the year	52,267	23,617
Purchase of Fixed Assets	140,039	34,477
	<u> </u>	<u> </u>
	£192,306	£58,094
	<u> </u>	<u> </u>
DECREASE IN NET CURRENT ASSETS		
Increased Stocks	21,340	4,890
Decreased/Increased Loans	(155,000)	15,000
Increased/Decreased Debtors	6,418	(5,950)
Increased/Decreased Bank balance	224	(33,250)
Increased/Decreased Cash in hand	1,497	(903)
Increased Creditors	(15,637)	(3,916)
	<u> </u>	<u> </u>
	(£141,158)	(£24,129)
	<u> </u>	<u> </u>

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)
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.
J. A. Kilpatrick, M.B., Ch. B., F.R.C.S.E.
D. G. Lyon, B.V.Sc., M.R.C.V.S. (Veterinary Officer)
W. H. Timmis (Curator of Birds) : (January — April)
P. J. Bloomfield (Acting Curator of Birds) : (May — October)
P. M. C. Stevens (Curator of Birds) : (November — December)
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 1979 by D. C. Dinning and D. G. Lyon. There are three main sections in the report, dealing with (a) Pathology, (b) Medicine and Surgery, and (c) Immobilisation and Anaesthesia.

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

Histology: Dr. J. R. Baker and Miss C. E. Ellis, Dept. of Veterinary Pathology, University of Liverpool.

Bacteriology: Dr. J. R. Walton, Dept. of Preventive Medicine, University of Liverpool; Dr. P. M. Poole and Mr. D. Brecon, Public Health Laboratories, Chester and Dr. G. R. Smith, Nuffield Laboratories of Comparative Medicine, Zoological Society of London.

Biochemistry: The Veterinary Investigation Officers, Ministry of Agriculture, Fisheries & Food; Veterinary Investigation Centres, Chester and Weybridge; Dr. J. R. Baker, University of Liverpool.

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

Haematology: Dr. C. M. Hawkey, Nuffield Laboratories of Comparative Medicine, Zoological Society of London; Dr. J. R. Baker, University of Liverpool.

Endocrinology: Miss S. Kingsley, Wellcome Laboratories of Comparative Physiology, Zoological Society of London; Mr. J. E. F. Rankin and Dr. J. E. Cox, Dept. of Veterinary Clinical Studies, University of Liverpool.

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 438 post-mortem examinations were performed. As can be seen from Table 1, this figure has been sub-divided into four groups, in two classes. The figures in column 'A' refer to specimens which have been more than thirty days in the collection; Column 'B' refers to those animals which have been resident for less than thirty days and includes births in the collection and specimens acquired from outside sources.

TABLE 1
POST MORTEM EXAMINATIONS CARRIED OUT DURING 1979

	A	B	TOTAL
MAMMALIA	106	13	119
AVES	210	12	222
REPTILIA/AMPHIBIA	37	2	39
PISCES	58	—	58
TOTALS	411	27	438*

*From a total of 438 carcasses submitted for post-mortem examinations, 46 had been destroyed for humane reasons.

The main objects of carrying out post-mortem examination 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 Mammalia, Aves, and Reptilia/Amphibia. 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.

Several carcasses were submitted to the Liverpool University Veterinary Field Station for Post-mortem examination. The assistance of Dr. R. Baker and Miss C. E. Ellis is gratefully acknowledged.

TABLE 2

MAIN GROUPS OF CONDITIONS ENCOUNTERED	MAMMALIA		AVES		REPTILIA/AMPHIBIA	
	Number Affected	% Affected	Number Affected	% Affected	Number Affected	% Affected
BACTERIAL	29	24.4	94	42.3	10	25.6
VIRAL	—	—	—	—	—	—
FUNGAL	2	1.7	4	1.8	—	—
PARASITIC	1	0.8	3	1.4	1	2.6
INJURY/ACCIDENT	32	26.9	44	19.8	8	20.5
METABOLIC/ NUTRITIONAL	13	10.9	30	13.5	7	17.9
DEBILITY/SENILITY	10	8.4	11	4.9	4	10.3
NEOPLASIA	5	4.2	4	1.8	—	—
REPRODUCTIVE	2	1.7	5	2.3	—	—
NEO-NATAL DEATH	8	6.7	3	1.4	—	—
NO DIAGNOSIS	17	14.3	24	10.8	9	23.1
TOTALS:—	119	—	222	—	39	—

MAMMALIA (TABLE 2)

BACTERIAL: Spinal tuberculosis (*Mycobacterium tuberculosis*) was responsible for the loss of two Red-necked Wallabies (*Macropus rufogriseus*) 5.5, 7.0. *Escherichia coli* was isolated on many occasions from a variety of lesions, including a necrotic enterocolitis in an Agile Wallaby (*M. agilis*) 1.6, a severe colitis in a Green Monkey (*Cercopithecus sabaues*) 5.3 and a non-healing necrotic fracture of the fetlock, which necessitated the humane destruction of a Red Lechwe (*Kobus leche*) 1.0. An actinomycotic infection was diagnosed in a Pere David's Deer (*Elaphurus davidianus*) and, as in previous years, chronic mandibular osteitis was responsible for the loss of several Red-necked Wallabies; *Bacteroides fragilis* and *Proteus morganii* being isolated from the lesions.

FUNGAL: An ulcerative mycotic rumenitis was seen in a Fallow Deer (*Dama dama*) 3.0.

PARASITIC: An acute parasitic enteritis caused by *Trichuris* sp. and *Trichostrongylus* sp. resulted in the death of a Greater Kudu (*Tragelaphus strepsiceros*) 1.8.

INJURIES/ACCIDENTS: As can be seen in Table (2) 26.9% of losses in the mammal division were attributed to this group. Predation by foxes and dogs remains a

problem, as in previous years. In one regrettable incident, five Chinese Water Deer (*Hydropotes inermis*) were killed by a renegade dog in a single night.

Stress and/or injury caused through aggression in herd animals and incompatibility amongst housed exhibits also accounts for many deaths in this category.

METABOLIC/NUTRITIONAL: Diabetes melitus was diagnosed in a Sooty Mangaby (*C. atys*) 17.2. Nutritional bone disease was present in a Squirrel Monkey (*Saimiri sciureus*) 2.1; the severity of the condition necessitated humane destruction. Fatty degeneration of the liver was seen in a Sykes Guenon (*C. albogularis*) 5.1. Chronic alopecia, due to suspected hormone imbalance was encountered in a Jaguarundi (*Felis yagouaroundi*) 4.3. Ruminal impactation, caused by the ingestion of a large quantity of polythene, caused the death of an Alpaca (*Lama pacos*) 1.9. Muscular dystrophy was diagnosed histologically in the myocardium from a newly acquired Wildebeeste (*Connochaetes taurinus*) which collapsed and died thirty minutes after Etorphine immobilisation. The animal had been sedated to facilitate examination to determine the cause of lameness. At autopsy it was determined that the cause of lameness was a healed dislocation fracture of the femoral neck and acetabulum with an associated chronic arthritis.

DEBILITY/SENILITY: Several specimens were lost during the year, with debilitating conditions associated with age and included advanced nephritis in an Indian Porcupine (*Hystrix indica*) 13.0, a Spot-nosed Guenon (*Cercopithecus nictitans*) 16.2, a Pere David's Deer 12.4, a Sooty Mangaby 17.2 and an Alpaca 13.9.

NEOPLASIA: A papillary adenocarcinoma of the gall bladder was recorded in a Hamadryas Baboon (*Papio hamadryas*) 13.0. An intestinal tumour, described histologically as a leiomyoma, was found to affect the posterior colon of a Spotted Hyena (*Hyaena crocuta*) 3.9.

AVES

BACTERIAL: Mycobacterium tuberculosis was diagnosed in the following specimens:— two Kookaburras (*Dacelo novaeguineae*) 11.0, 11.4, a Cattle Egret (*Bubulcus ibis*) 0.1, an Emu (*Dromaius novaehollandiae*) 4.9 and a Bar-headed Goose (*Anser indicus*) 5.10. Psuedo-tuberculosis (*Yersinia enterocolitica*) was responsible for the loss of a Red Avadavat (*Amandava amandava*) 0.3, a Blue Grey Tanager (*Thraupus episcopus*) 0.3 and a Swainson's Lorikeet (*Trichoglossus moluccanus*) 4.4. Escherichia coli septicaemia caused the deaths of the following:— two Plum-headed Parrakeets (*Psittacula cyanocephala*) 0.3/4.9, a Quaker Parrakeet (*Myiopsitta monachus*) 1.0, an Ornate Lorikeet (*Trichoglossus ornatus*) 0.2, a Hill Mynah (*Gracula religiosa*) 1.5 and a Laughing Dove (*Streptopelia senegalensis*) 0.6. Chronic salmonella infection (*S. typhimurium*) was found in five Swainson's and two Ornate Lorikeets which had been in the collection between three and six years. Other bacterial conditions included arterial erosion and endocarditis, caused by Streptococcus sp. in a Bahama Pintail (*Anas bahamensis*) 1.0 and Staphylococcal arthritis in a Gannet (*Sula bassana*) 0.7.

An outbreak of botulism occurred during September 1979. In total, 49 Birds of 25 species were lost over a four-day period. The birds affected belonged to the Orders Passeriformes, Piciformes, Coraciiformes, Cuculiformes, Gruiformes, and Charadriiformes.

The symptoms of the disease were characteristic, viz:— anorexia, partial and complete locomotor paralysis and terminal respiratory paralysis. Post-mortem examinations were carried out and no specific lesions were found. Remnants of the diet prepared on the day prior to the outbreak were recovered from the aviaries concerned. The prepared diet consisted of minced horse meat, a commercial insectivorous mixture, biscuit meal and carrots ground into a fine mixture, to which was added diced apples, pears, bananas, grapes, plums and tomatoes. Fruit was not present in the remnants found in the food dishes. Laboratory examination of the food remains was carried out and they were found to contain *Clostridium botulinum* type C toxin. The distribution of the toxin in the food was uneven, high levels being found in some parts of the food and low levels in others. As no original materials were available for analysis (the prepared diet was the last of a batch of meat and insectivorous), it was not possible to determine which constituent part of the diet was involved.

FUNGAL: Aspergillosis was recorded on three occasions, viz. a Palm Cockatoo (*Probosciger atterimus*) 8.9, a Coscoroba Swan (*Coscoroba coscoroba*) 9.1 and a Ypecha Woodrail (*Aramides ypecaha*) 0.6. Candidiasis was diagnosed in a Cheer's Pheasant (*Catreus wallichii*) 3.6.

INJURIES/ACCIDENTS: Bird losses attributed to this category followed the pattern seen in previous years; predation by predatory mammals being especially common amongst waterfowl and intra and interspecific aggression in shared exhibits.

METABOLIC/NUTRITIONAL: The severe winter weather experienced during the first three months of the year contributed towards the deaths of many smaller specimens. Osteodystrophy was diagnosed radiographically and histologically in a Crested bronze-winged Pigeon (*Ocyphaps lophotes*) 1.8.

NEOPLASIA: An abdominal neoplasm from a Bahama Pintail (*Anas bahamensis*) was shown on histology to be a papillary adenocarcinoma. The tissue of origin was not determined. A Roseate Cockatoo (*Eolophus roseicapillus*) 3.4 was presented for surgical removal of an abdominal lipoma; the lesion was so extensive that it was necessary to destroy the bird. Surgery had been carried out on two previous occasions, over a two-year period, in an attempt to alleviate the condition.

REPTILIA/AMPHIBIA

BACTERIAL: Two Boomslangs (*Dispholidus typus*) died as a result of peritonitis. In both cases, there were extensive lesions present, including ulcerations, perforations and adhesions of the rectal serosa. *Proteus* sp. and *Klebsiella* sp. were isolated from the lesions. A *Streptococcus* sp. and *Klebsiella* sp. were responsible for chronic stomatitis, oesophagitis and gastritis in a Burmese Brown Tortoise (*Geochelone emys*) 0.1. Upper respiratory tract infections were less prevalent than in previous years, being diagnosed on three occasions, viz. in a Common Boa (*Boa constrictor*) 4.1 and in two Carpet Pythons (*Morelia spilotes variegata*) 2.0, 6.9. Septicaemia, caused through extensive fight injuries, was diagnosed in a Solomon Island Skink (*Corucia zebreta*) 6.0.

PARASITIC: Amoebiasis was diagnosed in a Timber Rattlesnake (*Crotalus horridus*) 1.10.

INJURIES/ACCIDENTS: Losses due to aggression injuries included a False Gavia (*Tomistoma schlegeli*) 6.4, a Cuban Anolis (*Tiliqua gigas*) 5.7. Second and third degree burns caused the death of a Johnston's River Crocodile (*Crocodylus johnstoni*) 0.4. Mechanical failure of an aerating pump caused high temperature water to enter the exhibit pool occupied by the specimen. The cause of this accident has now been remedied.

METABOLIC/NUTRITIONAL: Nephritis was diagnosed in a Blue-tongued Skink, 2.4, a Burmese Brown Tortoise 0.3 and a Malay Giant Tortoise (*Geochelone emys*) 0.4. Scoliosis was recorded on one occasion during 1979 in a Madagascan Tree Boa (*Sanzinia madagascariensis*) 1.5. Severe renal glomerular degenerative changes and fatty degeneration of the liver were present in an Amethystine Python (*Liasis amethystinus*) 0.7.

MEDICINE AND SURGERY

During 1979 the Veterinary Officer dealt with 298 clinical cases, comprising 234 mammalian, 48 avian and 16 reptilian. Follow-up treatment brought the total number of attendances to 928. This figure does not include advice given regarding husbandry, minor problems, anthelmintic treatment or visits to the Society's Quarantine premises where, during the year, 3 equines, 6 marsupials and 4 birds were detained for varying periods.

It was necessary to immobilise and/or anaesthetise 116 specimens on 158 occasions (see Table 3). Nineteen specimens were translocated from the Gardens to the Veterinary Surgeons' Hospital for examination, radiography and/or surgery.

Vaccination for the prevention of feline viral rhinotracheitis, feline calici virus and feline panleucopenia continues, with all juvenile and newly acquired Felidae receiving inoculations at two and fifteen weeks after birth in the former case and on arrival in the latter.

Routine anthelmintic administration continued as a preventive measure, Thiabendazole (1), Fenbendazole (2) and Levamisole (3) being used as a feed additive for ruminant stock; Mebendazole (4) and Piperazine (5) for Equidae; Piperazine for Felidae; Levamisole for Birds and Thiabendazole and Mebendazole suspensions for Reptiles. Parasitic gastro-enteritis, due to *Trichuris* sp. and *Trichostrongylus* sp. was diagnosed in a Greater Kudu and it was necessary to immobilise a Musk Ox to facilitate subcutaneous injections of Levamisole as treatment for parasitic gastro-enteritis caused by *Nematodirus* sp.

Following the conclusions of the Anthropoid Ape Symposium, held at Dudley, England during March, 1979, collaborating Zoos adopted a policy of avoidance of breeding cross-bred form Orang-Utans. Blood samples were taken from the Society's collection of Orang-Utans and typed to determine form. Seven were found to be Bornean, two Sumatran and one animal (Rajang — born Chester Zoo 1968) was determined as cross-bred (Sumatran/Bornean). It was decided to carry out a vasectomy. At the time the vasectomy was carried out testicular biopsies were taken and the histology showed seminiferous tubules without apparent lumens, but with semi-

niferous cells showing some maturation towards the centre and with the presence of a small number of spermatozoa. The portions of the normal and patent right and left vas deferens removed were 25 and 28 m.m. lengths respectively. Apart from post-operative scrotal oedema, which persisted for seven days, no further complications occurred.

Subsequent to the Veterinary Report of 1978, Orang-Utan 'Barry' was sedated with Phencyclidine (6) at initially weekly and laterally bi-weekly intervals (a total of 16 occasions), to allow the prepuce to be explored per digit and packed with petroleum jelly to prevent adhesions. No evidence of discomfort was observed during micturition. Unfortunately, due to the original injury, penis length was small, the glans penis being virtually absent and, in consequence, during erection the penis could not protrude through the new preputial opening. This led to considerable frustration and associated problems and, following extensive and careful deliberations, it was decided to humanely destroy the animal.

In the two cases mentioned above the assistance given by Mr. Brightmore, Consultant Surgeon at Chester Royal Infirmary is gratefully acknowledged.

A six year old male Orang-Utan 'Oscar' was deposited with the Society. A few hours after arrival, the animal was observed to have a 9 inch rectal prolapse. Phencyclidine anaesthesia was induced and the prolapse replaced with nylon purse-string sutures. Post-operative antibiotic therapy (10) was carried out and the sutures removed after eight days. No complications arose.

Balantidium coli trophozoites and cysts were present in the faeces of a juvenile Orang-Utan with a history of intermittent diarrhoea. Treatment consisted of oral administration of Kaolin mixture (7) and Oxytetracycline syrup (8). The condition resolved in approximately two weeks' time but recurred several weeks later. Similar treatment was adopted, with resolution after the same period of time as previously. Several dietary changes were undertaken in conjunction with treatment but the condition reappeared. At the time of writing, Balantidial diarrhoea persists in this animal.

An extensive rectal prolapse with considerable mucosal damage, following a two day history of scouring, was reported in an adult female Brazilian Tapir. The animal was immobilised with Etorphine/Acetylpromazine (9) and the prolapse repaired with purse-string nylon sutures.

The prolapse recurred 24 hours later and was replaced as before. High levels of Procaine/Benzathine Penicillin (10) were administered post-operatively and the diet offered to the animal consisted of very finely chopped vegetables, emulsified with liquid paraffin.

The sutures were removed after nine days and no further complications arose.

During 1979, cases of endemic necrotic mandibular osteitis increased in frequency in the Society's collection of Red-necked Wallabies. From a total of 64 specimens, 26 were presented with new or recurring lesions. The majority of cases responded well to prolonged treatment with Oxytetracycline (11) although in some instances, due to the severity of the lesions, treatment was continued for up to 4 weeks. Deaths usually

occurred following secondary upper or lower respiratory tract involvement. One case was seen where secondary involvement of two ribs occurred and successful surgical correction and drainage was carried out over a three month period.

In an attempt to alleviate the problem, it was decided to create a new breeding group of Wallabies; one group (approximately 5 male and 20 female) was formed following physical examination to ensure that no lesions were present and the animals in this group were known, by tattoo number, to have no history of the disease. This group was re-located in an exhibit which had not housed Wallabies previously and dietary changes were made to ensure that the food supplied had minimal abrasive qualities, to prevent damage to the buccal cavity mucosa. The remaining group occupied the two established Wallaby exhibits; no food changes were made for this group.

- | | |
|---|-------------------------|
| (1) Thiabendazole | Thibenzole |
| (2) Fenbendazole | Panacur |
| (3) Levamisole | Nilverm |
| (4) Mebendazole | Multispec |
| (5) Piperazine | Coopane |
| (6) Phencyclidine | Sernylan |
| (7) Kaolin mixture | Mist Kaolin sed. B.P.C. |
| (8) Oxytetracycline | Imperacin |
| (9) Etorphine/Acetylpromazine | Large Animal Immobilon |
| (10) Procaine/Benzathine Penicillin | Duplocillin |
| (11) Oxytetracycline | Terramycin |

SPECIMENS IMMOBILISED OR ANAESTHETISED DURING 1979

The procedure followed during the year in the anaesthesia and immobilisation of animals differed in minor detail from those given in previous reports. It is intended only to list the number of occasions anaesthetic and immobilising drugs were used and to give details only of new procedures.

During 1979 animals were anaesthetised or immobilised on 158 occasions. Full details of the drugs and doses used are available and will be sent upon request. No new procedures were adopted in 1979.

	1 Stock at 1st Jan 1979	2 Rec'd	3 Births	4 D.N.S. within 30 days	5 Deaths excl. 4	6 Disposal	7 Stock at 31st December 1979		
							M	F	Y?
MAMMALS									
MONOTREMATA									
<i>Tachyglossus aculeatus</i>			Australian Echidna	2			1	1	
MARSUPIALIA									
<i>Macropus agilis</i>			Agile Wallaby	2		1	1		
<i>Macropus eugenii</i>		6	Tammar Wallaby			1	1	3	1
<i>Macropus rufogriseus</i>	59		Red-necked Wallaby			15	3		64
<i>Macropus fuliginosus</i>	4		Western Grey Kangaroo			1		2	
<i>Macropus rufus</i>	4		Red Kangaroo			2		2	
						1		2	
18 MENOTYPHLA									
<i>Tupaia belangeri</i>			Common Tree Shrew	*3		*1	*2		
PRIMATES									
<i>Lemur catta</i>			Ring-tailed Lemur	13			1	9	6
<i>Nycticebus coucang</i>			Slow Loris					2	1
<i>Cebus albifrons</i>	4	3	White-fronted Capuchin					3	3
<i>Saimiri sciureus</i>	8	2	Squirrel Monkey			1		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>	5		Lion-tailed Macaque				2	3	2
<i>Macaca nemestrina</i>	2	2	Pig-tailed Macaque					1	1
<i>Macaca sylvana</i>	9		Barbary Ape					3	6
<i>Cynopithecus niger</i>	2		Celebes Ape					1	1
<i>Cercocebus atys</i>	7		Sooty Mangabey		1	1		3	3
<i>Mandrillus sphinx</i>	2		Mandrill				2		

	1 Stock at 1st Jan 1979	2 Rec'd	3 Births	4 D.N.S. within 30 days	5 Deaths excl. 4	6 Disposal	7 Stock at 31st December 1979			
							M	F	Y?	
<i>Papio hamadryas</i>	15		Hamadryas Baboon	1		2	4	3	6	1
<i>Papio cynocephalus</i>	1		Yellow Baboon				1			
<i>Cercopithecus pygerythrus</i>	4		Vervet Monkey			2		1	1	
<i>Cercopithecus aethiops</i>	3		Grivet Monkey			1		1	1	
<i>Cercopithecus preussi</i>	1		Preuss's Monkey			1				
<i>Cercopithecus albogularis</i>			Sykes Guenon (Moloney's Form)	1					1	
<i>Cercopithecus albogularis x bred</i>	3		Sykes x Moloney's Form			1		1	1	
<i>Cercopithecus ascanius</i>	1		White-nosed Guenon			1				
<i>Cercopithecus mona</i>	5		Mona Monkey				3		2	
<i>Cercopithecus neglectus</i>	3	1	De Brazza Monkey					1	3	
<i>Cercopithecus nictitans</i>	3		White-nosed Guenon					1	2	
<i>Cercopithecus talapoin</i>	5		Talapoin Monkey		1			2	3	
<i>Erythrocebus patas</i>	8		Patas Monkey		1			3	4	1
<i>Hylobates lar</i>	*2		Lar Gibbon					*2		
<i>Hylobates agilis</i>	2		Agile Gibbon					1	1	
<i>Pan troglodytes</i>	18	1	Chimpanzee		1		2	7	10	
<i>Pongo pygmaeus</i>	8		Orang-utan (Bornean form)		1		*1	4	2	
<i>Pongo pygmaeus</i>			Orang-utan (Sumatran Form)	1		1		1	1	
<i>Pongo pygmaeus</i>			Orang-utan (Bornean x Sumatran)	1				1		
<i>Gorilla gorilla</i>	1		Western Lowland Gorilla					1		
<i>Gorilla gorilla</i>	1		Eastern Lowland Gorilla					1		
EDENTATA										
<i>Myrmecophaga tridactyla</i>	1		Giant Anteater				1			
RODENTIA										
<i>Calloscirtus germani</i>	2		Siamese Black Squirrel			1		1		
<i>Ratufa bicolor</i>	*2		Malay Giant Squirrel					1	*1	

	1 Stock at 1st Jan 1979	2 Rec'd	3 Births	4 D.N.S. within 30 days	5 Deaths excl. 4	6 Disposal	7 Stock at 31st December 1979		
							M	F	Y?
<i>Sciurus carolinensis</i>	5					5			
<i>Tamias sibiricus</i>	3					3			
<i>Funisciurus pyrrhopus</i>	9		1		3		2	4	1
<i>Cynomys ludovicianus</i>	160				54	6			100
<i>Marmota monax</i>		2					1	1	
<i>Castor canadensis</i>	2						1	1	
<i>Pedetes capensis</i>	*1					*1			
<i>Cricetomys gambianus</i>	1						1		
<i>Hystrix indica</i>	5				1		2	2	
<i>Hydrochoerus hydrochaeris</i>		2					1	1	
<i>Dasyprocta aguti</i>	5						2	3	
<i>Chinchilla laniger</i>	3	2					3	2	
<i>Myocastor coypus</i>	7				3		2	2	
<i>Lagostomus maximus</i>	6		1	1			3	3	
CARNIVORA									
<i>Canis mesomelas</i>	3						3		
<i>Canis familiaris</i>	2		2				2	2	
<i>Alopex lagopus</i>	2		10		2	6	2	2	
<i>Fennecus zerda</i>	*8						*6	2	
<i>Selenarctos thibetanus</i>	2					2			
<i>Ursus arctos</i>	4		2			1	1	2	2
<i>Thalarctos maritimus</i>	2				1			1	
<i>Procyon lotor</i>	2						1	1	
<i>Nasua nasua</i>	8				3		1	4	
<i>Potos flavus</i>	6	1			1		3	3	
<i>Martes americana</i>	2						2		
<i>Eira barbara</i>	2						1	1	
<i>Genetta tigrina</i>	6						3	3	
<i>Genetta tigrina</i>	1						1		

	1 Stock at 1st Jan 1979	2 Rec'd	3 Births	4 D.N.S. within 30 days	5 Deaths excl. 4	6 Disposal	7 Stock at 31st December 1979		
							M	F	Y?
<i>Viverra civetta</i>	3		2	2			2	1	
<i>Arctictis binturong</i>	3						2	1	
<i>Herpestes edwardsi</i>	1							1	
<i>Helogale parvula</i>	1							1	
<i>Mungos mungo</i>	2		1	1			1	1	
<i>Hyaena crocuta</i>	1				1				
<i>Felis colocolo</i>		*1					*1		
<i>Felis wiedi</i>		2					1	1	
<i>Felis chaus</i>	2	1			2		1		
<i>Felis bengalensis</i>	2						1	1	
<i>Felis caracal</i>	1						1		
<i>Felis lynx</i>	2					†2			
<i>Felis lynx</i>	4		2	2		1	1	2	
<i>Felis serval</i>	3						2	1	
<i>Felis geoffroyi</i>	2						1	1	
<i>Felis yagouaroundi</i>	*6				1		*2	*3	
<i>Felis concolor</i>	8	2			2	4	1	3	
<i>Panthera leo</i>	6		2	2			2	4	
<i>Panthera tigris</i>	5		3			4	2	2	
<i>Panthera tigris</i>	4		3		1	1	3	2	
<i>Panthera tigris</i>	1					1			
<i>Panthera pardus</i>	6		3	1		2	2	4	
<i>Panthera pardus</i>	7		4	1		6	2	2	
<i>Panthera pardus</i>	4				1		1	2	
<i>Panthera onca</i>	7		1			1	2	5	
<i>Acinonyx jubatus</i>	2						1	1	
PINNIPEDIA									
<i>Zalophus californianus</i>	3				1		2		

	1 Stock at 1st Jan 1979	2 Rec'd	3 Births	4 D.N.S. within 30 days	5 Deaths excl. 4	6 Disposal	7 Stock at 31st December 1979		
							M	F	Y?
PROBOSCIDEA									
<i>Loxodonta africana</i>	1				1				
<i>Elephas maximus</i>	3						1	2	
PERISSODACTYLA									
<i>Equus przewalskii</i>	2		1				2	1	
<i>Asinus hemionus</i>	3		1				2	2	
<i>Asinus hemionus</i>	1				1				
<i>Asinus hemionus</i>	4						3	1	
<i>Hippotigris burchelli</i>	10		1			2	4	5	
<i>Dolichohippus grevyi</i>	*5						*1	4	
	1						1		
<i>Tapirus indicus</i>	*2	*1			*1		1	*1	
<i>Tapirus terrestris</i>	3	1	1				2	3	
<i>Diceros bicornis</i>	1						1		
<i>Ceratotherium simum</i>	2						1	1	
ARTIODACTYLA									
<i>Tayassu tajacu</i>	3						2	1	
<i>Hippopotamus amphibius</i>	3					1	1	1	
<i>Choeropsis liberiensis</i>	*1					*1			
<i>Lama glama</i>	*5		1				*4	2	
<i>Lama guanicoe</i>	4	1	2	1			2	4	
<i>Lama pacos</i>	12		1		6	3	3	1	
<i>Camelus bactrianus</i>	*2						*1	1	
<i>Camelus dromedarius</i>	2				2				
<i>Dama dama</i>	15		2	1	4	2	4	6	
<i>Axis axis</i>	4		3	1			4	2	
<i>Cervus nippon</i>	5				1			4	
<i>Cervus canadensis</i>	10		3	1	1	4	2	5	

	1 Stock at 1st Jan 1979	2 Rec'd	3 Births	4 D.N.S. within 30 days	5 Deaths excl. 4	6 Disposal	7 Stock at 31st December 1979		
							M	F	Y?
<i>Elaphurus davidianus</i>	24		5		6	1	5	17	
<i>Rangifer tarandus</i>	6		1		2		2	3	
<i>Hydropotes inermis</i>	5		2	1	5			1	
<i>Giraffa camelopardalis</i>	5		1				2	4	
<i>Tragelaphus strepsiceros</i>	3				1		2		
<i>Taurotragus oryx</i>	5				2			3	
<i>Boselaphus tragocamelus</i>	6		1				4	3	
<i>Bos taurus</i>	4						1	3	
<i>Bison bison</i>	7				1		3	3	
<i>Kobus leche</i>	22		8		7	2	4	11	6
<i>Oryx gazella beisa</i>	1						1		
<i>Connochaetes taurinus</i>	3	2			2		1	2	
<i>Antelope cervicapra</i>	6		1			3	1	3	
<i>Gazella arabica</i>	17	1	7		3	2	7	13	
<i>Ovibos moschatus</i>	*1				*1				
<i>Capra hircus</i>	4	*1			2	1	1	*1	
<i>Ovis aries</i>	18		9	2	1	7	7	10	
	805	36	122	19	163	97	229	278	177

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	1 Stock at 1st Jan 1979	2 Rec'd	3 Births	4 D.N.S. within 30 days	5 Deaths excl. 4	6 Disposal	7 Stock at 31st December 1979		
							M	F	Y?
<i>Phoenicopterus ruber chilensis</i>	19								19
<i>Phoenicopterus ruber ruber</i>	9				2				7
ANSERIFORMES									
<i>Dendrocygna bicolor</i>	2								2
<i>Coscoroba coscoroba</i>	2								1
<i>Cygnus atratus</i>	4				1				1
<i>Cygnus olor</i>	2				1		1	2	
<i>Anser anser</i>	2						1	1	
<i>Anser caerulescens</i>	7				1		1		
<i>Anser canagicus</i>	2		2		2				7
<i>Anser fabalis brachyrhynchus</i>		1						2	
<i>Anser indicus</i>	7								1
<i>Anser rossii</i>	2				1				6
<i>Branta canadensis</i>	21		8		1				1
<i>Branta leucopsis</i>	2				7				22
<i>Branta sandvicensis</i>	2								2
<i>Cereopsis novaehollandiae</i>	4				1		1		
<i>Chloephaga melanoptera</i>		5			2		1	1	
<i>Tadorna tadorna</i>	2								5
<i>Anas acuta</i>	1				1			1	
<i>Anas bahamensis</i>	12						3	1	
<i>Anas cyanoptera</i>	1	2			5				7
<i>Anas penelope</i>	5						2	1	
<i>Anas platalea</i>	6				2		2	1	
<i>Anas platyrhynchos laysanensis</i>	2		1		2		2	2	
<i>Anas sp.</i>	3				1		2		
<i>Anas sibilatrix</i>	6				2				1
<i>Anas strepera</i>	5						2	4	
<i>Aythya ferina</i>	2				2		2	1	
<i>Aythya fuligula</i>	7	1					1	1	
							4	3	1

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	1 Stock at 1st Jan 1979	2 Rec'd	3 Births	4 D.N.S. within 30 days	5 Deaths excl. 4	6 Disposal	7 Stock at 31st December 1979		
							M	F	Y?
<i>Netta peposaca</i>	3				1		1	1	
<i>Netta rufina</i>	2						1	1	
<i>Chenonetta jubata</i>	7				2		2	3	
<i>Aix galericulata</i>	10		5		8				7
<i>Aix sponsa</i>	5		1				3	3	
<i>Cairina moschata Domestic</i>	1	8			1				8
<i>Anas platyrhynchos Domestic</i>		2							2
FALCONIFORMES									
<i>Sarcorhamphus papa</i>	2						1	1	
<i>Vultur gryphus</i>	2						1	1	
<i>Trigonoceps 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	
<i>Falco tinnunculus</i>		2				2			
GALLIFORMES									
<i>Crax fasciolata sclateri</i>	2						1	1	
<i>Coturnix japonica</i>		7	1		5		3		
<i>Crossoptilon auritum</i>	9		5	2	3				9
<i>Lophura nycthemera</i>	1						1		
<i>Gallus gallus</i>	1				1				
<i>Gallus sonneratii</i>	3	5			4		2	2	
<i>Catreus wallichii</i>	2				1			1	
<i>Chrysolophus pictus</i>	1	1			2				
<i>Phasianus colchicus</i>		8			5				3
<i>Pavo cristatus</i>	19		9	3	10	2			13
<i>Numida melagris Domestic</i>	5				2				3
<i>Gallus species Domestic</i>	22		2		3				21

	1 Stock at 1st Jan 1979	2 Rec'd	3 Births	4 D.N.S. within 30 days	5 Deaths excl. 4	6 Disposal	7 Stock at 31st December 1979		
							M	F	Y?
GRUIFORMES									
<i>Grus antigone</i>									
<i>Balearica pavonina</i>	2							2	
<i>Aramides cajanea</i>	1	1					1	1	
<i>Aramides ypecaha</i>	1				1				
<i>Gallirallus australis</i>		2			1		1		
<i>Amaurornis phoenicurus</i>	3				2				1
<i>Eurypyga helias</i>		4					2	2	
<i>Rallus striatus</i>	2						1	1	
	1				1				
CHARADRIIFORMES									
<i>Haematopus ostralegus</i>	2								
<i>Burhinus magnirostris</i>	2				2				
<i>Hoplopterus armatus</i>					1				1
<i>Stephanibyx coronatus</i>		4					2	2	
<i>Vanellus vanellus</i>		4					2	2	
		2			2				
COLUMBIFORMES									
<i>Streptopelia chinensis</i>									
<i>Streptopelia senegalensis</i>		1			1				
<i>Streptopelia risoria</i>	12				8				
<i>Streptopelia Domestic</i>	1	1							4
<i>Geopelia cuneata</i>	2								2
<i>Oena capensis</i>	1								2
<i>Turtur tympanistria</i>	2							1	
<i>Petrophassa scripta</i>	1						1	1	
<i>Ochypops lophotes</i>	2								1
							1	1	
<i>Geotrygon versicolor</i>	11				4				7
<i>Gallinula jacobae</i>	4	1			1				4
	3				1				2

	1 Stock at 1st Jan 1979	2 Rec'd	3 Births	4 D.N.S. within 30 days	5 Deaths excl. 4	6 Disposal	7 Stock at 31st December 1979		
							M	F	Y?
PSITTACIFORMES									
<i>Eos bornea</i>	3	2			1		2	2	
<i>Eos reticulata</i>	2				2				
<i>Eos squamata</i>	1					1			
<i>Trichoglossus chlorolepidotus</i>	*5								*5
<i>Trichoglossus haematodus capistratus</i>	3	1			1				3
<i>Trichoglossus haematodus micropteryx</i>	5				5				
<i>Trichoglossus haematodus mitchelli</i>	4								4
<i>Trichoglossus haematodus moluccanus</i>	20		1		7				14
<i>Trichoglossus haematodus weberi</i>	4				1				3
<i>Trichoglossus ornatus</i>	5		1	1	3				2
<i>Trichoglossus versicolor</i>	2						1	1	
<i>Lorius garrulus flavopalliatus</i>									
		2			1				1
<i>Charmosyna papou</i>		2			1				1
<i>Pseudeos fuscata</i>		4					2	2	
<i>Probosciger aterrimus</i>	2				1			1	
<i>Calyptorhynchus funereus</i>	1						1		
<i>Calyptorhynchus funereus baudinii</i>	2						1	1	
<i>Calyptorhynchus funereus magnificus</i>	2						1	1	

	1 Stock at 1st Jan 1979	2 Rec'd	3 Births	4 D.N.S. within 30 days	5 Deaths excl. 4	6 Disposal	7 Stock at 31st December 1979		
							M	F	Y?
<i>Eolophus roseicapillus</i>	2				1			1	
<i>Cacatua alba</i>	1					1			
<i>Cacatua galerita</i>	5					1	4		
<i>Cacatua galerita triton</i>	1	1			1	1			
<i>Cacatua goffini</i>	3					3			
<i>Cacatua leadbeateri</i>	2						1	1	
<i>Cacatua moluccensis</i>	2					1			1
<i>Cacatua ophthalmica</i>	5						2	3	
<i>Cacatua sanguinea</i>	2				1	1			
<i>Cacatua sulphurea</i>	3	1				3			1
<i>Cacatua sulphurea citrinocristata</i>	2					2			
<i>Cacatua tenuirostris tenuirostris</i>	2						1	1	
<i>Cacatua tenuirostris pastinator</i>	2					2			
<i>Nymphicus hollandicus</i>	250	2			64	138			50
<i>Nestor notabilis</i>	2							2	
<i>Eclectus roratus</i>	3					1	1	1	
<i>Eclectus roratus goodsoni</i>	8		3	2	1	2	3	3	
<i>Psittichas fulgidus</i>	1				1				
<i>Aprosmictus erythropterus</i>	5				1	1	1	2	
<i>Aprosmictus erythropterus coccineopterus</i>	2					1	1		
<i>Polytelis swainsoni</i>	3				1		1	1	
<i>Platycercus eximius</i>	1					1			
<i>Platycercus icterotis</i>	2					1	1		
<i>Platycercus eximius x Platycercus icterotis</i>			2						2
<i>Psephotus haematonotus</i>	6		3		5				4

	1 Stock at 1st Jan 1979	2 Rec'd	3 Births	4 D.N.S. within 30 days	5 Deaths excl. 4	6 Disposal	7 Stock at 31st December 1979		
							M	F	Y?
<i>Neophema pulchella</i>	1	2					1	2	
<i>Neophema splendida</i>	4				1		1	2	
<i>Neophema splendida x pulchella</i>			2		1				1
<i>Melopsittacus undulatus</i>	70				31				39
<i>Poicephalus gulielmi</i>	2				1	1			
<i>Poicephalus ruppelli</i>	2				1		1		
<i>Poicephalus senegalus</i>	2						1	1	
<i>Psittacus erithacus</i>	8				1	3	1	3	
<i>Agapornis fischeri</i>	18		2		8				12
<i>Agapornis roseicollis</i>	27		13		10	8			22
<i>Agapornis tararanta</i>	2						1	1	
<i>Psittacula alexandri</i>	3				1		1	2	
<i>Psittacula cyanocephala</i>	4				2		1	1	
<i>Psittacula derbiana</i>	3		1				1	3	
<i>Psittacula eupatria nipalensis</i>	2				1	1			
<i>Psittacula krameri</i>	13	1			6	4			4
<i>Anodorhynchus hyacinthinus</i>	2						1	1	
<i>Ara ararauna</i>	5					1	2	2	
<i>Ara chloroptera</i>	1	1					1	1	
<i>Ara macao</i>	2						1	1	
<i>Aratinga acuticauda</i>	1								1
<i>Aratinga aurea</i>	1								1
<i>Aratinga canicularis</i>	2					2			
<i>Aratinga erythrogenys</i>	2						1	1	
<i>Aratinga guarouba</i>	2								2
<i>Aratinga solstitialis</i>	1								6
<i>Nandayus nenday</i>	41				2	27			12
<i>Cyanoliseus patagonus</i>	16		6						22
<i>Pyrrhura melanura</i>	1	4							5
<i>Pyrrhura rhodogaster</i>	4						2	2	
<i>Enicognathus leptorhynchus</i>	2						1	1	
<i>Myiopsitta monachus</i>	36	1	6	3	4	10			26

		1 Stock at 1st Jan 1979	2 Rec'd	3 Births	4 D.N.S. within 30 days	5 Deaths excl. 4	6 Disposal	7 Stock at 31st December 1979		
								M	F	Y?
<i>Brotogeris versicolurus chiriri</i>	Canary-winged Parrakeet	1				1				
<i>Pionites melanocephala</i>	Black-headed Caique	1					1			
<i>Pionopsitta pileata</i>	Red-capped Parrot	2						1	1	
<i>Amazona species</i>	Red-fronted Amazon Parrot		1							1
<i>Amazona aestiva</i>	Blue-fronted Amazon Parrot	7					3			4
<i>Amazona ochrocephala</i>	Yellow-fronted Amazon Parrot	1	2				3			
<i>Amazona ochrocephala oratrix</i>	Yellow-headed Amazon Parrot	1					1			
CUCULIFORMES										
<i>Corythaixoides concolor</i>	Grey Go-away Bird	2	9			8				3
<i>Carpococcyx renauldi</i>	Renaud's Ground Cuckoo	2						1	1	
STRIGIFORMES										
<i>Tyto alba</i>	Barn Owl	6		4			3			7
<i>Bubo africanus</i>	Spotted Eagle Owl	4						2	2	
<i>Bubo bubo</i>	Great Eagle Owl	8		4			5	3	4	
<i>Bubo virginianus</i>	Great Horned Owl	2							2	
<i>Scotopelia bouvieri</i>	Fishing Owl	1							1	
<i>Pulsatrix perspicillata</i>	Spectacled Owl	2							2	
<i>Nyctea scandiaca</i>	Snowy Owl	2						1	1	
<i>Ninox novaeseelandiae</i>	Boobook Owl	2						1	1	
<i>Athene noctua</i>	Little Owl	1	1							2
CORACIIFORMES										
<i>Halcyon smyrnensis</i>	White-breasted Kingfisher		4			2				2
<i>Dacelo novaeguineae</i>	Kookaburra	5				2				1
<i>Upupa epops longirostris</i>	Thailand Hoopoe		2			1	2			1

		1 Stock at 1st Jan 1979	2 Rec'd	3 Births	4 D.N.S. within 30 days	5 Deaths excl. 4	6 Disposal	7 Stock at 31st December 1979		
								M	F	Y?
<i>Aceros leucocephalus</i>	Red-billed Wrinkled Hornbill	1								1
<i>Anthracoceros malabaricus</i>	Indian Pied Hornbill	2						1	1	
<i>Buceros bicornis</i>	Great Indian Hornbill	1							1	
<i>Bucorvus abyssinicus</i>	Ground Hornbill	1						1		
PICIFORMES										
<i>Aulacorhynchus prasinus</i>	Emerald Toucanet	2	3			5				
<i>Picoides major</i>	Great Spotted Woodpecker	1				1				
PASSERIFORMES										
<i>Pitagus sulphuratus</i>	Kiskadee	2				2				
<i>Eremopterix species</i>	Lark-Finch	2				2				
<i>Pycnonotus cafer</i>	Red-vented Bulbul	2				1	1			
<i>Pycnonotus jocusus</i>	Red-whiskered Bulbul	1				1				
<i>Pycnonotus sinensis</i>	Light Vented Bulbul		2			2				
<i>Pycnonotus species</i>	Red Eyed Bulbul		4			2				2
<i>Irena puella</i>	Fairy Bluebird	1				1				
<i>Luscinia calliope</i>	Siberian Rubythroat	1				1				
<i>Copsychus saularis</i>	Magpie Robin	1				1				
<i>Catharus ustulatus</i>	Swainson's Thrush		2							2
<i>Turdus naumanni</i>	Dusky Thrush	1				1				
<i>Turdus merula alba forma</i>	White Blackbird		2							2
<i>Garrulax chinensis</i>	Black-throated Laughing Thrush	2						1	1	
<i>Garrulax erythrocephalus</i>	Red-headed Laughing Thrush	4						2	2	
<i>Garrulax leucalophus</i>	White-crested Laughing Thrush	3	1			2				2
<i>Garrulax moniliger</i>	Black-necklaced Laughing Thrush	1					†1			

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	1 Stock at 1st Jan 1979	2 Rec'd	3 Births	4 D.N.S. within 30 days	5 Deaths excl. 4	6 Disposal	7 Stock at 31st December 1979		
							M	F	Y?
<i>Leiothrix lutea</i>	1	3			1				3
<i>Alcippe poioicephala</i>	1				1				
<i>Heteropnesia capistrata</i>	2				2				
<i>Paroaria coronata</i>	1	1			2				
<i>Cardinalis cardinalis</i>	1				1				
<i>Pheucticus melanocephalus</i>	2						1	1	
<i>Ramphocelus bresilius</i>		1			1				
<i>Thraupidae various</i>		29			29				
<i>Icterus gularis</i>	1								
<i>Cassidix mexicanum</i>	3				1				1
<i>Serinus mozambicus</i>	1						2		
<i>Cardeulis chloris</i>	4				4				1
<i>Carpodacus erythrinus</i>	2								
<i>Estrilda melpoda</i>	3	20			3				2
<i>Estrilda troglodytes</i>	5	20			5				20
<i>Amandava amandava</i>	6				2				20
<i>Poephila guttata</i>	40	2			5				4
<i>Lonchura maja</i>	3				1				37
<i>Lonchura m. malabarica</i>	17		7		3				2
<i>Lonchura malabarica cantans</i>	2								21
<i>Lonchura malacca</i>	1								2
									1
<i>Lonchura punctulata</i>	1								
<i>Padda oryzivora</i>	6				3				1
<i>Amandina fasciata</i>	1				1				3
<i>Vidua macroura</i>	3								
<i>Vidua paradisea</i>	1								3
<i>Ploceus bojeri</i>		20							1
<i>Ploceus cucullatus</i>	1				2				18
<i>Ploceus philippinus</i>	6	2			3				1
<i>Quelea quelea</i>	11								5
									11

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	1 Stock at 1st Jan 1979	2 Rec'd	3 Births	4 D.N.S. within 30 days	5 Deaths excl. 4	6 Disposal	7 Stock at 31st December 1979		
							M	F	Y?
<i>Euplectes afer</i>	2								2
<i>Euplectes hordeaceus</i>	1				1				
<i>Euplectes orix</i>	2				2				
<i>Lamprotornis caudatus</i>	4		1		1				4
<i>Lamprotornis chalybaeus</i>	2				2				
<i>Lamprotornis nitens</i>	1	3			1				3
<i>Saroglossa spiloptera</i>	2						1	1	
<i>Sturnus burmanicus</i>	5		2		2				5
<i>Sturnus erythropygius andamanensis</i>	2				1				1
<i>Leucopsar rothschildi</i>	4				1		1	2	
<i>Acridotheres fuscus</i>	6				1				5
<i>Acridotheres tristis</i>	4				2				2
<i>Gracula religiosa</i>	2				2				
<i>Cyanocorax chrysops</i>	3	1			3				1
<i>Cyanocorax sanblasiana nelsoni</i>	4				4				
<i>Garrulax bispecularis interstinctus</i>	1				1				
<i>Cissa chinensis</i>		2					1	1	
<i>Urocissa erythrorhyncha occipitalis</i>	2						1	1	
<i>Corvus corax</i>	1						1		
	1279	226	103	15	429	246	126	133	659

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1 Stock at 1st Jan 1979	2 Rec'd	3 Births	4 D.N.S. within 30 days	5 Deaths excl. 4	6 Disposal	7 Stock at 31st December 1979		
						M	F	Y?

ON DEPOSIT AT CHESTER ZOO AT 31st DECEMBER, 1979

<i>Trichoglossus chlorolepidotus</i>	Scaly breasted Lorikeet	1							1
<i>Anodorhynchus hyacinthinus</i>	Hyacinthine Macaw	1							1

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OUR STOCK DEPOSITED AT OTHER ZOOS AT 31st DECEMBER, 1979.

<i>Cacatua moluccensis</i>	Moluccan Cockatoo	1							1
<i>Garrulux moniliger</i>	Black-necklaced Laughing Thrush	1							1
<i>Rhea americana</i>	Common Rhea	1							1

	1 Stock at 1st Jan 1979	2 Rec'd	3 Births	4 D.N.S. within 30 days	5 Deaths excl. 4	6 Disposal	7 Stock at 31st December 1979		
							M	F	Y?

AMPHIBIA

<i>Bufo marinus</i>	Giant Toad	2					1	1	
<i>Litoria caerulea</i>	Australian Tree Frog				4				2
<i>Hyla sepehionalis</i>	Cuban Tree Frog				4				4

REPTILIA

RHYNCHOCEPHALIA

<i>Sphenodon punctatus</i>	Tuatara	2					1	1	
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TESTUDINATA

<i>Geochelone carbonaria</i>	Red-leg Tortoise	2				2			
<i>Geochelone denticulata</i>	Brazilian Tortoise	1				1			
<i>Geochelone elegans</i>	Star Tortoise	1				1			
<i>Geochelone elongata</i>	Elongated Tortoise	3				2			
<i>Geochelone emys</i>	Burmese Brown Tortoise	1	5		4	1			1
<i>Geochelone gigantea</i>	Aldabra Giant Tortoise	6							6
<i>Geochelone pardalis</i>	Leopard Tortoise	2	4				2	4	
<i>Geochelone sulcata</i>	Spurred Tortoise	2		7			1	1	7
<i>Testudo graeca</i>	Grecian Tortoise	2				2			
<i>Pelusios nigricans</i>	Blackish Mud Terrapin	1	1				1	1	
<i>Chelus fimbriatus</i>	Matamata Turtle	1							1
<i>Trionyx triunguis</i>	Soft-shelled Turtle	2			1				1
<i>Trionyx triunguis, white variety</i>	Soft-shelled Turtle, white	1							1

SAURIA

<i>Gekko gekko</i>	Tocko Gecko	5							5
<i>Phelsuma cepediana</i>	Day Gecko	6			2				4
<i>Eublepharis macularis</i>	Leopard Gecko	10	34		3	29			12
<i>Heloderma horridum</i>	Mexican Bearded Lizard	2					1	1	
<i>Heloderma suspectum</i>	Gila Monster	1						1	
<i>Gerrhosaurus flavigularis</i>	Plated Lizard	3							3

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	1 Stock at 1st Jan 1979	2 Rec'd	3 Births	4 D.N.S. within 30 days	5 Deaths excl. 4	6 Disposal	7 Stock at 31st December 1979		
							M	F	Y?
<i>Cordylus giganteus</i>	2				1				1
<i>Anolis e. equestris</i>	2	2			1		1	2	
<i>Iguana iguana</i>	2	2			1		2	1	
<i>Cyclura cornuta</i>	2	6					2	6	
<i>Amplibolurus b. barbatus</i>	2						2		
<i>Physignathus cocincinus</i>	3						1	2	
<i>Physignathus l. lesuerii</i>	4				1		2	1	
<i>Egernia cunninghami</i>	3					1	1	1	
<i>Egernia major</i>		1							1
<i>Trachydosaurus rugosus</i>	7				1		1	5	
<i>Tiliqua gerrardii</i>	2								2
<i>Tiliqua occipitalis</i>									
<i>multifasciata</i>									
	2				1				1
<i>Tiliqua scincoides</i>	4	3			2		4	1	
<i>Eumeces algeriensis</i>	2					2			
<i>Corucia zebata</i>	15				4				11
<i>Diploglossus costatus</i>		4							4
<i>Varanus prasinus</i>		2					1	1	
<i>Varanus bengalensis</i>		2							2
<i>Varanus gouldii</i>	3						1	2	
<i>Varanus indicus</i>	1					1			
<i>Varanus niloticus</i>		1							1
<i>Varanus salvator</i>	2								2
<i>Varanus timorensis</i>	2						1	1	
<i>Varanus varius</i>	2				2				
<i>Ophisaurus apodus</i>	1								1
SERPENTES									
<i>Liasis amethystinus</i>	1				1				
<i>Liasis childreni</i>	3						2	1	

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	1 Stock at 1st Jan 1979	2 Rec'd	3 Births	4 D.N.S. within 30 days	5 Deaths excl. 4	6 Disposal	7 Stock at 31st December 1979		
							M	F	Y?
<i>Liasis fuscus albertsii</i>	3						2	1	
<i>Liasis mackloti</i>	2						1	1	
<i>Morelia spilotes</i>	3				1		2		
<i>Morelia spilotes variegata</i>	2	4			3		1	2	
<i>Python curtus</i>	1								1
<i>Python molurus</i>	3					1	1		
<i>Python regius</i>	3					3			
<i>Python reticulatus</i>	2								2
<i>Python sebae</i>	2	1					2	1	
<i>Chondropython viridis</i>	2						1	1	
<i>Eunectes murinus</i>	2						1	1	
<i>Boa constrictor</i>	3	2			1		1	3	
<i>Epicrates cenchris</i>	2	1							3
<i>Epicrates striatus</i>	1					1			
<i>Candoia carinata</i>	2								2
<i>Sanzinia madagascariensis</i>	5				2				3
<i>Boiga dendrophila</i>	2								2
<i>Boiga irregularis</i>		2							
<i>Dispholidus typus</i>	4				2				2
<i>Naja melanoleuca</i>	2				2				2
<i>Dendroaspis angusticeps</i>	2								2
<i>Bitis gabonica</i>	1								1
<i>Vipera xanthina palaestinae</i>	1					1			
<i>Agkistrodon contortrix</i>	3				1		2		
<i>Agkistrodon piscivorus</i>	1					1			
<i>Crotalus atrox</i>									
	4					2	1	1	
<i>Crotalus baliliscus</i>	1							1	
<i>Crotalus horridus</i>	2				1			1	
<i>Crotalus viridis helleri</i>	2						1	1	
<i>Sistrurus miliarius</i>	4	1							5

LORICATA
Alligator mississippiensis
Osteolaemus tetraspis
 40 *Crocodylus johnstoni*
Crocodylus niloticus
Tomistoma schlegeli

Mississippi Alligator
 Broad-fronted Crocodile
 Johnston's River Crocodile
 Nile Crocodile
 False Gavial

1 Stock at 1st Jan 1979	2 Rec'd	3 Births	4 D.N.S. within 30 days	5 Deaths excl. 4	6 Disposal	7 Stock at 31st December 1979		
						M	F	Y?
3						2	1	
3								3
2				1				1
2						1	1	
4				1				3
204	54	41		45	51	47	51	105

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		
Knife Fish	<i>Notopterus notopterus</i>	1
African Knife Fish	<i>Xenomystus nigri</i>	12
Clown Knife Fish		1
Mormyriadae		
Long Nosed Elephant Trunkfish	<i>Gnathonermus petersi</i>	3
Round Nosed Elephant Trunkfish	<i>Gnathonermus stanleyanus</i>	1
Anguillidae		
Common Eel	<i>Anguilla anguilla</i>	1
Charocidae		
Silver Dollar	<i>Metynnis calichromus</i>	4
Silver Dollar	<i>Metynnis roosevelti</i>	2
Red-eyed Tetra	<i>Moenkhausia sanctae filomenae</i>	18
Black Widow Tetra	<i>Gymnocorymbus ternetzi</i>	18
Glowlight Tetra	<i>Hemigrammus erythrozonus</i>	12
Neon Tetra	<i>Hyphessobrycon innesi</i>	20
Lemon Tetra	<i>Hyphessobrycon pulchripinnis</i>	4
Rosy Tetra	<i>Hyphessobrycon rosaceus</i>	3
Blind Cave Fish	<i>Anoptichthys jordani</i>	3
Silver Tetra	<i>Stenobrycon spilurus</i>	1
Cardinal Tetra	<i>Cheirodon axelrodi</i>	6
Red-eyed Characin	<i>Arnoldichthys spilopterus</i>	9
Long-finned Characin	<i>Alestes longipinnis</i>	6
Congo Tetra	<i>Micralestes interruptus</i>	11
Red Phantom Tetra	<i>Megalampodus sweglesi</i>	3
Pacu	<i>Colossoma nigripinnis</i>	3
Anostomidae		
Marbled Headstander	<i>Abramites microcephalus</i>	6
Striped Anostomus	<i>Anostomus anostomus</i>	7
Three Spot Anostomus	<i>Anostomus trimaculatus</i>	1
	<i>Leporinus affinis</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>	1
Silver Hatchetfish	<i>Gasteropelecus levis</i>	8
Cyprinidae		
Bream	<i>Abramis brama</i>	3
Mirror Carp	<i>Cyprinus carpio</i>	2
Golden Orfe	<i>Idus idus</i>	18
Golden Rudd	<i>Scardinius erythrophthalmus</i>	8
Tench	<i>Tinca tinca</i>	2
Golden Tench	<i>Tinca tinca</i>	1
Varieties of Goldfish	<i>Carassius auratus</i>	24
Koi Carp		14
White Cloud Mountain Minnow	<i>Tanichthys albonubes</i>	14
Silver Shark	<i>Balantiocheilus melanopterus</i>	1
Zebra Danio	<i>Brachydanio rerio</i>	3
Leopard Danio	<i>Brachydanio frankei</i>	10
Giant Danio	<i>Danio malabaricus</i>	7
Red-tailed Black Shark	<i>Labeo bicolor</i>	1
Black Shark	<i>Morulus chrysophekadion</i>	2
Festive Shark	<i>Labeobarbus festiva</i>	4
Apollo Shark	<i>Luciosoma serigerum</i>	1
Bony Lipped Barb	<i>Osteochilus hasselti</i>	1
Arulius Barb	<i>Barbus arulius</i>	3
Rosy Barb	<i>Barbus conchoni</i>	15
Cumings Barb	<i>Barbus cumingi</i>	8
Clown Barb	<i>Barbus everetti</i>	7
Striped Barb	<i>Barbus fasciatus</i>	6
Filament Barb	<i>Barbus filamentosus</i>	4
Spanner Barb	<i>Barbus lateristriga</i>	1
Nigger Barb	<i>Barbus nigrofasciatus</i>	12
Red Cheek Barb	<i>Barbus orphoides</i>	2
Six Zoned Barb	<i>Barbus hexazona</i>	1
Tiger Barb	<i>Barbus tetrazona</i>	24
Golden Barb	<i>Barbus shurberti</i>	24
Chinese Half-striped Barb	<i>Barbus semifasciolatus</i>	2
Yellow Barb	<i>Barbus species</i>	2
Two Spot Barb	<i>Barbus bimaculatus</i>	15
Harlequin Fish	<i>Rasbora hetromorpha</i>	7
Red-tailed Scissortail	<i>Rasbora caudimaculata</i>	1
Flying Fox	<i>Epalzeorhynchus kallopterus</i>	4
Gyrinocheilidae		
Sucking Loach	<i>Gyrinocheilus aymonieri</i>	80
Cobitidae		
Skunk Botia	<i>Botia horae</i>	2
Red-tailed Botia	<i>Botia lecontei</i>	2
Clown Botia	<i>Botia macracanthus</i>	6
Electrophoridae		
Electric Eel	<i>Electrophorus electricus</i>	1

Siluridae		
Glass Catfish	<i>Kryptopterus macrocephalus</i>	5
Helicopter Catfish	<i>Ompok pabda</i>	3
Bagridae		
Bumblebee Catfish	<i>Leiocassis poecilopterus</i>	4
Catfish	<i>Parauchenoglanis macrostoma</i>	2
Chacidae		
Frogmouth Catfish	<i>Chaca chaca</i>	3
Schilbeidae		
Congo Catfish	<i>Etropiella debauwi</i>	16
Catfish	<i>Schilbe marmoratus</i>	1
Catfish	<i>Pangasius suchi</i>	3
Clariidae		
Albino Clarias Catfish	<i>Clarias species</i>	3
Fossil Catfish	<i>Heteropneustes fossilis</i>	1
Mochokidae		
Up-side down Catfish	<i>Synodontis species</i>	8
Pimelodidae		
Catfish	<i>Pimelodella pictus</i>	2
Shovel-nose Catfish	<i>Sorubim lima</i>	2
Malapterusidae		
Electric Catfish	<i>Malapterurus electricus</i>	1
Callichthyidae		
Bronze Catfish	<i>Corydoras aeneus</i>	20
Agassiz's Catfish	<i>Corydoras agassizi</i>	6
Leopard Catfish	<i>Corydoras julii</i>	6
Albino Bronze Catfish	<i>Corydoras aeneus</i>	4
Peppered Catfish	<i>Corydoras paleatus</i>	100
Reticulated Catfish	<i>Corydoras reticulatus</i>	2
Porthole Catfish	<i>Hoplosternum species</i>	1
	<i>Corydoras metae</i>	2
Loricariidae		
Plecostomus Catfish	<i>Plecostomus plecostomus</i>	4
Bristle-nosed Plecostomus	<i>Xenocara species</i>	3
Clown Plecostomus	<i>Plecostomus species</i>	2
Royal Plecostomus	<i>Panaque nigrolinatus</i>	1
Cyprinodontidae		
Guppy	<i>Lebistes reticulatus</i>	50
Molly	<i>Mollienesia species</i>	30
Berlin Swordtail	<i>Xiphophorus helleri</i>	60
Green Swordtail	" "	60
Red Swordtail	" "	10
Red Wagtail Platy	<i>Xiphophorus maculatus</i>	40

Hemiramphidae Half-beak	<i>Dermogenys pusillus</i>	26
Centrarchidae Black-banded Sunfish	<i>Mesogonistius chaetodon</i>	3
Centropomidae Indian Glassfish	<i>Chanda ranga</i>	6
Cichlidae Blue Acara	<i>Aequidens pulcher</i>	3
Brown Acara	<i>Aequidens species</i>	1
Oscar or Marbled Cichlid	<i>Astronotus ocellatus</i>	2
Texas Cichlid	<i>Cichlasoma cyanoguttatum</i>	10
Convict Cichlid	<i>Cichlasoma nigrofasciatum</i>	4
Albino Convict Cichlid	" "	16
Banded Cichlid	<i>Cichlasoma severum</i>	2
Albino-banded Cichlid	" "	1
Blue-eyed Cichlid	<i>Cichlasoma spilurum</i>	6
Red Devil Cichlid	<i>Cichlasoma erythroeam</i>	50
Varieties of Angelfish	<i>Pterophyllum scalare</i>	14
Discus	<i>Symphysodon discus</i>	6
Heckel Discus	<i>Symphysodon aequifasciata</i>	1
Burton's Mouthbrooder	<i>Haplochromis burtoni</i>	20
Jewel Cichlid	<i>Hemichromis bimaculatus</i>	12
Maria's Tilapia	<i>Tilapia maria</i>	40
Mozambique Mouthbrooder	<i>Tilapia mossambica</i>	36
Zilliss Tilapia	<i>Tilapia zilli</i>	8
	<i>Pseudotropheus livingstoni</i>	1
	<i>Pseudotropheus pindanni</i>	6
Rainbow Cichlid	<i>Herotilapia multispinosa</i>	10
Eledridae Chameleon Goby	<i>Hyperselectris species</i>	6
Ophicephalidae Snake-head	<i>Ophicephalus micropeltes</i>	1
Anabantidae Comb-tailed Paradise Fish	<i>Belontia signata</i>	25
Thick-lipped Gourami	<i>Colisa labiosa</i>	5
Giant Gourami	<i>Osphronemus goramy</i>	2
Pearl Gourami	<i>Trichogaster leeri</i>	20
Moonlight Gourami	<i>Trichogaster microlepis</i>	1
Three-spot Gourami	<i>Trichogaster trichopterus</i>	1
Croaking Gourami	<i>Trichopsis vittatus</i>	44
Tail-spot Climbing Perch	<i>Ctenopoma kingsleyae</i>	1
Eye-spot Climbing Perch	<i>Ctenopoma ocellatum</i>	1
Golden Gourami	<i>Trichogaster trichopterus</i>	12
Honey Gourami	<i>Colisa chunae</i>	1
Atherinidae Australian Rainbow Fish	<i>Melanotaenia nigrans</i>	28
Synbranchia Eel	<i>Synbranchus marmoratus</i>	1

Dipnoi		
South American Lung Fish	<i>Lepidosiren paradoxa</i>	1
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		
Snowflake Moray Eel	<i>Echidna nebulosa</i>	1
Zebra Moray Eel	<i>Echidna zebra</i>	1
Pomacentridae		
Common Clownfish	<i>Amphyrion ocellaris</i>	2
Labridae		
Six-Barred Wrasse		1
Scorpaenidae		
Scorpion Fish	<i>Pterois volitans</i>	2
Gatesinidae		
Clown Sweetlys	<i>Gaterin chaetodonoides</i>	1
INVERTEBRATES		
Mollusca		
Murex Snail	<i>Murex species</i>	1
Crustacea		
Banded Coral Shrimp	<i>Stenopus hispidus</i>	1
Anemone Shrimp	<i>Periclimenes brevicarpalis</i>	1
Decorator Crab		1
Echinoderms		
Long Spined Sea Urchin	<i>Diadema species</i>	1
Red Spined Starfish	<i>Pentoceraster mammillatus</i>	1
Blue Starfish	<i>Linckia laevigata</i>	1
Sea Apple		1
Coelenterates		
Beadlet Anemone	<i>Actina equina</i>	150
Sea Anemone	<i>Stoichactis species</i>	2
Pink Sea Anemone		1
Sea Anemone		1
OTHER VERTEBRATES		
Amphibia		
Black Axolotl	<i>Amblystoma mexicanum</i>	8
White Axolotl	<i>Amblystoma mexicanum</i>	12
South African Clawed Frog	<i>Xenopus laevis</i>	120
Nigerian Clawed Frog	<i>Xenopus tropicalis</i>	3
Dwarf Clawed Frog	<i>Hymenochirus curtipes</i>	4
Italian Crested Newt	<i>Triturus cristatus carnifex</i>	2
Japanese Fire Bellied Newt		4

Reptilia		
Red Eared Terrapin	<i>Pseudemys scripta elegans</i>	4
Spanish Terrapin		1
Brown Terrapin		1
Red-tailed Silver Shark	<i>Leptobarbus hoeveni</i>	2
Driftwood Catfish		2
Two-Spot Catfish		3
Freshwater Stingray	<i>Potamotrygon species</i>	1
Doradidae		
Talking Catfish	<i>Doras hancocki</i>	1
Spotted Talking Catfish	<i>Doras pectinifrons</i>	2
Striped Talking Catfish	<i>Doras species</i>	1
TROPICAL HOUSE		
Bream	<i>Abramis brama</i>	1
Hi-goï Carp		9
Mirror Carp	<i>Cyprinus carpio</i>	16
Goldfish	<i>Carrassius autatus</i>	60
Golden Orfe	<i>Idus idus</i>	16

The number of specimens in the Collection at 31st December, 1979 was as follows:—

	Species	Specimens
Mammals	122	684
Birds	207	918
Reptiles and Amphibians	71	203
Fish	175	1,860

THE MEMBERSHIP OF
THE NORTH OF ENGLAND ZOOLOGICAL SOCIETY
AS AT 31st DECEMBER 1979

PATRONS	147
HONORARY MEMBERS	8
ANNUAL MEMBERS	386
	—
	541
	—

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

	1978	1979
VISITORS TO THE GARDENS	935,891	880,763
VISITORS TO THE AQUARIUM	213,520	220,523
VISITORS TO THE TROPICAL HOUSE	274,926	312,491
 DIRECT EXPENDITURE	 1978	 1979
	£	£
Animal Welfare	308,186	323,613
Gardens	82,854	88,072
Maintenance of Buildings and Grounds including costs and repairs of Vehicles and Boats	110,500	114,129

The following table shows the number of visitors to the Gardens and Aquarium during the last five years -

Year	Visitors to the Gardens	Visitors to the Aquarium	Visitors to the Tropical House	Direct Expenditure
1975	208,521	17,000	27,821	1,000
1976	208,521	17,000	27,821	1,000
1977	208,521	17,000	27,821	1,000
1978	208,521	17,000	27,821	1,000
1979	208,521	17,000	27,821	1,000

The following table shows the number of visitors to the Gardens and Aquarium during the last five years -

Year	Visitors to the Gardens	Visitors to the Aquarium	Visitors to the Tropical House	Direct Expenditure
1975	208,521	17,000	27,821	1,000
1976	208,521	17,000	27,821	1,000
1977	208,521	17,000	27,821	1,000
1978	208,521	17,000	27,821	1,000
1979	208,521	17,000	27,821	1,000