

THE  
NORTH OF ENGLAND  
ZOOLOGICAL SOCIETY  
CHESTER

**Report of the Council**  
**and**  
**Statement of Accounts**  
**1976**

**NOTICE OF  
THE 43rd ANNUAL GENERAL MEETING  
OF  
THE NORTH OF ENGLAND ZOOLOGICAL SOCIETY**  
To be held on Saturday, 28th May, 1977 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) The appointment of Scrutineers and the opening of the Ballot for the election of members of the Council.
- (g) Receiving the Report of the Scrutineers on the Result of the Ballot.

**MEMBERS OF THE COUNCIL — 1976**

PROFESSOR J. O. L. KING, Ph.D., M.V.Sc., B.Sc. (Agric.), F.R.C.V.S.,  
F.I.Biol. (Chairman)

HER GRACE SALLY, DUCHESS OF WESTMINSTER

F. MOSFORD

H. F. PARKER

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.

A. K. McGHIE, 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

**DIRECTOR-SECRETARY**

G. S. MOTTERSHEAD, O.B.E., M.Sc.

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.

## BALANCE SHEET AS AT 31st DECEMBER, 1976

	1976		1975	
	£	£	£	£
<b>FIXED ASSETS</b>				
<b>FREEHOLD PROPERTY</b>				
Balance as per Schedule annexed .....	306,639		306,656	
<b>SPECIAL BUILDINGS, ENCLOSURES AND EQUIPMENT</b>				
Balance as per Schedule annexed .....	224,105		246,001	
<b>STOCK OF ANIMALS, REPTILES, BIRDS, ETC.</b>				
Balance as per Schedule annexed .....	131,044		127,963	
(Market Valuation £335,008)				
<b>TOTAL FIXED ASSETS</b> .....		661,788		680,620
<b>CURRENT ASSETS</b>				
Stocks of Feeding Stuffs, Goods for resale and Fuel at cost .....	29,752		19,991	
Stock of Farm Livestock, Produce and Seeds at cost .....	8,441		6,431	
Debtors and Prepayments .....	20,866		18,438	
Loans — Long Term                     200,000				
— Short Term                         100,000				
Balance at Bank .....	20,582		5,244	
Cash in Hand .....	1,938		2,245	
<b>TOTAL CURRENT ASSETS</b> .....	381,579		332,349	
<b>Less:</b>				
<b>CURRENT LIABILITIES</b>				
Sundry Creditors .....	23,255		21,347	
		358,324		311,002
<b>NET ASSETS</b>		£1,020,112		£991,622
<b>Financed by:</b>				
<b>LEGACY ACCOUNT</b> as at 31/12/75 .....		19,517		19,517
<b>CAPITAL RESERVE ACCOUNT</b> as at 31/12/75		32,633		32,633
<b>INCOME AND EXPENDITURE ACCOUNT — Accumulated Surplus</b>				
Balance as at 31/12/75 .....	939,472		941,307	
<b>Add:</b> Net Surplus for year (1975 Deficit)	28,490		(1,835)	
		967,962		939,472
<b>TOTAL CAPITAL AND RESERVES</b> .....		£1,020,112		£991,622

NOTE Capital commitments not provided for in these accounts total £6,000 (1975 NIL).

J. O. L. KING, *Chairman*  
G. S. MOTTERSHEAD, *Director/Secretary*

### 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 a true and fair view of the state of the Society's affairs at the 31st December 1976 and of the surplus 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  
7th March, 1977

**AFFORD, BOND AND CO.,**  
**Chartered Accountants,**  
**Nantwich.**

**SCHEDULE ANNEXED TO BALANCE SHEET  
AT 31st DECEMBER, 1976**

	£
<b>FREEHOLD PROPERTY</b>	
Balance at beginning of year at cost .....	306,656
Less Reduction in legal costs .....	17
	<hr/>
<b>TOTAL AS SHOWN IN BALANCE SHEET</b>	<b>£306,639</b>
	<hr/> <hr/>
<b>SPECIAL BUILDINGS, ENCLOSURES AND EQUIPMENT</b>	
Balance at beginning of year at cost .....	703,314
Balance at beginning of year at valuation .....	17,460
Additions during year — cost .....	4,972
	<hr/>
	725,746
	<hr/>
Less Depreciation at beginning of year .....	474,773
	<hr/>
Depreciation provided during year .....	26,868
	<hr/>
	501,641
	<hr/>
<b>TOTAL AS SHOWN IN BALANCE SHEET</b>	<b>£224,105</b>
	<hr/> <hr/>
<b>ANIMALS, REPTILES, BIRDS, ETC.</b>	
Balance at beginning of year at cost .....	127,963
Additions during year — cost .....	6,982
	<hr/>
	134,945
	<hr/>
• Sales during year .....	3,901
	<hr/>
<b>TOTAL AS SHOWN IN BALANCE SHEET</b>	<b>£131,044</b>
	<hr/> <hr/>

**INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR  
ENDED 31st DECEMBER, 1976**

	1976		1975	
	£	£	£	£
<b>TURNOVER</b>				
Cash Receipts for Goods and Services .....		919,551		821,708
		<u>          </u>		<u>          </u>
 <b>SURPLUS FOR THE YEAR (Deficit 1975)</b>		15,167		(14,738)
before charging —				
Auditors' Remuneration .....		750		650
Depreciation of Fixed Assets .....		26,868		29,431
		<u>          </u>		<u>          </u>
		27,618		30,081
		<u>          </u>		<u>          </u>
<b>DEFICIT</b>		(12,451)		(44,819)
and before crediting				
Rents from Houses and Farms .....		4,608		—
Investment Income Received (Gross) .....		34,615		40,630
Profit on Sale of Equipment — Net .....		—		737
Members' Subscriptions and Entrance Fees		1,636		1,553
Donations .....		82		64
		<u>          </u>		<u>          </u>
		40,941		42,984
		<u>          </u>		<u>          </u>
<b>SURPLUS FOR THE YEAR (Deficit 1975)</b>		28,490		(1,835)
<b>Add:</b> Balance brought forward from				
last year .....		939,472		941,307
		<u>          </u>		<u>          </u>
 <b>BALANCE CARRIED FORWARD</b>				
<b>TO NEXT YEAR</b> .....		£967,962		£939,472
		<u>          </u>		<u>          </u>

## STATEMENT OF SOURCE AND APPLICATION OF FUNDS

	Year ended 31st December	
	1976	1975
<b>SOURCE OF FUNDS</b>		
Surplus for the year .....	28,490	(1,835)
Depreciation of Fixed Assets .....	26,868	28,694
Overprovision Fixed Assets (legal costs) .....	17	—
Sale of Fixed Assets .....	3,901	2,316
Legacy .....	—	50
	<u>£59,276</u>	<u>£29,225</u>
	<u>=====</u>	<u>=====</u>
 <b>APPLICATION OF FUNDS</b>		
Purchase of Fixed Assets .....	11,954	100,484
Increase in net Current Assets (see below) .....	47,322	(71,259)
	<u>£59,276</u>	<u>£29,225</u>
	<u>=====</u>	<u>=====</u>
 <b>INCREASE IN NET CURRENT ASSETS</b>		
Increased Stocks .....	11,771	(4,834)
Increased Debtors .....	2,428	(10,994)
Increased Loans .....	20,000	(55,000)
Increased Bank balance .....	15,338	2,770
Decreased Cash in hand .....	(307)	874
Increased Creditors .....	(1,908)	(4,075)
	<u>£47,322</u>	<u>£(71,259)</u>
	<u>=====</u>	<u>=====</u>

## ANNUAL REPORT 1976

The Council of The North of England Zoological Society has pleasure in presenting its Annual Report for 1976.

So as to comply with the provisions of 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 this activity during the year and that the state of the Society's affairs at 31st December, 1976 was satisfactory.

The total receipts for the year are shown on 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 1976 was 201 and their aggregate gross remuneration amounted to £437,180.

It was with great regret that the Society heard of the death of Miss Geraldine Russell Allen in July. Miss Russell Allen was a Founder Member of The North of England Zoological Society and took a great personal interest in its welfare. She held the position of Chairman for some years.

We are happy to report that in 1976 attendances showed a slight increase on the previous year. There was a considerable increase in visitors to the Tropical House and Aquarium. It was thought advisable that no major developments should be commenced before outstanding works had been completed. Several new enclosures had been made in the area of Green End Lane and these were now well stocked.

The Society was offered by The Associated Octel Company the gift of an X-Ray Unit, which was very much appreciated, but a special building had to be erected to accommodate it. This equipment should prove a great asset to the Zoo. An extra room had been provided in the building, which will be used for educational purposes as and when required. This aspect of the Zoo is now increasing considerably and an Educational Assistant has been engaged to deal with the ever increasing number of educational visits.

A small Tortoise House was erected in the Camel Enclosure to accommodate some of the tortoises which were too large for the Reptile House.

An Insect Collection was gradually being introduced into the Tropical House, which it was hoped would add interest for the visitor, but it was mainly on the educational side that this would be appreciated.

Unfortunately the Rainbow Cafe and adjoining Souvenir Shop were destroyed by gales in the early Spring. A Snack Bar and a new Souvenir Shop had been erected in their place.

The drought during the Summer had its effect on the Zoo but the situation was not so bad as in other parts of the country.

The past year had been very successful with the breeding of mammals and birds and it was hoped this success will be continued in 1977.

A collection of Kangaroos and Wallabies was received from Perth, Australia, which had to be accommodated in the Quarantine premises in Birkenhead. Eventually these animals would be transferred to new accommodation near the Stores; the building was formerly used by the Malayan Bears, which died from old age, and the house would be completely remodelled.

In exchange for the Kangaroos and Wallabies, a pair of the Society's Chimpanzees, 'Jamie' and 'Lollipop', were sent to Perth, where they had settled down very well.

Interesting new arrivals in the livestock were two Musk Oxen and a pair of Przewalski's Horses; these are exhibited in the paddocks off Green End Lane.

Six Members Meetings were held in the Lecture Hall, all of which were well attended. A Buffet Luncheon was held after the April Meeting and this seemed to be very popular with members. The number of Patrons increased by 10 but the Annual Membership dropped from 307 to 304.

The Director and Miss Howard attended the British Zoo Directors Conference in Edinburgh, an Educational Symposium in Paignton and the official opening of the Educational Centre at Edinburgh Zoo by the Duke of Edinburgh. The Secretary and Chairman attended the 150th Celebration Dinner at London Zoo.

Mr. P. W. Gallup, the Head Gardener for nearly 24 years, retired early in the year. During his period of office Mr. Gallup made a marked impression on the horticultural side of the Zoo, and the Gardens are now well-known throughout the World. In appreciation of his services Mr. Gallup was presented with a Scroll and a Silver Salver, and made a Life Member of The North of England Zoological Society, after the Annual General Meeting which was held on 29th May 1976. We wish him every success in his retirement. Members may be interested to learn that Mr. Gallup has been made an Associate of Honour of the Royal Horticultural Society. His place has been taken by Mr. W. Worth who, for several years, was Mr. Gallup's Assistant.

Mr. W. H. Timmis, who is now Curator of Birds and Apes, has been granted leave of absence during 1978 in order that he can participate in the Wallace Expedition to Amazonia.

In 1976 there were two further cases of doping; unfortunately, up to now the culprit has not been caught.

We are indebted to one of our members, Miss D. Walker, for the gift of two paintings; these have been hung in the Members Room.

Unfortunately it will be necessary to increase admission charges for 1977, as the cost of running the Zoo has increased dramatically.

The Council would like to take this opportunity of thanking all members of the staff for their loyal support during the year, and also the many members of the public who have made donations to the Society.

## MAMMALS BRED DURING 1976

Species	Scientific Name	No.		Sex	
		Born	Reared	M	F
Alpaca	<i>Lama pacos</i>	3	2	1	1
Bear Hybrid	<i>Ursus arctos</i> spp.	3	2	2	0
Bison	<i>Bos bison</i>	1	1	0	1
Blackbuck	<i>Antilope cervicapra</i>	2	2	2	0
Blesbok	<i>Damaliscus dorcas</i>	1	—		
Cattle Highland	<i>Bos taurus</i>	1	—		
Chimpanzee	<i>Pan troglodytes</i>	3	2	2	0
Chinchilla	<i>Chinchilla laniger</i>	1	1	1	0
Deer Fallow	<i>Dama dama</i>	7	6		
Deer Pere David's	<i>Elaphurus davidianus</i>	5	5	2	3
Deer Formosan Sika	<i>Cervus nippon taiouanus</i>	2	2	0	2
Eland	<i>Taurotragus oryx</i>	1	1	0	1
Gazelle Arabian	<i>Gazella arabica</i>	7	4	2	2
Hippopotamus Common	<i>Hippopotamus amphibius</i>	1	1	1	0
Jaguar	<i>Panthera onca</i>	1	—		
Kinkajou	<i>Potos flavus</i>	1	1		
Kudu Greater	<i>Tragelaphus strepsiceros</i>	1	—		
Lechwe Red	<i>Kobus leche</i>	5	2		
Lemur Ring-Tailed	<i>Lemur catta</i>	2	2	1	1
Leopard, Black	<i>Panthera pardus</i>	1	1	1	0
Leopard, Common	<i>Panthera pardus</i>	6	3	2	1
Llama	<i>Lama glama</i>	1	1	1	0
Monkey Baboon	<i>Papio hamadryas</i>				
Hamadryas		4	3	2	1
Monkey Barbary	<i>Macaca sylvana</i>				
Ape		1	—		
Monkey Capuchin	<i>Cebus albifrons</i>	1	1	1	0
Monkey Moloney's	<i>Cercopithecus albogularis</i>				
Guenon	<i>moloneyi</i>	1	1	0	1
Monkey Sooty	<i>Cercocebus torquatus</i>				
Mangabey	<i>atys</i>	1	1	0	1
Nilgai	<i>Boselaphus tragocamelus</i>	3	2	2	0
Onager	<i>Equus hemionus onager</i>	1	1	0	1
Orang-utan	<i>Pongo pygmaeus</i>	1	1	1	0
Prairie Marmot	<i>Cynomys ludovicianus</i>	3	3		
Puma	<i>Felis concolor</i>	5	5	3	2
Sheep Soay	<i>Ovis aries</i>	7	6		
Tiger Bengal	<i>Panthera tigris</i>	2	2	1	1
Wallaby Bennett's	<i>Wallabia rufogrisea</i>	20	15		
Wapiti	<i>Cervus canadensis</i>	4	4	3	1
Zebra Common	<i>Equus burchelli granti</i>	2	1	0	1
Zebra Grevy's	<i>Equus grevyi</i>	1	1	0	1

## BIRDS BRED DURING 1976

Species	Scientific Name	No. Reared
Avadavat Red	<i>Amandava amandava</i>	7
Bulbul Black	<i>Hypsipites madagascariensis</i>	1
Bulbul Red-Whiskered	<i>Pycnonotus jocosus peguensis</i>	1
Bulbul White-Cheeked	<i>Pycnonotus leucogenys</i>	1
Bulbul Yellow-browed	<i>Hypsipites indicus</i>	1
Cockatiels	<i>Nymphicus hollandicus</i>	89
Cockatoo Lesser	<i>Kakatoe sulphurea</i>	
Sulphur-crested		1
Crimson Bellied Conures	<i>Pyrrhura rhodogaster</i>	3
Conure Lesser Patagonian	<i>Cyanoliseus patagonus</i>	7
Conure Nanday	<i>Nandayus nanday</i>	7
Coot	<i>Fulica atra</i>	2
Cordon Bleu	<i>Uraeginthus bengalus</i>	2
Doves Barbary	<i>Streptopelia risoria</i>	4
Doves Diamond	<i>Geopelia cuneata</i>	2
Doves Laughing	<i>Stigmatopelia senegalensis</i>	3
Doves Chinese Turtle	<i>Streptopelia chinensis chinensis</i>	2
Duck Gadwell	<i>Anas strepera strepera</i>	1
Duck Hybrid		2
Duck Bahama Pintail	<i>Anas bahamensis</i>	1
Duck Pochard	<i>Aythya ferina</i>	2
Duck Wigeon	<i>Anas penelope</i>	2
Emu	<i>Dromaius novae-hollandiae</i>	1
Finch Bengalese	<i>Lonchura striata</i>	8
Finch Cut-Throat	<i>Amadina fasciata</i>	6
Finch Green	<i>Chloris chloris</i>	5
Finch Green Singing	<i>Serinus mozambicus</i>	2
Finch Saffron	<i>Sicalis falveola</i>	1
Finch Zebra	<i>Taeniopygia castanotis</i>	34
Geese Bar-headed	<i>Anser indicus</i>	4
Goose Barnacle	<i>Branta leucopsis</i>	1
Geese Canada	<i>Branta canadensis</i>	6
Guinea Fowl Common	<i>Numida meleagris</i>	10
Heron Night	<i>Nycticorax nycticorax</i>	2
Ibis Sacred	<i>Threskiornis aethiopicus</i>	4
Ibis Straw-necked	<i>Carphibis spinicollis</i>	1
Jays Bushy-crested	<i>Cyanocorax melanocyanea</i>	3
Java Sparrows	<i>Padda oryzivora</i>	2
Jungle Fowl Red	<i>Gallus varius</i>	2
Kookaburra	<i>Dacelo gigas</i>	2
Laughing Thrush	<i>Garrulax chinensis</i>	
Black-throated		1
Lorikeet Green-naped	<i>Trichoglossus haematod</i> <i>micropteryx</i>	1
Lorikeet Ornate	<i>Trichoglossus ornatus</i>	2
Lorikeet Scaly-Breasted	<i>Trichoglossus chlorolepidotus</i>	2
Lovebird Fischer's	<i>Agapornis fischeri</i>	11

## BIRDS BRED DURING 1976 — Continued

Species	Scientific Name	No. Reared
Lovebird Peach-Faced	<i>Agapornis roseicollis</i>	15
Mynah Bank	<i>Acridotheres ginginianus</i>	1
Mynah Jungle	<i>Aethiopsar fuscus</i>	4
Nun Tri-Coloured	<i>Munia malacca</i>	2
Ostrich	<i>Struthio camelus</i>	2
Parrakeet Barraband	<i>Polytelis swainsoni</i>	2
Parrakeet Crimson-wing	<i>Aprosmictus erythropterus</i>	2
Parrakeet Derbyan	<i>Psittacula derbyana</i>	3
Parrakeet Quaker	<i>Miopsitta monachus</i>	10
Parrakeet Red-Rumped	<i>Psephotus haematonotus</i>	6
Parrot African Grey	<i>Psittacus erithacus</i>	4
Parrot Yellow-fronted Amazon	<i>Amazona ochrocephala</i>	1
Parrot Grand Eclectus	<i>Lorius roratus</i>	1
Parrotlet Guiana	<i>Forpus passerinus</i>	14
Peacock Common	<i>Pavo cristatus</i>	6
Pheasant Common	<i>Phasianus colchicus</i>	3
Rail Slaty-breasted	<i>Rallus striatus</i>	3
Rail Weka	<i>Gallirallus australis greyi</i>	4
Rhea	<i>Rhea americana</i>	1
Sibia Black-headed	<i>Leioptila capistrata</i>	2
Silverbills	<i>Euodice malabarica cantans</i>	17
Spicebirds	<i>Munia punctulata</i>	3
Starling Blue-eared Glossy	<i>Lamprotornis chalybaeus</i>	1
Starling Jerdon's	<i>Sturnus burmanicus</i>	6
Mute Swan	<i>Cygnus olor</i>	5
Waxbill Orange-cheeked	<i>Estrilda melpoda</i>	4
Waxbill Red-Eared	<i>Estrilda troglodytes</i>	2
Waxbill Sundervall's	<i>Estrilda rhodopya</i>	2
Weaver Little-masked	<i>Ploceus luteolus</i>	1
Weaver Napoleon	<i>Euplectes afra</i>	1
Weaver Red Bishop	<i>Euplectes orix</i>	2
Weaver Red-billed	<i>Qualea quelea</i>	2
Whydah Paradise	<i>Steganura paradisaea</i>	1

## REPTILES BRED DURING 1976

Species	Scientific Name	No. Reared
Boa Constrictor	<i>Constrictor constrictor</i>	22
Gecko, Leopard	<i>Eublepharis macularis</i>	18
Hybrid Snake	<i>Elaphe obsoleta obsoleta</i> x <i>Elaphe obsoleta quadrivittata</i>	15
Python, African	<i>Python sebae</i>	2
Rattlesnake Pigmy	<i>Sistrurus m. miliarius</i>	3
Skink Solomon Island	<i>Corucia zebrata</i>	2

The number of specimens in the Collection at 31st December, 1976 was as follows:—

	<b>Species</b>	<b>Specimens</b>
Mammals .....	131	834
Birds .....	283	2,155
Reptiles and Amphibians .....	80	206
Fish .....	143	2,400

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THE MEMBERSHIP OF  
THE NORTH OF ENGLAND ZOOLOGICAL SOCIETY  
AS AT 31st DECEMBER, 1976

PATRONS .....	82
LIFE MEMBERS .....	5
HONORARY MEMBERS .....	6
CORRESPONDING MEMBERS .....	1
ANNUAL MEMBERS .....	304

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

	<b>1975</b>	<b>1976</b>
VISITORS TO THE GARDENS .....	921,045	932,258
VISITORS TO THE AQUARIUM .....	219,455	246,450
VISITORS TO THE TROPICAL HOUSE .....	225,349	259,103

**Veterinary Laboratory**

**Annual Report - 1976**

*NORTH OF ENGLAND ZOOLOGICAL SOCIETY,  
ZOOLOGICAL GARDENS,  
UPTON-BY-CHESTER,  
CHESHIRE.*

## 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. (Chairman)  
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 Mammals and Birds)  
G. S. Mottershead, O.B.E., M.Sc. (Director-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 by D. G. Lyon and D. C. Dinning from clinical case records, laboratory findings and autopsy reports for 1976. 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, Dept. Veterinary Pathology, University of Liverpool, and Dr. H. B. Marsden, Royal Manchester Children's Hospital, Pendlebury, Lancs.

**Bacteriology:** Dr. J. R. Walton, Dept. Veterinary Preventive Medicine, University of Liverpool, and Dr. P. M. Poole & Mr. D. Brecon, Public Health Laboratories, Chester.

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Dr. J. R. Baker, Dept. Veterinary Pathology, University of Liverpool, (Birds' heads and mammal skulls).

Miss B. A. Noddle, Dept. of Anatomy, University College of S. Wales and Monmouthshire, Cardiff. (Ruminant carcasses).

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The Society wishes to gratefully acknowledge the generous gift of a radiography unit, which was kindly donated by the Associated Octel Co.

## PATHOLOGY

During the year the Society's collection consisted of 995 mammals, 2,625 birds and 311 reptiles. One hundred and twelve mammal, 385 bird and 62 reptile births were recorded for the year.

During the period 1st January to 31st December inclusive 260 post-mortem examinations were performed. As can be seen from Table 1, this figure has been subdivided into three groups in three classes. 'Unacclimatised' specimens are those which have been in the collection for less than three months; 'newborn' refers to those mammals born in the collection and which died before attaining the age of 14 days.

**TABLE 1**  
POST MORTEM EXAMINATIONS CARRIED OUT DURING 1976

	Acclimatised	Unacclimatised	Newborn	Total
MAMMALIA	111	6	11	128
AVES	87	9	0	96
REPTILIA/ AMPHIBIA	33	3	0	36
TOTALS	231	18	11	260

The main object of carrying out post-mortem examinations is to ascertain the cause of death, to enable suitable action to be taken to prevent further losses.

Tables (2), (3) and (4) summarise the main findings at post-mortem examination. Each class is discussed separately under the Main Groups listed in the Tables 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. Bennetts Wallaby (*Protemnodon rufogrisea*) 6.9 denotes a residence of six years and nine months.

Several carcasses were submitted to the Liverpool University Veterinary Field Station for post-mortem examination. The assistance of Dr. J. R. Baker of that department is gratefully acknowledged.

**MAMMALIA (TABLE 2)**

MAIN GROUPS OF CONDITIONS ENCOUNTERED	ACCLIMATISED		UNACCLIMATISED		NEWBORN		TOTALS	
	Number Affected	% Affected	Number Affected	% Affected	Number Affected	% Affected	Total	% of Total Deaths
BACTERIAL	32	28.82	3	50.00	4	36.36	39	30.46
VIRAL	1	0.90	0		0		1	0.78
FUNGAL	0		0		0		0	
HELMINTH	2	1.80	0		0		2	1.56
PROTOZOA	0		0		0		0	
ARTHROPOD	0		0		0		0	
INJURY/ACCIDENT	31	27.92	1	16.66	2	18.18	34	26.56
METABOLIC/ NUTRITIONAL	14	12.61	0		2	18.18	16	12.50
DEBILITY/SENILITY	12	10.81	1	16.66	0		13	10.15
NEOPLASIA	6	5.40	0		0		6	4.68
OTHERS*	13	11.71	1	16.66	3	27.27	17	13.28
TOTALS	111		6		11		128	

\*Includes carcasses where no post-mortem examination was carried out, due to decomposition

**AVES (TABLE 3)**

MAIN GROUPS OF CONDITIONS ENCOUNTERED	ACCLIMATISED		UNACCLIMATISED		TOTALS	
	Number Affected	% Affected	Number Affected	% Affected	Total	% of Total Deaths
BACTERIAL	31	35.63	2	22.22	33	34.37
VIRAL	0		0		0	
FUNGAL	0		0		0	
HELMINTH	5	5.74	0		5	5.20
PROTOZOA	0		1	11.11	1	1.04
ARTHROPOD	0		0		0	
INJURY/ACCIDENT	27	31.03	4	44.44	31	32.29
METABOLIC/ NUTRITIONAL	11	12.64	1	11.11	12	12.50
DEBILITY/SENILITY	3	3.44	0		3	3.12
NEOPLASIA	0		0		0	
OTHERS*	10	11.49	1	11.11	11	11.45
TOTALS	87		9		96	

\*Includes carcasses where no post-mortem examination was carried out, due to decomposition.

**REPTILIA (TABLE 4)**

MAIN GROUPS OF CONDITIONS ENCOUNTERED	ACCLIMATISED		UNACCLIMATISED		TOTALS	
	Number Affected	% Affected	Number Affected	% Affected	Total	% of Total Deaths
BACTERIAL	7	19.44	0		7	17.94
VIRAL	0		0		0	
FUNGAL	0		0		0	
HELMINTH	0		0		0	
PROTOZOA	0		0		0	
ARHROPOD	0		0		0	
INJURY/ACCIDENT	2	5.55	0		2	5.12
METABOLIC/ NUTRITIONAL	14	38.88	0		14	35.89
DEBILITY/SENILITY	2	5.55	0		2	5.12
NEOPLASIA	1	2.77	0		1	2.56
OTHERS*	10	27.77	3	100.00	13	33.33
TOTALS	36		3		39	

\*Includes carcasses where no post-mortem examination was carried out, due to decomposition.

## MAMMALIA (TABLE 2)

From a total of 128 carcasses submitted for post-mortem examination, 23 had been euthanised for humane reasons.

**BACTERIAL:** Tuberculosis (*Mycobacterium tuberculosis*) was diagnosed in two Bennetts Wallabies (*Protemnodon rufogrisea*) 4.0, 2.0, a Bactrian Camel (*Camelus bactrianus*) 15.8 and a Viscacha (*Lagostomus maximus*) 4.6.

Lesions associated with erosive mandibular osteitis were seen in eight adult Bennetts Wallabies, with secondary meningeal involvement in three cases.

Salmonellosis (*Salmonella typhimurium*), phage type 1, var. 5 D.T. 44) was the cause of death of a juvenile Grevy Zebra (*Equus grevyi*) 1.0, which died after an illness of 24 hours duration.

Johne's disease (*Mycobacterium johnei*) was diagnosed in an Ankole (*Bos taurus*) 1.4, following positive bacteriological culture of faecal material; the animal was humanely destroyed. *Corynebacterium* sp. was isolated from widespread abscess formation in a Red Lechwe (*Kobus leche*) 8.3. A sub-adult Chimpanzee (*Pan troglodytes*) 6.1 died following a short illness characterised by acute respiratory distress. An *Haemophilus* sp. (X-factor requirement) was isolated from a severe purulent broncho-pneumonia.

**VIRAL:** One case was diagnosed during 1976, viz. Feline panleucopenia in an African Civet (*Civettictis civetta*) 3.7.

**PARASITIC (HELMINTH):** Despite routine and therapeutic anthelmintic treatment, two juvenile Common Zebras (*Equus burchelli granti*) 1.0, 2.3 died as a result of impactions of the small intestines with dead *Parascaris equorum* nematodes.

**PARASITIC (PROTOZOAL):** A severe colitis caused by *Balantidium coli* was present in a Chimpanzee 6.1. *Sarcocystis* sp. was diagnosed in heart muscle from a Greater Kudu (*Tragelaphus strepsiceros*) 6.5.

**INJURY/ACCIDENT:** Herd aggression resulted in fatal injuries in the following specimens:- a Reindeer (*Rangifer tarandus*) 1.3, a Blackbuck (*Antilope cervicapra*) 2.9, a Blesbok (*Damaliscus dorcas phillipsi*) 4.4, a Red Kangaroo (*Megaleia rufa*) 3.7 and two Red Lechwe (*Kobus Leche*) 12.9, 9.11. An adult Nilgai (*Boselaphus tragocamelus*) 8.0 died as a result of a horn penetration into the thoracic cavity. At post-mortem examination, approximately 150 pieces of wire and a variety of metallic objects (including coins) were found in the reticulum. The pieces of wire were identical, each length being 3.17 cm. Careful examination of the animal's enclosure failed to reveal any source of material and it was postulated that, due to the amount of foreign bodies present in this animal, these had been maliciously administered.

Acute barbiturate poisoning was diagnosed in a Black Panther (*Panthera pardus*) 9.7 and an African Civet (*Civettictis civetta*) 13.8 — See Clinical Medicine Section.

**METABOLIC/NUTRITIONAL:** Muscular dystrophy was diagnosed in a juvenile Black Rhinoceros (*Diceros bicornis*) 2.4. Pyelonephritis was considered to be the cause of death of two aged felids, a Black Panther, 10.9 and a Jungle Cat (*Felis chaus*) 11.8; both animals were adult on arrival in the collection.

Advanced arteriosclerosis caused the death of a Cherry-crowned Mangabey (*Cercocebus torquatus*) 10.0. Arteriosclerotic lesions were also recorded in a Red Lechwe, 8.3, a Bison (*Bos bison*) 17.0, a Pere David's Deer (*Elaphurus davidianus*) 15.0 and a Crab-eating Macaque (*Macaca irus*) 13.2.

A young Orang-Utan (*Pongo pygmaeus*) 2.2 was presented for hand-rearing but died within a few days. At post-mortem examination the animal was found to have a severe osteomalacia, with moderate distortion of bone shapes and pathological fractures.

NEOPLASIA: Lymphosarcoma was diagnosed in a Diana Monkey (*Cercopithecus diana*) 9.6. Widespread tumours found in a De Brazza Monkey (*C. neglectus*) 7.4 were anaplastic and probably of lymphoid origin. A papillary adenoma of the gall bladder was diagnosed in a Malayan Sunbear (*Helarctos malayanus*) 23.1. Neoplastic disease was recorded in the following specimens:— an Alpaca (*Lama pacos*) 5.1, a Palm Civet (*Paradoxurus hermaphroditus*) 10.1 and an American Badger (*Taxidea taxus*) 11.10.

#### AVES (TABLE 3)

BACTERIAL: Salmonellosis (*S. typhimurium*) was diagnosed in the following specimens:— two Giant Coots (*Fulica gigantea*) 1.7, 2.4, three Scaly-breasted Lorikeets (*Trichoglossus chlorolepidotus*) 0.7, 0.9, 3.0, a Green-naped Lorikeet (*T. haematod micropteryx*) 1.0, a Violet-necked Lorikeet (*Eos squamata*) 1.0, a Pesquet's Parrot (*Psitttrichas fulgidus*) 2.0, a Grand Electus Parrot (*Lorius roratus*) 1.7 and two Cockatiels (*Nymphicus hollandicus*) 1.0, 1.0.

Avian tuberculosis (*M. tuberculosis*) was less evident than in previous years; three cases were diagnosed during 1976. viz. an Emu (*Dromaius novae-hollandiae*) 3.0, a Mandarin Duck (*Aix galericulata*) 2.3 and a Cheer Pheasant (*Catreus wallichi*) 0.10.

Septicaemia, due to *Escherichia coli*, was diagnosed in two Cockatiels, 2.0, 2.0, a Red-billed Toucan (*Rhamphastos tucanus*) 0.10 and a Perfect Lorikeet (*T. euteles*) 0.7.

Other bacterial diseases encountered during 1976 included *Yersinia enterocolitica* in two Pesquet's Parrots 0.11, 0.11, *Erysipelas indiosa* in a Bob-white Quail (*Colinus virginianus*) 5.3, and Staphylococcal arthritis in a Crowned Pigeon (*Goura victoriaha*) 1.11 and a Painted Stork (*Ibis leucocephalus*) 0.7.

PARASITIC (HELMINTH): Parasitic tracheitis (*Syngamus trachea*) was diagnosed in a Mocking-bird (*Mimus gilvus*) 1.8, a Bushy-crested Jay (*Cissilopha melanocyanea*) 0.5, a Royal Starling (*Cosmopsarus regius*) 2.4 and a Chestnut-bellied Starling (*Spreo pulcher*) 12.4. Capillariasis was considered to be the cause of death of a Toco Toucan (*R. toco*) 1.10, and a Citron-throated Toucan (*R. citreohaemus*) 2.2

PARASITIC (PROTOZOA): Coccidiosis was responsible for the deaths of a Barraband Parrakeet (*Polytelis swainsoni*) 0.3 and a Rufous Tree Pie (*Dendrocitta vagabunda*) 5.0.

INJURIES/ACCIDENTS: Losses, due to fatal injuries received from, or direct killings by, predatory mammals were as follows:— a James' Flamingo (*Phoenicoparrus jamesi*) 5.0, two Canada Geese (*Branta canadensis*) 0.3, 0.3, a Barnacle Goose (*B. leucopsis*) 0.3 and two Bar-headed Geese (*Anser indicus*) 0.6, 8.2.

Losses due to interspecific aggression:- an Amazon Parrot (*Amazona sp.*) 2.6, a Mealy Amazon Parrot (*A. farinosa*) 4.4, a Red and Yellow Macaw (*Ara macao*) 1.7, a Greater-sulphur-crested Cockatoo (*Kakatoe galerita*) 1.1, a Grand Eclectus Parrot, 10.8, a Quaker Parrakeet (*Myiopsitta monachus*) 1.1, a Painted Stork 3.9, a White Pelican (*Pelecanus onocrotalus*) 2.0, a Jungle Babbler (*Dumetia hyperythra*) 4.2, and a Ruby-throated Bulbul (*Pycnonotus melanicterus gularis*) 0.2.

**METABOLIC/NUTRITIONAL:** Lead poisoning was diagnosed in a Yellow-tailed Black Cockatoo (*Calyptorhynchus funereus*) 7.7. Toxicological analysis of intestinal content showed a level of 38 p.p.m.

Visceral gout was established as the cause of death of a Derbyan Parrakeet (*Psittacula derbyana*) 7.1. Arteriosclerosis was diagnosed in a Great Indian Hornbill (*Dichoceros bicornis*) 4.10 and fatty degeneration of the liver was recorded in a Black-headed Nun (*Munia malacca*) 0.10, a Scaly-breasted Lorikeet 0.7 and two Red Birds of Paradise (*Paradisaea rubra*) 1.3, 3.5.

A central nervous system syndrome of unknown aetiology caused the deaths of four Rockhopper Penguins (*Eudyptes cristatus*), ranging in age from 3-9 years. Microscopically, degeneration of the white matter of the cerebellum and medulla was evident.

#### **REPTILIA AND AMPHIBIA (TABLE 4)**

**BACTERIAL:** Septicaemia, caused by *Proteus sp.* was the cause of death of a Solomon Island Skink (*Corucia zebrata*) 3.2, and a Rhinoceros Viper (*Bitis nasicornis*) 3.9. In the latter case, the origin of the septicaemia was a perforated gastric ulcer. A necrotic diphtheritic enteritis, caused by an unidentified gram negative bacterium was diagnosed in a Puff Adder (*Bitis arietans*) 0.9. Widespread liver abscesses and an associated myocarditis, caused by *Arizona sp.*, were responsible for the death of a Spectacled Cobra (*Naja Naja*) 2.3.

**METABOLIC/NUTRITIONAL:** As can be seen from Table 4, 38.8% of reptile deaths were included in this category. Three cases of renal gout were seen in a Sailfin Lizard 0.8, in a Basilisk Lizard (*Basiliscus basiliscus*) 3.3, and in a Freckled Monitor (*Varanus tristis orientalis*) 3.6. Osteodystrophy was diagnosed in the following specimens:- a Sailfin Lizard, 0.8, an Eastern Water Dragon (*Physignathus lesuerii lesuerii*) 3.9, a New Guinea Skink (*Tiliqua gigas*) 1.0, a Giant Tortoise (*Testudo gigantea*) 3.1 and a Common Iguana (*Iguana iguana*) 0.4. In the latter case, it had been necessary to euthanise the specimen, due to the severity of its condition. The Iguana had severe arteriosclerosis, with medial calcification and formation of myxomatous plaques on the intima of the aorta. Extensive fibrosis of the kidneys was also present.

#### **MEDICINE AND SURGERY**

During 1976 the Veterinary Officer dealt with 242 clinical cases, comprising 214 mammalian, 19 avian and 9 reptilian. Follow-up treatment brought the total number of attendances to 614. This figure does not include advice given regarding husbandry, minor problems, anthelmintic treatment or visits to the Society's Quarantine Station, where (during the year) 12 marsupials, 2 ungulates and 8 psittacines were detained for varying periods.

It was necessary to immobilise and/or anaesthetise 42 specimens on 75 occasions (see Table 6). Twelve specimens were translocated from the Gardens to the Veterinary Surgeons' Hospital for examination, radiography and/or surgery.

In order to obtain an accurate diagnosis of the cause of lameness in a female Grevy Zebra it was necessary to utilise portable radiographic equipment, which was kindly loaned by the University of Liverpool, Department of Veterinary Clinical Studies, and the advice and assistance of Mr. P. A. Neal of that Department is gratefully acknowledged.

The Zebra exhibited a severe degree of lameness on its arrival from another Zoological collection. The animal was immobilised to facilitate clinical examination of the left foreleg. In the absence of findings to the contrary, a tentative diagnosis of a fractured pedalbone was made. Radiographic examination confirmed a longitudinal fracture of the os pedis. Treatment consisted of fitting surgical shoes (bar shoes, each with two pairs of quarter clips) to both forefeet. Within fourteen days of fitting the shoes, signs of lameness disappeared. It is interesting to note that the animal was not in any way disturbed by the presence of these shoes. The shoes have been on for approximately five months and it is expected that these will be removed between five and six months.

An adult female common Zebra sustained an injury to the left thigh which resulted in the formation of a large subcutaneous haematoma at this site. The animal was immobilised and approximately six litres of blood-stained serous fluid and clots were drained from the lesion. The wound was sutured with deep retention sutures in order to obliterate the subcutaneous dead space, and routine antibiotic cover and tetanus antitoxoid were given post-operatively. The animal made an uncomplicated recovery and all sutures were removed six weeks post-operatively. This animal was one of a pair which were subsequently exported to Australia and, prior to departure, were subject to a Mallein Test.

An eight month old Chimpanzee, 'Friday', was removed from its mother for hand-rearing. The Chimpanzee was placed in the Primate Nursery, together with a young Chimpanzee and a young Orang Utan. Two days later the animal suffered a spontaneous fracture of the left femur. Radiographic examination revealed a transverse midshaft fracture of the left femur. Initial repair of the fracture was carried out, using a stainless steel plate. The plate loosened after fourteen days, necessitating a further operation, when a stainless steel intramedullary pin was used. The pin remained in place for twenty-two days. At this time the pin loosened and was removed. Radiographs indicated that a good callus was forming; as the animal was using the leg satisfactorily no further methods of fixation were adopted. He was returned for hand-rearing to the Veterinary Surgeons' Hospital and, two months later, was returned to the Curator for further hand-rearing. To date, the animal is healthy and using the limb with no apparent ill-effect.

Other successful hand-rearings during the year included an Orang-Utan, two Chimpanzees, one Sooty Mangabey and one Common Leopard.

A twenty-two month old female Orang-Utan was removed from its mother due to a rapidly deteriorating physical condition, after having apparently failed to maintain normal body weight. Clinical signs indicated that the specimen was suffering from hyperthyroidism. Four days later the young Orang-Utan died from an acute respiratory infection, which had failed to respond to antibiotic therapy. At post-mortem examination radiographic examination of the carcass showed that a severe

osteomalacia, with moderate distortion of bone shapes and many pathological fractures were present. Analysis of the tibia gave the following results:-

Dry weight as % of wet weight	26%
Ash weight as % of wet weight	5%
Ash weight as % of dry weight	18%
Ca:Mg:P—	1:0.05:0.6

It is most probable that this condition was due to a relative, or absolute, deficiency of calcium.

A twenty-eight month old female Black Rhinoceros died after an eighteen day illness. This initially started due to lameness in the right foreleg, as a result of a subcutaneous abscess in the right scapular area. The animal became recumbent two days later and, despite intensive antibiotic, multivitamin and corticosteroid treatment, the animal remained recumbent and died sixteen days later, despite attempts to support her with specially manufactured slings and hoists. Post-mortem examination revealed that the animal was suffering from severe muscular dystrophy.

A severe abdominal wall ventral hernia was successfully repaired under Xylazine immobilisation in a female White-bearded Gnu. The wound was drained and cleaned on two further occasions and sutures were removed seven weeks post-operatively.

Large subcutaneous abdominal lipomas were successfully removed surgically from a Roseate Cockatoo and a Snowy Owl. The lesion in the Snowy Owl was further complicated by the presence of a large hernia, which was corrected at the same time.

Three further incidents of drug intoxication in Felidae occurred during 1976. During March, two Tigers were affected and the drug was identified as Hexobarbitone. The second incident occurred during December and the animals affected were two Black Panthers, a Common Leopard and a Tigress. Despite a three day period of intensive care, a Black Panther died.

Toxicological analysis of blood and urine taken on the first day showed levels of 3 mg. % and 29.6 mg. % barbiturates respectively. The remaining Black Panther and the Common Leopard were mildly affected and returned to normal within forty-eight hours. The Tigress remained comatose for six days, but intensive care therapy effected uncomplicated recovery.

Twelve days later an aged male African Civet Cat died, after exhibiting symptoms compatible with drug intoxication. Traces of barbiturate were found in urine obtained from this animal at post-mortem examination.

Further analysis of materials from the Black Panther and the Civet Cat indicated that the barbiturate involved was Pentobarbitone.

A twelve hours old Greater Kudu sustained a multiple fracture of the right metatarsus, as a result of a kick by an Ostrich in a shared enclosure.

The animal was removed to allow surgical repair of the fracture with screws and a plate. The animal was subsequently hand-reared successfully to two weeks of age. Unfortunately, it was realised from the onset that the distal end of the limb was ischaemic due to the severity of the injury and, despite high-level antibiotic cover during this two week period, the foot became gangrenous and this necessitated the animal's destruction.

**TABLE 6**  
SPECIMENS IMMOBILISED OR ANAESTHETISED DURING 1976

Species	Sex	Estimated Body Weight (kg)	Drug	Route	Dosage (mg.)	Indication	Comments
COMMON ZEBRA ( <i>Equus burchelli granti</i> ) 1st occasion.	F	200	aEtorphine Acepromazine	IM	2.45 10.00	To examine swollen leg.	Good immobilisation. 3.0 mg. Diprenorphine IV. Recovery uneventful.
COMMON ZEBRA 2nd occasion.	F	200	Etorphine Acepromazine	IM	2.45 10.00	Drain serous fluid from leg. Insert retention sutures.	Good immobilisation. 3.0 mg. Diprenorphine IV. Recovery uneventful.
COMMON ZEBRA 3rd occasion	F	200	Etorphine Acepromazine	IM	2.45 10.00	To remove sutures and inject antibiotics.	Good immobilisation. 3.0 mg. Diprenorphine IV. Recovery uneventful.
COMMON ZEBRA	F	200	Etorphine Acepromazine	IM	1.80 7.5	To facilitate Mallein test.	Good immobilisation. 2.25 mg. Diprenorphine IV. Recovery uneventful.
COMMON ZEBRA	M	100	Etorphine Acepromazine	IM	1.23 5.0	To facilitate Mallein test.	Good immobilisation. 1.5 mg. Diprenorphine IV. Recovery uneventful.
GREVY ZEBRA ( <i>Equus grevyi</i> ) 1st occasion.	F	300	Etorphine Acepromazine	IM	3.67 15.00	Hoof trimming.	Good immobilisation. 3.75 mg. Diprenorphine IV. Recovery uneventful.
GREVY ZEBRA 2nd occasion	F	300	Etorphine Acepromazine	IM	3.67 15.00	To facilitate radiographic exam. of left forefoot.	Good immobilisation. 3.75 mg. Diprenorphine IV. Recovery uneventful.
GREVY ZEBRA 3rd occasion	F	300	Etorphine Acepromazine	IM	3.67 15.00	To measure hooves for surgical shoes.	Good immobilisation. 3.75 mg. Diprenorphine IV. Recovery uneventful.
GREVY ZEBRA 4th occasion	F	300	Etorphine Acepromazine	IM	3.67 15.00	To fit surgical shoes to front forefeet.	Good immobilisation. 3.75 mg. Diprenorphine IV. Recovery uneventful.
GREVY ZEBRA	F	175	Etorphine Acepromazine	IM	1.80 7.5	To facilitate rectal and vaginal examination.	Good immobilisation. 2.25 mg. Diprenorphine IV. Recovery uneventful.
RED LECHWE ( <i>Kobus lechwe</i> ) 1st occasion.	M	60	Etorphine Acepromazine	IM	2.45 10.00	To facilitate surgical drainage of sternal abscess	Good immobilisation. 3.0 mg. Diprenorphine IV. Recovery uneventful.
RED LECHWE 2nd occasion.	M	60	Etorphine Acepromazine	IM	2.45 10.00	To clean and pack wound with antibiotics.	Good immobilisation. 3.0 mg. Diprenorphine IV. Recovery uneventful.
RED LECHWE 3rd occasion	M	60	Etorphine Acepromazine	IM	2.45 10.00	To clean and pack wound with antibiotics.	Good immobilisation. 3.0 mg. Diprenorphine IV. Recovery uneventful.
RED LECHWE 4th occasion.	M	60	Etorphine Acepromazine	IM	2.45 10.00	To clean and drain wound; pack with antibiotics.	Good immobilisation. 3.0 mg. Diprenorphine IV. Recovery uneventful.
RED LECHWE 5th occasion.	M	60	Etorphine Acepromazine	IM	2.45 10.00 2.45 10.00	To drain and clean axillary abscess.	1st injection did not produce immobilisation (dart failure). Good immobilisation following 2nd injection. 3.0 mg. Diprenorphine IV. Recovery uneventful.
RED LECHWE 6th occasion.	M	60	Etorphine Acepromazine	IM	2.45 10.00	Examine and clean granulation tissues.	Good immobilisation. 3.0 mg. Diprenorphine IV. Recovery uneventful.

Species	Sex	Estimated Body Weight (kg)	Drug	Route	Dosage (mg.)	Indication	Comments
RED LECHWE 7th occasion	M	60	Etorphine Acepromazine	IM	2.45 10.00	To facilitate surgical drainage of abscesses.	Good immobilisation. 3.0 mg. Diprenorphine IV. Recovery uneventful.
RED LECHWE 8th occasion.	M	60	Etorphine Acepromazine	IM	2.45 10.00	Remove sutures - inject antibiotics.	Good immobilisation. 3.0 mg. Diprenorphine IV. Recovery uneventful.
PERE DAVID'S DEER ( <i>Elaphurus davidianus</i> ) 1st occasion.	M	70	Etorphine Acepromazine	IM	3.05 12.5	To suture lacerated forefoot.	Good immobilisation. 3.75 mg. Diprenorphine IV. Recovery uneventful.
PERE DAVID'S DEER 2nd occasion.	M	70	Etorphine Acepromazine	IM	2.45 10.00	Remove sutures and remove damaged portion of antler.	Good immobilisation. 3.0 mg. Diprenorphine IV. Recovery uneventful.
PERE DAVID'S DEER 3rd occasion.	M	70	Etorphine Acepromazine	IM	2.45 10.00	To examine and clean forefoot.	Good immobilisation. 3.0 mg. Diprenorphine IV. Recovery uneventful.
SIBERIAN LYNX ( <i>Felis lynx wranglei</i> )	M	12	Phencyclidine	IM	20.0	To facilitate euthanasia.	
BLACK PANTHER ( <i>Panthera pardus</i> ) 1st occasion.	F	24	Phencyclidine Acepromazine	IM IM	40.0 5.0	To suture lacerated forelimb.	Good anaesthesia. Recovery uneventful.
BLACK PANTHER 2nd occasion	F	24	Ketamine	IM	800.0	To clean and treat sutured forelimb.	Slight convulsions. Recovery uneventful.
BLACK PANTHER 3rd occasion.	F	24	Phencyclidine Acepromazine	IM IM	40.0 10.0	Translocation to Veterinary Hospital.	Good anaesthesia. Recovery uneventful.

Species	Sex	Estimated Body Weight (kg)	Drug	Route	Dosage (mg.)	Indication	Comments
BLACK PANTHER 4th occasion	F	24	Phencyclidine Acepromazine cThiopentone Sodium 2½% to effect.	IM IM IM	40.0 10.0	To facilitate mid-humerus amputation of left forelimb.	Recovery uneventful.
BLACK PANTHER 5th occasion.	F	24	Phencyclidine Acepromazine	IM IM	40.0 10.0	To remove sutures.	Good anaesthesia. Recovery uneventful.
TAYRA ( <i>Tayra barbara</i> )	M	1.5	Ketamine	IM	30.0	Surgical removal of sub-mandibular lesion.	Recovery uneventful.
BENNETTS WALLABY ( <i>Protemnodon rufogrisea</i> )	F	15	2½% Thiopentone Sodium to effect.	IV		Drain and clean facial abscesses; inject antibiotics.	Long recovery period - 24 hours.
VERVET MONKEY ( <i>Cercopithecus pygerythrus</i> )	M	1.0	Ketamine	IM	20.0	Clinical examination following respiratory distress.	Good anaesthesia. Recovery uneventful.
CHERRY CROWNED MANGABEY ( <i>Cercocebus torquatus</i> )	F	5.0	Phencyclidine	IM	50.0	To facilitate blood sampling.	Good anaesthesia. Recovery uneventful.
LIONTAILED MACAQUE ( <i>Macaca silenus</i> )	M	13.0	Phencyclidine	IM	15.0	To facilitate radiographic examination of hips.	Good anaesthesia. Recovery uneventful.
CRABEATING MACAQUE ( <i>M. irus</i> ) 1st occasion.	M	1.0	Phencyclidine	IM	6.0	Examine bitten testicle. Orchitis - drain and inject antibiotics.	Good anaesthesia. Recovery uneventful.
CRABEATING MACAQUE 2nd occasion.	M	1.0	Phencyclidine	IM	4.0	Inject antibiotics.	Good anaesthesia. Recovery uneventful.

Species	Sex	Estimated Body Weight (kg)	Drug	Route	Dosage (mg.)	Indication	Comments
SOOTY MANGABEY ( <i>C. torquatus atys</i> )	F	3.0	Phencyclidine	IM	8.0	To facilitate clinical examination.	Good anaesthesia. Recovery uneventful.
PERE DAVID'S DEER	F	150	Etorphine Acepromazine	IM	3.67 15.0	To facilitate manual removal of dead foetus.	Good immobilisation. 4.5 mg. Diprenorphine IV. Recovery uneventful.
WILDEBEESTE ( <i>Connochaetes taurinus albojubatus</i> ) 1st occasion.	F	250	bXylazine	IM	700.0	To suture abdominal perforation and inject antibiotics.	Moderate sedation. Recovery uneventful.
WILDEBEESTE 2nd occasion.	F	250	Etorphine Acepromazine	IM	2.45 10.0	Examine wound and inject antibiotics.	Good immobilisation. 3.0 mg. Diprenorphine IV. and 1.5 mg IM. Recovery uneventful.
WILDEBEESTE 3rd occasion	F	250	Etorphine Acepromazine	IM	2.45 10.0	Examine, clean and treat wound.	Good immobilisation. 3.0 mg. Diprenorphine IV. Recovery uneventful.
WILDEBEESTE 4th occasion	F	250	Etorphine Acepromazine	IM	2.45 10.0	Remove sutures and inject antibiotics.	Good immobilisation. 3.0 mg. Diprenorphine IV. and 1.5 mg IM. Recovery uneventful.
WAPITI ( <i>Cervus canadensis</i> )	F	175	Etorphine Acepromazine	IM	3.18 13.3	Examination of abdominal swelling.	Good immobilisation. 3.3 mg. Diprenorphine IV. and 1.5 mg IM. Recovery uneventful.
SITATUNGA ( <i>Tragelaphus spekei</i> )	M	100	Etorphine Acepromazine	IM	2.45 10.0	To examine fractured left foreleg.	Euthanasia, due to severity of fracture.

Species	Sex	Estimated Body Weight (kg)	Drug	Route	Dosage (mg.)	Indication	Comments
SWAMP DEER ( <i>C. duvauceli</i> )	M	90	Etorphine Xylazine	IM IM	2.45 60.0	To remove antlers.	Good immobilisation in 3 mins. Respiratory depression. 4.0 mg. Diprenorphine IV. Recovery uneventful.
GIRAFFE ( <i>Giraffa camelo pardalis</i> ) 1st occasion.	F	600	Xylazine	IM	160.0	To clean sternal abscess.	Good standing sedation in 15 minutes. Recovery uneventful.
GIRAFFE 2nd occasion.	F	600	Xylazine	IM	180.0	To clean abscess and pack with antibiotics.	Good standing sedation. Recovery uneventful.
GIRAFFE 3rd occasion.	F	600	Xylazine	IM	180.0	To clean and treat abscess.	Good standing sedation. Recovery uneventful.
GIRAFFE 4th occasion.	F	600	Xylazine	IM	180.0	To clean and treat abscess.	90 mins. post injection - acute respiratory distress due to anoxia caused by pressure of crush-cage bar on trachea - collapsed. 12 ml. Millophylline given IV. Recovered after 5 minutes.
GREATER KUDU ( <i>Tragelaphus strepsiceros</i> )	F	10	hHalothane	Open Mask		Surgical repair of fractured metatarsus.	Good anaesthesia. Recovery uneventful.
MALAYAN SUNBEAR ( <i>Helarctos malayanus</i> )	F	80	Etorphine Acepromazine	IM	3.67 15.0	To trim ingrowing nails.	Good immobilisation. 4.5 mg. Diprenorphine IV. Recovery uneventful.
HYBRID BEAR	M	10	Etorphine Acepromazine	IM	1.23 5.0	To facilitate examination of fractured leg.	Euthanasia, due to severity of injuries.

Species	Sex	Estimated Body Weight (kg)	Drug	Route	Dosage (mg.)	Indication	Comments
HYBRID BEAR	M	20	dPhencyclidine	IM	20.0	To facilitate examination of fractured leg.	Euthanasia due to severity of injuries.
POLAR BEAR ( <i>Helarctos maritimus</i> )	M	250	Phencyclidine	IM	250.0	Oral examination and removal of decayed teeth.	Good sedation. Recovery uneventful.
JUNGLE CAT ( <i>Felis chaus</i> )	M	4	eKetamine	IM	150.0	To facilitate clinical examination.	Good anaesthesia. Recovery uneventful.
LION ( <i>Panthera leo</i> )	M	100	Phencyclidine	IM	50.0	To facilitate euthanasia.	
LION	F	100	Phencyclidine	IM	50.0	To facilitate euthanasia.	
LION	F	150	Phencyclidine Acepromazine	IM	150.0	To facilitate translocation.	Good sedation but three convulsions occurred during movement to new location. Recovery uneventful.
CANADIAN LYNX ( <i>Felis lynx canadensis</i> ) 1st occasion.	M	10	Ketamine	IM	500.0	Examination of eyes and radiographic examination of hips and stifle joints.	Good anaesthesia. Recovery uneventful.
CANADIAN LYNX 2nd occasion.	M	10	Phencyclidine	IM	20.0	To facilitate euthanasia.	
ORANG UTAN ( <i>Pongo pygmaeus</i> )	F	40.0	Phencyclidine	IM	30.0	To facilitate removal of offspring.	Good sedation. Recovery uneventful.
CHIMPANZEE ( <i>Pan troglodytes</i> )	F	25.0	Phencyclidine	IM	25.0	To facilitate removal of offspring.	Good sedation. Recovery uneventful.

Species	Sex	Estimated Body Weight (kg)	Drug	Route	Dosage (mg.)	Indication	Comments
CHIMPANZEE	F	30.0	Phencyclidine	IM	30.0	To facilitate removal of offspring.	Good sedation. Recovery uneventful.
CHIMPANZEE	F	20.0	Phencyclidine	IM	17.0	Suture damaged vagina.	Good anaesthesia. Recovery uneventful.
CHIMPANZEE 1st occasion.	F	18.0	Phencyclidine	IM	5.0	To facilitate Tuberculin testing.	Good restraint. Recovery uneventful.
CHIMPANZEE 2nd occasion.	F	18.0	Phencyclidine	IM	5.0	To facilitate Tuberculin testing.	Good restraint. Recovery uneventful.
CHIMPANZEE 1st occasion.	M	9.0	Phencyclidine	IM	5.0	To facilitate Tuberculin testing.	Good restraint. Recovery uneventful.
CHIMPANZEE 2nd occasion.	M	9.0	Phencyclidine	IM	5.0	To facilitate Tuberculin testing.	Good restraint. Recovery uneventful.
CHIMPANZEE 1st occasion	M	40.0	Phencyclidine	IM	20.0	Clean and treat multiple fight wounds.	Good anaesthesia. Recovery uneventful.
CHIMPANZEE 2nd occasion.	M	40.0	Phencyclidine	IM	20.0	Clean and treat multiple fight wounds.	Good anaesthesia. Recovery uneventful.
CHIMPANZEE 3rd occasion.	M	40.0	Phencyclidine	IM	20.0	Clean and treat wounds - Suture lacerated scrotum.	Good anaesthesia. Recovery uneventful.
CHIMPANZEE 4th occasion.	M	40.0	Phencyclidine	IM	20.0	Clean wounds and inject antibiotics.	Good anaesthesia. Recovery uneventful.
CHIMPANZEE 1st occasion.	M	1.0	Phencyclidine Halothane	IM Open Mask	2.0	Surgical repair of fractured femur, using plate and screws.	Good anaesthesia. Recovery uneventful.

Species	Sex	Estimated Body Weight (kg)	Drug	Route	Dosage (mg.)	Indication	Comments
CHIMPANZEE 2nd occasion.	M	1.0	Phencyclidine Halothane	IM Open Mask	2.0	Replacement of plate with intramedullary pin.	Good anaesthesia. Recovery uneventful.
PINTAIL DUCK ( <i>Anas acuta</i> )	M	0.25	gAlphaxalone) Alphadolone) to effect.	IV		To facilitate amputation of damaged wing.	Good anaesthesia. Recovery uneventful.
ROSEATE COCKATOO ( <i>Kakatoe roseicapilla</i> )	F	0.25	Alphaxalone) Alphadolone)	IV	6.75) 2.25)	To facilitate surgical removal of abdominal lipomas.	Good anaesthesia. Recovery uneventful.
SNOWY OWL ( <i>Nyctea scandiaca</i> )	F	2.0	Alphaxalone) Alphadolone)	IV	36.0) 12.0)	To facilitate surgical removal of abdominal wall tumour.	Good anaesthesia. Recovery uneventful.

**KEY FOR TABLE 6:—**

M = Male  
F = Female  
IV = Intravenous  
IM = Intramuscular

- a. Etorphine hydrochloride and acepromazine maleate — Immobilon (large animal).  
Reckitt & Colman Limited.
- b. Xylazine — Rompun — Bayer Agrochem Ltd.
- c. Thiopentone sodium — IntraVal — May & Baker Ltd.
- d. Phencyclidine — Sernylan — Parke, Davis & Co.
- e. Ketamine hydrochloride — Vetalar — Parke, Davis & Co.
- f. Diprenorphine hydrochloride — Revivon (large animal and small animal).  
Reckitt & Colman Limited.
- g. Alphaxalone/Alphadolone — Saffan — Glaxo Laboratories Ltd.
- h. Fluothane — Halothane — Imperial Chemical Industries Limited.