

MINISTRY OF PUBLIC WORKS, EGYPT.

ZOOLOGICAL SERVICE.

# REPORT

ON A

## ZOOLOGICAL MISSION TO INDIA IN 1913.

BY

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Plates IX, X, XI, and XII are from photographs kindly taken for the purpose by Mr. S. A. Christopher of Rangoon; Plate VI is from a photograph placed at our disposal by the authorities of the Mysore Zoological Gardens; the remaining plates are from photographs by Captain Flower.

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# REPORT ON ZOOLOGICAL MISSION TO INDIA IN 1913.

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## I.—OBJECTS OF MISSION.

(1) With a view to making improvements in similar matters in the Egyptian Zoological Gardens, to specially inquire into the following subjects:—

- (i) Methods of managing and housing the larger and more dangerous animals such as lions, elephants, rhinoceros, buffaloes, crocodiles, and pythons.
- (ii) Methods of obtaining, storing, distributing, and checking forage, material, etc.
- (iii) Distribution of responsibilities and work amongst the staff.
- (iv) Methods of keeping accounts and checking expenditure.
- (v) Methods of registering the collection.
- (vi) Methods of managing large crowds of visitors, and of keeping order among them.

(2) With a view to disposing of such surplus animals as there may be from time to time in the Egyptian collections, and also to helping the Indian Zoological Gardens by supplying them with the beasts or birds that they want, to ascertain the *desiderata* of the various Indian institutions and the terms (by purchase or exchange) that might be expected.

Incidentally, as far as time permitted, I looked at every animal in each zoological garden, to note its condition, food, accommodation, etc., as compared to our menagerie at Gîza.

The reason for visiting stables and kennels (*see* Chap. III, p. 5) is : that of all the various species of animals that mankind has kept alive in conditions differing from those of nature there are two species—the horse and the dog—on the care of which the human intellect has been specially exercised from century to century for untold thousands of years, and therefore the director of a zoological garden should be always on the alert to learn from the experiences of the horse-master and the kennel-man facts that may prove useful in the management of less known animals.

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III.—LIST OF PLACES OF ZOOLOGICAL  
AND BOTANICAL INTEREST IN INDIA, VISITED  
APRIL-JUNE, 1913.

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6	„	Company Garden (Tigers and Bears) 38
7	„	Elephant Lines ... .. 12, 14, 16, 17
8	„	Horse Lines ... .. —
9	Bangalore.	Lal Bagh (Zoological and Botanical Gardens) ... .. 6, 8, 10, 40, 86
10	„	Palace Gardens (Botanical) ... .. —
11	„	Museum ... .. 41
12	Baroda.	Zoological Gardens... 6, 8, 10, 25, 42, 86
13	„	Museum ... .. 43
14	Bombay.	Victoria Gardens (Zoological and Botanical) ... 6, 8, 10, 26, 44, 65, 86
15	„	Mr. Millard's Garden (Botanical) ... —
16	„	Museum ... .. 50
17	„	Crawford Market (Wild animal dealers) ... .. 50
18	Calcutta.	Zoological Gardens 6, 8, 10, 25, 43, 53, 65, 86
19	„	Botanical Gardens ... .. 59
20	„	Museum ... .. 14, 22, 25, 61
21	Jaipur.	Zoological Gardens ... .. 6, 8, 10, 63
22	„	Museum ... .. 65
23	„	Elephant Lines ... .. 12
24	„	Horse Lines ... .. —
25	„	Crocodile Tank ... .. 28
26	„	Tiger House ... .. 65
27	„	Galta Pass (Monkeys) ... .. 66
28	Karachi.	Zoological Gardens 6, 8, 10, 26, 43, 65, 67, 86
29	„	Museum ... .. 21, 24, 68
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LIST OF PLACES VISITED (*continued*).

			Page.
31	Lahore.	Zoological Gardens ...	6, 9, 11, 65, 70
32	„	Museum ... ..	71
33	Madras.	Zoological Gardens ...	6, 9, 11, 26, 72
34	„	Aquarium ... ..	74
35	„	Museum ... ..	22, 24, 73
36	„	Botanical Gardens ...	73
37	Mysore.	Zoological Gardens 6, 9, 11, 26, 65, 80,	86
38	„	Elephant Lines ... ..	12
39	„	Stables and Kennels ... ..	—
40	„	Palace Cowhouse (Leopards and cattle)... ..	83
41	Peshawar.	Zoological Gardens ...	6, 9, 11, 43, 65, 84
42	Rangoon.	Zoological Gardens 6, 9, 11, 13, 26, 86,	87
43	„	Timber Yards (Elephants) ... ..	12
44	Trivandrum.	Zoological Gardens 6, 9, 11, 26, 43, 86, 91,	95
45	„	Museum ... ..	15, 23, 94
46	„	Elephants ... ..	12, 14, 16
47	„	Stables ... ..	—

Some small gardens, tanks, and collections of heads and horns of game animals were also visited in Calcutta, Karachi, Madras, Trivandrum, etc.

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IV.—LIST OF INDIAN ZOOLOGICAL GARDENS.

	Town.	Province or State.	Date when Started.	Proprietor.	Official in Charge.	Area of Land, Occupied or Available.			Usual Admission.	Name of Garden.
						Acres.	Hectares.	Remarks.		
1	Bangalore.	Mysore.	c. 1855	Government.	Mr. G. H. Krumbiegel, Supt. ...	100	40·46	—	Free.	Lal Bagh.
2	Baroda.	Baroda.	?	The Maharaja.	?	?	Apparently over 50 acres.	Free.	Public Gardens.	
3	Bombay.	Bombay.	c. 1870	Municipality.	Mr. C. D. Mahaluxmivala, Supt....	50	20·23	Appears to be less ...	Free.	Victoria Gardens.
4	Calcutta.	Bengal.	1875	Government.	Mr. B. K. Basu, Supt. ... ..	64	25·89	—	1 Anna.	Zoological Gardens.
5	Jaipur.	Jaipur.	? 1875	The Maharaja.	?	36	14·56	Appears to be more ...	Free.	Ram Newas Gardens.
6	Karachi.	Sind.	1881	Municipality.	Mr. Ali Murad, Supt. ... ..	46	18·61	—	Free.	Zoological Gardens.
7	Lahore.	Punjab.	?	Government.	Mr. A. W. Pinto, Curator ... ..	112	45·32	These are the areas of the whole gardens; the menageries are concentrated, in each case, in one part only.)	Free.	Lawrence Gardens.
8	Madras.	Madras.	Before 1858	Municipality.	Mr. H. Garwood, Supt. ... ..	116	46·94		½ Anna.	People's Park.
9	Mysore.	Mysore.	1892	The Maharaja.	Mr. A. C. Hughes, Supt. ... ..	35	14·16	—	1 Anna.	Sri Chamarajendra Zoological Gardens.
10	Peshawar.	North-West Frontier.	c. 1909	Municipality.	Capt. J. G. L. Ranking, Hon. Dir.	?	?	Apparently over 50 acres.	Free.	Shahi Bagh.
11	Rangoon.	Burma.	1906	Government.	Dr. R. M. Sen, Supt. ... ..	80	32·37	—	1 Anna.	Victoria Memorial Park.
12	Trivandrum.	Travancore.	1859	Government.	Mr. A. J. Vieyra, Director. ... ..	50½	20·43	—	Free.	Public Gardens.



Besides the zoological gardens shown on the opposite page, there are others open to the public at *Burdwan*, in Bengal (belonging to the Maharaja of Burdwan), at *Nagpore*, in the Central Provinces, and at *Secunderabad*, Hyderabad, in the Deccan (belonging to the Nizam). There is, or was, also a small one at *Jubbulpore*, in the Central Provinces. The Amir of Afghanistan maintains a collection of wild animals at *Jellalabad*, and several of the Maharajas have private menageries or a few animals in their public gardens, as at Alwar, Gwalior, Indore, and Kolhapur.

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**V.—ANALYSIS OF THE COLLECTIONS OF LIVE ANIMALS SEEN IN**

	1 BANGALORE.		2 BARODA.		3 BOMBAY.		4 CALCUTTA.		5 JAIPUR.		6 KARACHI.	
	Specimens.	Forms.	Specimens.	Forms.	Specimens.	Forms.	Specimens.	Forms.	Specimens.	Forms.	Specimens.	Forms.
<b>I.—MAMMALS.</b>												
1. Mias, or Orang-Utan ... ..	1	1	—	—	—	—	3	1	—	—	—	—
2. Gibbon, <i>Hylobates</i> ... ..	—	—	—	—	1	1	3	2	—	—	—	—
3. Old World Monkeys, <i>Cercopithecidae</i> .	3	3	20	9	c. 45*	14	58	23	c. 22	8	24	9
4. American Monkeys, <i>Cebidae</i> ... ..	—	—	—	—	1	1	4	4	1	1	—	—
5. Marmosets, <i>Hapalidae</i> ... ..	—	—	1	1	—	—	c. 6	3	2	1	—	—
6. Lemurs ... ..	5	3	12	5	6	4	17	6	3	3	1	1
<b>Total Primates</b> ... ..	9	7	33	15	c. 53	20	c. 91	39	c. 28	13	25	10
7. Lions ... ..	1	1	2	1	4	1	4	1	—	—	3	1
8. Tigers ... ..	2	1	—	—	3	1	8	1	7†	1	2	1
9. Leopards ... ..	6	1	5	1	6	1	7	4	4	2	12	1
10. Other Cats of the <i>Felidae</i> ... ..	—	—	—	—	2	2	12	7	—	—	2	1
11. Civets, Mongeese, etc., <i>Viverridae</i> ...	—	—	—	—	6	3	5	4	1	1	2	2
12. Hyaenas ... ..	1	1	1	1	2	1	3	1	—	—	3	1
13. Wolves, Jackals, and Foxes ... ..	5	1	2	1	16	5	8	4	4	3	5	2
14. Otters, Badgers, etc., <i>Mustelidae</i> ...	—	—	—	—	4	2	6	3	1	1	2	1
15. Racoons, Pandas, etc., <i>Procyonidae</i> ..	—	—	—	—	2	1	7	3	—	—	—	—
16. Bears, <i>Ursidae</i> ... ..	4	2	2	1	12	3	8	2	4	2	4	2
<b>Total Carnivores</b> ... ..	19	7	12	5	57	20	68	30	21	10	35	12
17. Porcupines, Squirrels, etc., <i>Rodentia</i> . §	?	2	?	2	5	1	c. 24	14	6	5	?	3
18. Elephants ... ..	—	—	—	—	1	1	1	1	—	—	—	—
19. Rhinoceros ... ..	—	—	—	—	—	—	2	1	—	—	—	—
20. Zebras, etc., <i>Equidae</i> ... ..	—	—	—	—	2	1	4	2	4	1	1	1
21. Tapirs ... ..	—	—	1	1	1	1	4	1	—	—	—	—
22. Cattle ... ..	—	—	—	—	—	—	9	5	—	—	—	—
23. Antelopes ... ..	5	2	c. 14	4	c. 35	8	27	8	c. 15	1	23	5
24. Goat-Antelopes ... ..	—	—	—	—	—	—	—	—	—	—	1	1
25. Goats ... ..	—	—	—	—	—	—	1	1	—	—	5	2
26. Sheep ... ..	—	—	—	—	1	1	11	1	—	—	7	2
27. Giraffes ... ..	—	—	—	—	—	—	—	—	—	—	—	—
28. Deer, <i>Cervidae</i> ... ..	c. 30	3	c. 20	5	14	3	58	8	c. 15	2	35	4
29. Mous-Deer, <i>Tragulidae</i> ... ..	—	—	—	—	1	1	5	2	1	1	1	1
30. Camels and Lamas ... ..	—	—	—	—	6	2	c. 8	2	—	—	—	—
31. Hippopotamus ... ..	—	—	—	—	—	—	2	1	—	—	—	—
32. Pigs, <i>Suidae</i> ... ..	—	—	—	—	3	1	8	1	—	—	9	1
<b>Total Ungulates</b> ... ..	c. 35	5	c. 35	10	c. 64	19	c. 140	34	c. 35	5	82	17
33. Ant-eaters, etc., <i>Edentata</i> ... ..	—	—	—	—	—	—	—	—	—	—	—	—
34. Kangaroos, etc., <i>Marsupialia</i> ... ..	—	—	c. 8	1	5	2	c. 16	9	1	1	2	2
<b>TOTAL MAMMALS</b> ... ..	c. 63	21	c. 90	33	c. 184	62	c. 339	126	c. 91	34	145	44

\* "c." (*circa*) signifies that the number is approximate.  
 † JAIPUR : 5 tigers and 2 leopards in the city are included.  
 ‡ MYSORE : 2 leopards in the city are included.

**TWELVE ZOOLOGICAL GARDENS : APRIL 12 TO JUNE 6, 1913.**

7 LAHORE.		8 MADRAS.		9 MYSORE.		10 PESHAWAR.		11 RANGOON.		12 TRIVANDRUM.		Number of Individual Animals seen.
Specimens.	Forms.	Specimens.	Forms.	Specimens.	Forms.	Specimens.	Forms.	Specimens.	Forms.	Specimens.	Forms.	
—	—	1	1	2	1	—	—	—	—	1	1	8 Mias, <i>Simia satyrus</i> .
—	—	—	—	1	1	—	—	2	2	—	—	7 Gibbons.
11	5	25	6	19	12	8	4	35	11	15	8	c. 285 Old World Monkeys.
—	—	—	—	4	3	—	—	—	—	1	1	11 American Monkeys.
—	—	—	—	—	—	1	1	—	—	—	—	c. 10 Marmosets.
2	1	2	1	7	3	1	1	3	1	2	2	61 Lemurs and Lorises.
13	6	28	8	33	20	10	6	40	14	19	12	c. 382 Total number of Apes, Monkeys, and Lemurs.
—	—	1	1	2	1	2	1	2	1	3	1	24 Lions.
—	—	2	1	2	1	2	1	—	—	3	1	34 Tigers : including 3 seen at Alwar.
4	1	6	1	6†	2	2	1	8	1	7	2	75 Leopards : including 2 at Alwar.
—	—	—	—	—	—	—	—	8	2	3	2	27 Jungle Cats, Lynxes, Chitas, etc.
1	1	9	3	4	3	—	—	9	4	11	7	48 Civet Cats, Mongeese, Binturongs, etc.
1	1	4	1	2	1	1	1	2	1	4	1	24 Striped Hyaenas.
2	2	—	—	9	4	2	2	4	1	2	1	59 <i>Canidae</i> .
4	1	—	—	—	—	2	2	4	2	4	3	27 Otters, Badgers, etc.
—	—	—	—	2	1	—	—	1	1	—	—	12 Pandas, Racoons, and Coaties.
5	3	5	3	6	3	4	3	6	2	3	1	66 Bears : including 3 at Alwar.
17	9	27	10	33	16	15	11	44	15	40	19	396 Carnivorous Mammals.
?	2	?	2	?	1	9	5	c. 17	10	15	5	{ c. 77 Individual Rodents, excluding Rabbits and Guinea-pigs.
—	—	1	1	2	1	—	—	2	1	1	1	53 Elephants. ¶
—	—	1	1	—	—	—	—	1	1	—	—	4 Rhinoceros.
3	2	—	—	4	2	2	2	1	1	1	1	22 Donkeys, Zebras, etc.
—	—	1	1	—	—	—	—	3	1	—	—	10 Malay Tapirs.
—	—	—	—	—	—	—	—	10	4	2	2	21 Cattle.
11	2	7	5	25	4	8	2	7	2	5	2	c. 185 Antelopes : including 3 at Ahmedabad.
—	—	—	—	—	—	2	1	—	—	—	—	3 Goral.
1	1	—	—	2	2	2	2	—	—	—	—	11 Goats.
4	1	1	1	2	2	—	—	—	—	—	—	26 Sheep.
—	—	—	—	3	1	—	—	—	—	—	—	3 Giraffes.
c. 8	2	11	2	51	3	5	2	47	5	14	4	c. 308 Deer.
—	—	—	—	1	1	—	—	—	—	—	—	9 Mouse-Deer.
—	—	3	2	13	4	—	—	1	1	3	2	34 Camels and Lamas.
—	—	—	—	—	—	—	—	—	—	—	—	2 Hippopotamus.
—	—	—	—	4	1	—	—	4	2	2	1	30 Wild Swine.
c. 27	8	25	13	107	21	19	9	76	18	28	13	c. 721 Total number of individual Ungulates.
—	—	—	—	—	—	—	—	—	—	2	2	2 Edentates.
1	1	3	2	15	2	1	1	7	2	1	1	c. 60 Marsupials.
c. 58	26	83	35	188	60	54	32	c. 184	59	105	52	Approximately 1,638 individual Mammals noted.

§ *Rodentia* : the numbers of specimens of domestic rabbits and guinea-pigs are not included.

¶ Elephants : this includes 5 other elephants seen at Rangoon, 23 at Alwar, 14 at Trivandrum, and 3 at Jaipur. Other elephants seen at Mysore are not included.

V.—ANALYSIS OF THE COLLECTIONS OF LIVE ANIMALS SEEN IN

	1 BANGALORE.		2 BARODA.		3 BOMBAY.		4 CALCUTTA.		5 JAIPUR.		6 KARACHI.	
	Specimens.	Forms.	Specimens.	Forms.	Specimens.	Forms.	Specimens.	Forms.	Specimens.	Forms.	Specimens.	Forms.
<b>I.—MAMMALS. Total</b> ... ..	c. 63	21	c. 90	33	c. 184	62	c. 339	126	c. 91	34	145	44
<b>II.—BIRDS.</b>												
1. Bulbuls, Finches, etc., <i>Passeres</i> ...	—	—	c. 3	2	?	14	?	c. 35	?	c. 50	?	9
2. Hornbills, Cuckoos, etc., <i>Picariae</i> ...	—	—	—	—	c. 7	2	?	c. 9	c. 8	3	?	1
3. Parrots, <i>Psittaci</i> ... ..	—	—	c. 25	14	c. 40	15	?	e. 27	c. 123	c. 26	?	6
4. Owls, <i>Striges</i> ... ..	—	—	—	—	—	—	6	2	—	—	2	1
5. Birds of Prey, <i>Accipitres</i> ... ..	—	—	1	1	—	—	c. 19	c. 13	—	—	1	1
6. Pelicans, Cormorants, etc., <i>Steganopodes</i> ... ..	—	—	1	1	c. 6	1	?	3	c. 22	4	c. 7	4
7. Herons, Storks, etc., <i>Herodiones</i> ...	—	—	11	5	?	6	?	14	39	7	34	8
8. Flamingoes, Ducks, etc., <i>Anseres</i> ...	12	2	c. 20	8	?	17	?	34	c. 200	18	?	18
9. Pigeons, <i>Columbae</i> * ... ..	—	—	c. 12	c. 5	?	3	?	c. 13	?	c. 6	?	3
10. Sand-Grouse, <i>Pterocletes</i> ... ..	—	—	—	—	—	—	?	3	—	—	—	—
11. Pheasants, Quail, etc., <i>Gallinae</i> † ...	2	2	c. 12	5	?	15	?	23	?	14	?	8
12. Rails, Coots, etc., <i>Fulicariae</i> ... ..	—	—	1	1	?	1	?	7	c. 20	2	?	2
13. Cranes, etc., <i>Alectorides</i> ... ..	—	—	1	1	?	4	?	7	c. 11	3	c. 3	2
14. Plovers, etc., <i>Limicolae</i> ... ..	—	—	—	—	—	—	2	1	c. 32	3	—	—
15. Gulls, <i>Gaviae</i> ... ..	—	—	—	—	?	c. 3	—	—	—	—	—	—
16. Cassowaries, <i>Casuarius</i> ... ..	—	—	—	—	—	—	—	—	—	—	1	1
17. Emus, <i>Dromaeus</i> ... ..	2	1	—	—	1	1	3	1	2	1	—	—
18. African Ostriches, <i>Struthio</i> ... ..	—	—	3	1	3	1	3	1	2	1	—	—
19. American Ostriches, <i>Rhea</i> ... ..	—	—	1	1	8	1	1	1	—	—	—	—
<b>Total Birds</b> ... ..	16	5	c. 91	c. 35	?	c. 84	?	c. 194	?	c. 138	?	64
<b>III.—REPTILES.</b>												
1. Tortoises, <i>Chelonia</i> ... ..	—	—	3	1	9	2	c. 25	10	3	1	3	1
2. Crocodiles, <i>Crocodylia</i> ... ..	—	—	2	1	1	1	21	4	—	—	3	1
3. Lizards, <i>Lacertilia</i> ... ..	—	—	—	—	—	—	c. 17	7	1	1	—	—
4. Chameleons, <i>Rhoptoglossa</i> ... ..	—	—	—	—	—	—	2	1	—	—	—	—
5. Snakes, <i>Ophidia</i> ... ..	—	—	—	—	—	—	c. 40	c. 19	—	—	—	—
<b>Total Reptiles</b> ... ..	—	—	5	2	10	3	c. 105	c. 41	4	2	6	2
<b>IV.—FISHES</b> ... ..												
<b>GRAND TOTAL</b> .. ..	c. 79	26	c. 186	c. 70	?	c. 149	?	c. 362	?	c. 174	?	110

\* *Columbae*: the numbers of specimens of domestic pigeons are not included.  
 † *Gallinae*: " " " " " " " poultry " " "

COMPARISONS OF THE COLLECTIONS.—From the above tables and from my

	A.—Number of Different Forms of Mammals.	B.—Number of Individual Mammals.	C.—Number of Different Forms of Birds.	D.—Number of Individual Birds.
1st.	Calcutta.	Calcutta.	Calcutta.	Calcutta.
2nd.	Bombay.	Mysore.	Jaipur.	Jaipur.
3rd.	Mysore.	Bombay.	Bombay.	Lahore.
4th.	Rangoon.	Rangoon.	Lahore.	Bombay.
5th.	Trivandrum.	Karachi.	Peshawar.	Karachi.

N.B.—The collections of live animals in the Bombay Natural History Society's Museum and in the Madras Museum and

**TWELVE ZOOLOGICAL GARDENS : APRIL 12 TO JUNE 6, 1913 (cont.).**

7 LAHORE.		8 MADRAS.		9 MYSORE.		10 PESHAWAR.		11 RANGOON.		12 TRIVANDRUM.		Number of Individual Animals seen.
Specimens.	Forms.	Specimens.	Forms.	Specimens.	Forms.	Specimens.	Forms.	Specimens.	Forms.	Specimens.	Forms.	
c. 58	26	83	35	188	60	54	32	c. 184	59	105	52	
?	c. 29	c. 23	c. 6	?	9	?	27	5	3	5	4	
—	—	—	—	1	1	c. 3	2	1	1	15	6	
?	c. 16	12	6	c. 22	12	?	20	c. 17	10	10	6	
—	—	—	—	2	2	2	2	3	1	4	2	
—	—	—	—	—	—	—	—	—	—	8	7	
1	1	2	1	2	2	—	—	1	1	1	1	
?	2	11	4	3	2	—	—	5	4	9	6	
?	12	6	3	?	16	?	7	c. 30	8	10	4	
?	5	c. 11	5	?	7	?	5	17	8	7	3	
?	1	—	—	—	—	—	—	—	—	—	—	
?	13	13	7	?	12	?	7	c. 70	10	c. 17	8	
—	—	—	—	—	—	—	—	2	1	—	—	
2	1	1	1	5	2	6	3	4	3	1	1	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	10	3	—	—	—	—	—	—	1	1	
—	—	1	1	—	—	—	—	2	2	3	1	
—	—	2	1	2	1	—	—	c. 2	1	—	—	7 Cassowaries.
—	—	—	—	1	1	—	—	—	—	—	—	c. 14 Emus.
—	—	—	—	1	1	—	—	—	—	—	—	12 Ostriches.
—	—	—	—	1	1	—	—	—	—	—	—	11 Rheas.
?	c. 80	c. 92	c. 38	?	68	?	73	c. 159	53	c. 91	50	
—	—	—	—	1	1	—	—	c. 7	2	6	1	c. 57 Tortoises, not including those seen in the Jaipur and Kankerla tanks.
—	—	5	2	5	1	—	—	1	1	4	1	80 Crocodilians. ‡
—	—	—	—	1	1	—	—	1	1	1	1	c. 21 Lizards.
—	—	—	—	—	—	—	—	—	—	—	—	2 Chameleons.
—	—	1	1	3	1	—	—	2	1	22	11	c. 68 Snakes.
—	—	6	3	10	4	—	—	c. 11	5	33	14	c. 228 individual Reptiles.
?	1	—	—	—	—	—	—	—	—	c. 7	2	
?	c. 107	c. 181	c. 76	?	132	?	105	c. 354	117	c. 236	118	

‡ *Crocodylia* : this includes 9 other crocodiles seen at Jaipur, 27 at "Mugger Pir," and 2 at Kankerla.

notes on the different institutions the zoological gardens may be arranged as follows :—

<b>E.</b> —Number of Different Forms of Reptiles.	<b>F.</b> —Number of Individual Reptiles.	<b>G.</b> —Numbers both of Forms and Individuals, of all Classes.	<b>H.</b> —Most Valuable Individual Specimens.
Calcutta. Trivandrum.	Calcutta. Trivandrum.	Calcutta. Jaipur. Bombay. Mysore. Rangoon.	Calcutta. Mysore. Rangoon. Madras. Trivandrum.
—	—	—	—
—	—	—	—
—	—	—	—

Aquarium are not included in the above tables.

### X.—NOTES AT BANGALORE.

Hyder Ali, some time before his death in 1782, caused a large garden to be made and planted with mango trees, rather less than a mile east of Bangalore Fort. This is called the Lal Bagh and is to-day a very beautiful public garden about 100 acres (40·46 hectares) in extent, supported by the Government of Mysore and open free to the public daily.

Mr. G. H. Krumbiegel is the Superintendent and lives in a very nice official house in the garden.

Although principally a botanical garden, the Lal Bagh has for the last fifty years also contained a menagerie. The collection at present is not a large one, but I am told that plans are being prepared to extend it.

At the time of my visit, April 14, 15, and 19, 1913, this menagerie comprised :—

- (i) The Court, probably built between 1850 and 1860, about 68 yards (62·17 metres) long by 26 yards (23·77 metres) wide, containing very solid dens for large carnivorous animals and a curious cage (now empty) formerly inhabited by a rhinoceros. A fine pair of tigers deserve notice, specially the female, said to have been presented by Mr. C. W. G. Morris in 1900.
- (ii) The Aviary, now being rebuilt.
- (iii) The Monkey House, the most noticeable inhabitant of which is a very large Mias or Orang-Utan, *Simia satyrus*.
- (iv) The Great Paddock, which is so large that field glasses are necessary to see the animals in it, and contains, besides Blackbuck, Gazelles, Chital, and Sambur, a nice pair of Kákar, the Rib-faced or Barking Deer, *Cervulus muntjac*. One corner of this paddock is fenced in to form a separate enclosure for two Emus, *Dromaeus novaehollandiae*.
- (v) The Bear House.
- (vi) The Peacock Enclosure.

### XIII.—NOTES AT CALCUTTA.

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#### Calcutta Zoological Garden.

The Zoological Garden of Calcutta is situated in Alipore, just south of Tolly's Nulla. On the west the garden of the observatory adjoins it, and on the east Belvidere road divides the part of the zoological garden open to the public from the part reserved for administrative work.

The garden was founded in 1875 and opened to the public in 1876. Though a Government institution the Government of Bengal do not directly administer it, but manage it through an Honorary Committee, the members of which are appointed by Government. Lieutenant Colonel E. H. Brown, a retired officer of the Indian Medical Service, is the present Honorary Secretary of the Committee. Under the orders of this Committee is a paid staff, the principal executive officer being the Superintendent, who is provided with an official house in the garden. Another house, known as the "Hermitage," provides a residence for the Honorary Secretary, but the present holder of that office does not occupy it, but lives in the city of Calcutta.

The garden is financially supported by Government grants and by the gate-money, and has also from time to time received handsome donations of money from many Indian princes and other private individuals.

On most days the entrance fee is one anna (1*d.*, or four milliemes) per person, but on certain occasions this is raised to four annas (4*d.*, or 16 milliemes), or to one rupee (1*s.* 4*d.*, or 65 milliemes), and on a few days in the year the garden is open free to the public.

This institution is well known to zoologists, who have not personally visited Calcutta, by two useful publications:—

- (i) "Guide to the Calcutta Zoological Gardens," by the late Dr. John Anderson, F.R.S., 1883.

- (ii) "Handbook of the Management of Animals in Captivity in Lower Bengal," by the late R. B. Sányál, 1892.

Rai Ram Bramha Sányál Bahadur, who died on October 13, 1908, will always be remembered in connection with the Calcutta Zoological Garden, in which he worked for thirty-three years.

Mr. Bijay Krishna Basu, Veterinary Inspector, was appointed Assistant Superintendent of the garden on February 25, 1907, and after the death of Mr. Sányál succeeded to the Superintendentship. Babu Somadev Ganguli is the Assistant Superintendent.

#### STAFF.

- 1 Superintendent.
- 1 Assistant Superintendent.
- 1 Overseer.
- 1 Store clerk.
- 1 Gate clerk.
- 58 Men (keepers, gardeners, etc.) on the permanent list.
- 35 Men (keepers, gardeners, etc.) on the temporary list.

Total 98.

#### AREA.

The present area of land occupied by the Calcutta Zoological Garden is about 53 acres (21·44 hectares); of this, 33 acres (13·35 hectares) are open to the public on the west side of Belvidere Road, and about 20 acres (8·09 hectares) lying on the east side of the road are used as quarantine yard, stores and vegetable garden, and also give room for quarters in which the keepers live. This year (1913) the Government has allotted a further 11 acres (4·45 hectares) for an extension of the zoological garden. At the time of my visit this piece of land had not yet been taken over, but when this is done the total area will be about 64 acres (25·89 hectares).

#### PRINCIPAL FEATURES.

The principal feature of this garden is the Great Lake (*see* Pl. II), a beautiful piece of water, surrounded by



magnificent trees and thronged by countless numbers of water-loving birds, the most abundant species being the Little Cormorant, *Phalacrocorax javanicus*, and the Indian Darter, or Snake-bird, *Plotus melanogaster*. Some Malay Tapirs, *Tapirus indicus*, have been turned loose in this lake ; it is found that they do no damage, either by frightening the birds or by injuring the vegetation, and the presence of these large, parti-coloured animals, add interest to the scene.

#### INSTALLATIONS FOR ANIMALS.

The principal buildings in which the animals are caged may be thus summarized :—

(1) *Primates*. — The “Dumraon House,” named in honour of the Maharaja of Dumraon, built in 1878, and the “Gubbay House,” named in honour of the late Mr. Elias Gubbay. Both these houses were remodelled in the years 1906–1907.

(2) *Carnivora*. — The “Burdwan House,” built at the expense of the Burdwan Raj Estate, contains the lions and tigers, adjoining which is an open-air enclosure, the cost of which was met from the fund provided by the late Maharaja Bahadur Surya Kanta Acharya Chowdhury of Mymensing, surrounded by an iron fence curved inwards at the top, the height of the fence from the ground level where the animals walk to the top of the curve of the fence being apparently about 22 feet (6·70 metres).

The “Small Carnivora House,” built in 1898, contains leopard, wild cat, hyaena, etc.

The “New Bear House,” a present from the Nawab Bahadur of Dacca, and the “Abdul Ghani House,” provide accommodation for the bears.

The “Mullick House” contains mongoose, otter, etc., and was named in honour of Raja Rajendra Nath Mullick of Chorebagan, Calcutta, who, I learn from Mr. Basu (“Guide to the Zoological Garden, Calcutta,” 1910, p. 26), was an enthusiastic animal fancier and maintained his own private menagerie long before this zoological garden came into existence.

(3) *Ungulata*. — Besides the series of paddocks for cattle, antelope, deer, etc., there is a large enclosure for rhinoceros; another for hippopotamus, which is called the "Buckland Enclosure" to commemorate the name of Mr. C. T. Buckland, I.C.S., who was for many years President of the Garden; and the "Ezra House," built at the expense of the late Mr. David Ezra for the accommodation of the splendid pair of giraffes which he presented to the Garden in 1877,\* now occupied by zebras and wild donkeys.

(4) *Birds*.—The "Murshidabad House," a present from H.H. the Nawab Bahadur of Murshidabad, consists of a central hall and a series of very beautiful aviaries, in which banana and papaya trees are growing, and contains such valuable exhibits as birds of paradise and toucans.

The "Sarnomoyi House," named in honour of the late Maharani Sarnomoyi of Cossimbazar, and erected at the cost of her nephew Maharaja Manindra Chandra Nandy, contains a vast collection, chiefly passerines, picarions, parrots, pigeons, and game birds.

The "Schwendler House," named after the late Mr. L. Schwendler, has pretty aviaries, principally for the smaller sorts of water-loving birds, teal, rails, etc.

The "Birds of Prey Aviary" is composed of a series of very fine lofty cages in which the vultures, eagles, and owls are lodged.

The "Smaller Duck House" contains flamingoes and other interesting birds, and the "Duck Pond," which is covered in with wire netting, contains a wonderful collection of anseres, herodiones, etc., rich in species and individuals. Many of the birds nest in this fine cage.

(5) *Reptiles*.—The "Crocodile Pool," built in 1878 as a pit with a rockery in it to keep snakes in, was adapted to its present use in 1907. It consists of two cages, one containing a large American alligator and the other three Indian crocodiles.

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\* B. Basu, "Guide to the Zoological Garden, Calcutta," 1910, page 39.

The "Reptile House," built in 1892, consists of a hall surrounded by cases and with two large tanks sunk in the centre of the floor. The visitors enter by a door in the east wall and pass round between the floor tanks and the wall cases.

## ANIMALS.

I visited the Calcutta Zoological Garden on May 10, 11, 12, 13, and 14, 1913. The number of species seen is given in the "Analysis" on pages 8 to 11, but the following animals should be specially mentioned:—

### MAMMALIA.

#### (1) *Primates.*

An Albino Bandar, or Bengal Monkey, *Macacus rhesus*.

Two Golden Haired Bandars, *Macacus rhesus* var.(?)

Three Brown Stump-tailed Monkeys, *Macacus arctoides*.

*N.B.*—The celebrated big Mandrill, *Papio maimon*, of the Calcutta Zoological Garden, died shortly before my visit. I was told it had lived here for twenty-nine years.

#### (2) *Carnivora.*

An Ounce, or Snow Leopard, *Felis uncia*.

A Clouded Tiger, or Clouded Leopard, *Felis nebulosa*.

A Crab-eating Mongoose, *Herpestes urva*.

Three Pandas, or Red Cat-Bears, *Aelurus fulgens*.

#### (3) *Ungulata.*

A magnificent pair of the Great One-horned Rhinoceros, *Rhinoceros unicornis*.

It is to be hoped that these very rare and valuable animals will breed here. As far as I know there is no record of a *Rhinoceros unicornis* having been born in captivity, but there seems no reason why such an event should not take place, as an Asiatic Two-horned Rhinoceros, *Rhinoceros sumatrensis*, was born in the Victoria Docks, London, on board the S.S. "Orchis," December 7, 1872 (*vide* Bartlett, P.Z.S., 1873, p. 104), and another of the same

species in Calcutta in 1889 (*vide* Basu, "Guide to the Zoological Garden, Calcutta," 1910, p. 14).\*

Four Malay Tapirs, *Tapirus indica*.

Four Gayals, *Bos frontalis*.

Two Bantings, *Bos sondaicus*.

An American Bison, *Bos bison*.

An Anoa, *Bos depressicornis*.

A pair of African Waterbuck, *Cobus unctuosus* (apparently).

A male Blessbok, *Damaliscus albifrons*.

A male Princess Beatrice's Antelope, *Oryx beatrix*.

A female Addax, *Addax nasomaculatus*.

Five Four-horned Antelopes, *Tetraceros quadricornis*.

Four Bárasingha, or Swamp Deer, *Cervus duvauceli*. At the time of my visit the big stag was making the garden resound with its voice, a loud "bray."

Fourteen Brow-antlered Deer, or Thameng, *Cervus eldi*.

Five Rib-faced, or Barking Deer, *Cervulus muntjac*.

A pair of Hippopotamus, *Hippopotamus amphibius*. Both the male and the female are very dangerous; I was told that about eighteen months ago the male killed his keeper, suddenly attacking and crushing the man in his mouth.

(4) *Marsupialia*.

Two Tasmanian Devils, *Sarcophilus ursinus*.

An albino Kangaroo, and an albino Wallaby.

AVES.

(1) *Passeres*.

Lesser Bird of Paradise, *Paradisea minor*, a cock and a hen.

Greater Bird of Paradise, *Paradisea apoda*, one cock.

Red Bird of Paradise, *Paradisea rubra*, four cocks.

Twelve-wired Bird of Paradise, *Seleucides nigricans*, one cock over seven years here.

I noted that the Rose-coloured Starlings, *Pastor roseus*, in the Calcutta and other Indian Zoological Gardens were in their beautiful pink plumage, which they do not assume in Gîza or, so far as I have seen, in captivity in Europe.

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\* *Vide* Sányál "Handbook", 1892, pages 133, 134.

(2) *Herodiones*.

An Indian Open-bill Stork, *Anastomus oscitans*, a very rare bird to see alive and well in captivity. Mr. Basu told me that he had had it now for over a year.\*

(3) *Limicolae*.

Two Great Stone-Plovers, *Esacus recurvirostris*, one of which was presented several years ago by Mr. Frank Finn. As Mr. Basu writes in his "Guide," page 44 : "No visitor can miss the stone-plover, which, with unfailing regularity, follows the footsteps of every passer-by in hopes of food or notice."

REPTILIA.

Two enormous Land Tortoises, probably *Testudo gigantea*.

Five Gharials, *Garialis gangeticus*.

Three Water Waran-Lizards, *Varanus salvator*, one of these being a particularly big specimen.

**Calcutta Botanical Garden.**

The "Royal Botanic Garden," as it is officially called, of Calcutta, is situated at Sibpur, on the west bank of the River Hugli, opposite Garden Reach.

This garden was "founded in 1786 on the suggestion of Colonel Kyd, who was appointed the first Superintendent" (Murray, "Handbook to India," 8th Edition, 1911, p. 65); it is 278 acres (112.49 hectares) in area.

This magnificent institution is too well known to require any description in this report. I will only mention the great banyan tree and give some details of the staff kindly given to me by Mr. G. T. Lane, who was so good as to show me over the gardens when I visited them on May 12, 1913, and to answer my many questions on matters concerning the management of public gardens.

The celebrated Banyan Tree, *Ficus bengalensis*, is now

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\* In the "List of Animals in the Garden on 31st March, 1913," pages 36 to 46, of the "Report of the Honorary Committee for the Management of the Zoological Garden, Calcutta, 1912-13," this *Anastomus* does not appear to be mentioned.

about 144 years old; in October, 1908, the following information was officially given about it :—

“The circumference of its trunk, at 5½ feet from the ground, is 51 feet, and of its crown about 977 feet. Its height is 85 feet. It has 562 aerial roots actually rooted in the ground.”

On the opposite side of India there was formerly an even larger banyan tree, on an island in the Nerbudda, about eleven miles from Broach. Forbes, who visited Broach (1776–1783), says in his “Oriental Memoirs” (i, p. 26) that this tree, called the “Kabir wad,” enclosed a space within its principal stems 2,000 feet in circumference. It had 350 large and 3,000 small trunks, and had been known to shelter 7,000 men. (Murray, “Handbook to India,” 8th Edition, 1911, p. 119.)

#### STAFF.

Superintendent, Mr. C. C. Calder.  
Curator, Mr. G. T. Lane.

*Office, Herbarium, and Library.*—Not noted.

<i>Gardens.</i>	14	Gardeners.
	8	Mowers.
	2	Sirdars, headmen of coolies.
	71	Garden coolies.
	1	Rat-catcher.
	1	Assistant mason.
	2	Punkah coolies.
	1	Cattle-man.
	3	Ghoramies, employed in Palm House.
	15	Sweepers.
	12	Boys, employed in Nurseries.
	11	“ “ in Orchid and Palm Houses.
	1	“ “ watching waterfowl.
	1	“ “ washing monuments.
	1	“ “ in Stores.
	58	Women, employed in sweeping roads.
	22	Women, employed in Nurseries and Flower Garden.
Total	224	

Fifteen men, one boy, and nine women are also on the books, but were absent on the day the above enumeration was made, making a total of 249 workers available in the garden.

In addition to this, the grass in the Palmetun is cut by women from Sibpur, and the clearing of water weeds from the lake is done by contract.

### Calcutta Wild Fauna.

The Indian Fruit-Bat, or Flying Fox, *Pteropus medius*, is a very noticeable inhabitant of Calcutta. It is a curious and interesting sight to see these bats by day roosting in trees, hanging head downwards and appearing like some strange, large, brown fruit.

The pretty little striped Palm-Squirrels, *Sciurus palmarum*, are very numerous.

Of the many birds I saw in and about this city, besides the Crows, Babblers, King-Crows, Tailor-birds, Golden Orioles, Mynas, Magpie-Robins, Sparrows, Swallows, Coppersmiths, Rollers, Kingfishers, Swifts, Koels, Parrakeets, Vultures, Kites, Cormorants, and Pond Herons, I would like specially to mention the Indian Tree-Pie, *Dendrocitta rufa*, the White-breasted Water-hen, *Amaurornis phoenicurus*, the Indian Darter, or Snake-bird, *Plotus melanogaster*, the Night Heron, *Nycticorax griseus*, and also a flock of eight beautiful little Cotton Teal, *Nettopus coromandelianus*, which were on the Hugli close to the Botanical Garden.

### Calcutta Museum.

The Indian Museum, an immense and magnificent building in the Chowringhee Road, Calcutta, is of such worldwide scientific reputation, and the collections of animals, antiquities, books, meteorites, minerals, etc., it contains so vast, that I cannot attempt to describe it. I was not fortunate enough to meet Dr. N. Annandale, the Superintendent, as he was at Simla when I visited his Museum, May 13, 1913, but his assistants, Mr. S. W. Kemp and Mr. F. H. Gravely, very kindly conducted me round the galleries and laboratories, and Mr. G. E. Pilgrim, of the Geological Survey, was so good as to show me the wonderful series of Tertiary mammal remains from various parts of India and from the Island of Perim that are his special charge.

The elephant and crocodile specimens in this Museum are referred to in the chapters in this report devoted to those animals.

The undermentioned specimens in the lofty and well lighted exhibition galleries should be specially noted :—

- (i) Skull and horns of a Kudu Antelope, *Strepsiceros sp. incert.*, brought from Abyssinia by the late Mr. W. T. Blanford, F.R.S.
- (ii) A stuffed male Duyong, *Halicore dugong*, from the Gulf of Manar.\*
- (iii) A model of the Súsú, or Gangetic Dolphin, *Platanista gangetica*.
- (iv) Models, made by C. Subraya Mudaliar of the Trivandrum Museum, of Little Indian Porpoise, *Phocaena phocaenoides*, Speckled Dolphin, *Sotalia lentiginosa*, and the Dolphin, *Delphinus delphis*.
- (v) A model of the Soft-Turtle, *Chitra indica*.
- (vi) A Rat Snake, or Dhaman, *Zamenis mucosus*, 8 foot 3 inches (2·51 metres) long, labelled as being the record for length; but Wall (J.B.N.H.S., XVII, p. 260) mentions specimens 9 feet 1½ inches (2·78 metres) and 11 feet 9 inches (3·58 metres) long.
- (vii) The saw of a Saw-Fish, *Pristis perrottetii*.  
The fish is said to have been 21 feet 7 inches (6·57 metres) in length. Indian Saw-Fishes of this great size are very seldom obtained. Day ("Fauna of British India," Fishes, I, 1889, pp. 38, 39) mentions a *Pristis cuspidatus* of 20 feet (6·09 metres) and a *Pristis pectinatus* of 24 feet (7·31 metres).
- (viii) A specimen of the bright coloured Saw-Fish, *Pristis pectinatus annandalei*, from the coast of Burma.
- (ix) A model of a green coloured Sting Ray, *Trygon sephen* (or *Hypolophus sephen*).
- (x) A stuffed specimen of the very thorny Ray called *Urogymnus asperrimus*.

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\* Total length, as stuffed, from tip of snout along curves, 9 feet 4 inches (2·84 metres). Mr. S. W. Kemp very kindly had this specimen measured at my request.



## XVII.—NOTES AT MADRAS.

### Madras Zoological Garden.

A Municipal Zoological Garden occupying one end of the People's Park. This park is 116 acres (46·94 hectares) in area and is open free to the public; the Zoological Garden itself is enclosed by a corrugated iron fence and an entrance fee of  $\frac{1}{2}$  anna ( $\frac{1}{2}d.$  or 2 milliemes) is charged per visitor.

Messrs. Higginbotham & Co. of Madras published "A Guide to the People's Park, Madras," in 1876.

The site of the Zoological Garden is flat and occupies three sides of a lake, on which is an island connected to the mainland by two wooden bridges. Pelicans, adjutant storks, white swans, black swans, and peafowl are loose in the grounds during the day, but these birds have to be shut up in cages every night for fear of the jackals which roam about the city.

I visited the Madras Zoological Garden on April 30 and May 1, 1913, and have to express my best thanks to Mr. P. L. Moore, C.I.E., I.C.S., the Municipal Commissioner, and to Mr. H. Garwood, the Superintendent of the Park, for their kindness in showing me round their garden and giving me useful information about it.

Except the Tiger House, which was built in 1887, the existing cages for the larger carnivora at Madras date from the year 1858. Mr. Moore told me that larger and better quarters are about to be built for these animals.

Many pretty little striped Palm-Squirrels, *Sciurus palmarum*, occur wild in this garden, and Crows, both *Corvus splendens* and *Corvus macrorhynchus*, abound. The *Corvus splendens* gives a lot of trouble by perching on the backs of and worrying some of the animals, especially the Sambar deer and the Lamas.

Special attention may be called to the following animals in the Madras Garden:—

- (i) A very large and dark coloured male Mias, or Orang-Utan, *Simia satyrus*.

- (ii) A female Asiatic Two-horned Rhinoceros, *Rhinoceros sumatrensis*, which has now been about fourteen years here.
- (iii) A male Malay Tapir, *Tapirus indicus*, which has a nice cage to live in.
- (iv) Two Great Black-headed Gulls, *Larus ichthyaëtus*, a very handsome species, rarely seen in menageries.
- (v) Six Brown-headed Gulls, *Larus brunneicephalus*.
- (vi) An Indian Python, *Python molurus*, which was purchased on August 3, 1903, and is now in the most beautiful condition. It appears to be not only the largest specimen of this species but the most magnificent individual snake that I have ever seen alive.

#### Madras Horticultural Garden.

I visited this very nice, neat, pretty and instructive garden on May 1, 1913. Though not fortunate enough to meet any of the officials in charge, I learn from Murray ("Handbook to India," 8th Edition, 1911, p. 408) that this garden was founded about 1836, "mainly through the efforts of Dr. Wright," and that it occupies an area of 22 acres (8.90 hectares).

Among the many interesting plants I can only mention here the Bread-Fruit Tree, *Artocarpus incisa*, laden with quantities of fruit, and fine specimens of the Sausage Tree, *Kigelia pinnata*, and of the Mahogany, *Swietenia mahagoni*; and among the delightful wild birds which were living in this quiet beautiful place a Crow-Pheasant, *Centropus sinensis*, in a clump of small palms, *Nipa fructitans*, and a Black Bittern, *Dupetor flavicollis*, sitting motionless on the edge of a pretty pond.

#### Madras Museum.

A great institution under the superintendentship of Dr. J. R. Henderson, comprising the Connemara Library and large and valuable collections of arms, antiquities, industrial

## XX.—NOTES AT RANGOON.

The Zoological Garden of Rangoon is called the Victoria Memorial Park ; it was founded in 1906. The site was given by the Government and the grounds laid out and buildings erected with funds subscribed by the public as a memorial to Queen Victoria. It is supported by contributions from the Government, from the Municipality, from the Port Commissioners, and by the gate-money, and is managed by a Board of Administrators through a committee of gentlemen who take special interest in the institution, one of the committee being an "Official Visitor" appointed by the Government.

The park adjoins the British Barracks and the Royal Lakes and is a very pretty piece of ground, with several small hills and nice ponds. The graceful golden pagoda, the Shwe Dagon, can be seen from many points in the grounds.

The area of the zoological garden was originally about 14 acres (5.66 hectares), is at present 35 acres (14.16 hectares), and is shortly to be extended and will then comprise about 80 acres (32.37 hectares).

The admission fee to the garden is 1 anna (1*d.*, or 4 milliemes) per person.

An interesting pamphlet: "Notes on the Improvements of the Zoological Gardens, Rangoon," by Dr. R. M. Sen, the Superintendent, was published in 1910 under the authority of the Administrators of the Park, from page 24 of which we learn:—

"For the supply of foodstuff and other articles (such as kerosene oil, wire netting, nails, etc.) there is a contract renewed at the beginning of each official year by public tender at scheduled rates of prices plus a commission of certain percentage. Though not the cheapest, this appears to be the least troublesome process. On this, however, we cannot entirely depend. For certain articles, of which the necessity cannot be foreseen, direct purchase is the only course. There are

others again, such as vegetables, fruits, fishes, etc., which it is desirable to purchase direct. If taken from the contractors, the choice is left with him whose interest it is to supply one of the many scheduled articles that will cost him the least. Direct purchase has the advantage of meeting urgent necessities, securing fresh stuff, and of selecting the desired articles, which can only be decided on by an inspection and enquiry in the market. The commission money paid last year approximated to 1,800 rupees, or 150 rupees a month."

I visited the Rangoon garden on May 5, 6, and 7, 1913, and am much indebted to Dr. A. Blake, to Mr. S. A. Christopher, to Mr. W. Shircore, Honorary Secretary, and to Dr. R. M. Sen, Superintendent, for giving me all the information I required.

The wild fauna of this beautiful garden add to its attractions; most noticeable were the brown squirrels, probably *Sciurus ferrugineus*, the Magpie Robins, *Copsychus saularis*, the Burmese Crows, *Corvus insolens*, the Myna Birds, *Acridotheres tristis* and *Sturnopastor superciliaris*, the Black-headed Chestnut Finches, *Munia atricapilla*, the pretty Brown-headed Sparrows, *Passer montanus*, the White-breasted Water-hens, *Amaurornis phoenicurus*, the Little Cormorants, *Phalacrocorax javanicus*,\* the Eastern Cattle Egrets, *Bubulcus coromandus*, the little Chestnut Bitterns, *Ardetta cinnamonea*, and the very brilliantly coloured Lizards, probably *Calotes versicolor*, and, as in most gardens in India, the voices of the Crimson-breasted Barbet or Coppersmith, *Xantholaema haematocephala*, and of the Koel, *Eudynamis honorata*, could be very frequently heard.

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\* These cormorants are a great feature of Rangoon. I saw many flying over the main streets, and in the evening, about sunset, flocks of many hundred cormorants flew low along the river front, associated with the cormorants being some scores of eastern cattle egrets.

STAFF.

The Staff of the Rangoon Zoological Garden is as follows :—

<i>Superior Staff</i>	1 Superintendent : provided with a house in the garden.	
	1 Clerk (part time only).	
<i>Gardens</i>	1 Head gardener.	} All Hindoos from Madras.
	1 Second gardener.	
	19 Gardeners.	
<i>Menagerie</i>	1 Store-keeper.	} All natives of India. The keepers are mostly Chittagong Mohammedans. I was surprised to find that no Burmese were employed here.
	1 Head keeper.	
	6 Keepers.	
	9 Under keepers.	
	2 Gate keepers.	
	2 Peons (Messengers).	
	3 Day watchmen.	
	3 Night watchmen.	
	2 Carters.	
	1 Sweeper.	
<b>Total</b>	<b>53</b>	

The most noticeable building in the Victoria Memorial Park is the Monkey House, originally the Phayre Museum, which stood in the town of Rangoon between Commissioners Road and Canal Street. The site, however, being required for other purposes, the building was taken down and eventually re-erected in the Zoological Garden and adapted to its present use. The contents of the Phayre Museum are said to be stored somewhere in Rangoon, but are not available for inspection.

The collection in the Zoological Garden is rich in Monkeys of the genus *Macacus*. Besides the species usually to be seen in menageries, there were a Himalayan Monkey, *Macacus assamensis*, said to be from beyond Bhamo, three Brown Stump-tailed Monkeys, *Macacus arctoides*, from Mergui, and three Burmese Pig-tailed Monkeys, *Macacus leoninus*.

Other inhabitants of the menagerie worthy of special notice are :—

(1) Three Slow Lorises, *Nycticebus tardigradus subsp. incert.*

(2) Three Burmese Ferret-Badgers, *Helictis personata.*

(3) A Panda, or Red Cat-Bear, *Aelurus fulgens*, now two years here and fed almost entirely on bread and milk, its only other sustenance being a very little fruit.

(4) A large and beautiful Grey Flying Squirrel, *Pteromys sp.*, from Pegu.

(5) Four (or more) Bay Bamboo-Rats, *Rhizomys badius.*

(6) A male Asiatic Two-horned Rhinoceros, *Rhinoceros sumatrensis*, received from the Straits Settlements in 1909, and still tame enough to allow his keeper to sit on his back (see Pl. X).

(7) Three Malay Tapirs, *Tapirus indicus* (see Pl. XI); these animals breed regularly here and the young ones thrive.

(8) A young female Gaur, or Indian Bison, from Burma, so presumably representing *Bos gaurus readi* described by Mr. Lydekker in 1903.

(9) Three Gayal or Mithan, *Bos frontalis.*

(10) Five Tsaing, *Bos banteng birmanicus*\* : three bulls and two cows. A young bull that has not yet assumed the dark colour that these animals get when old is figured on Plate XII.

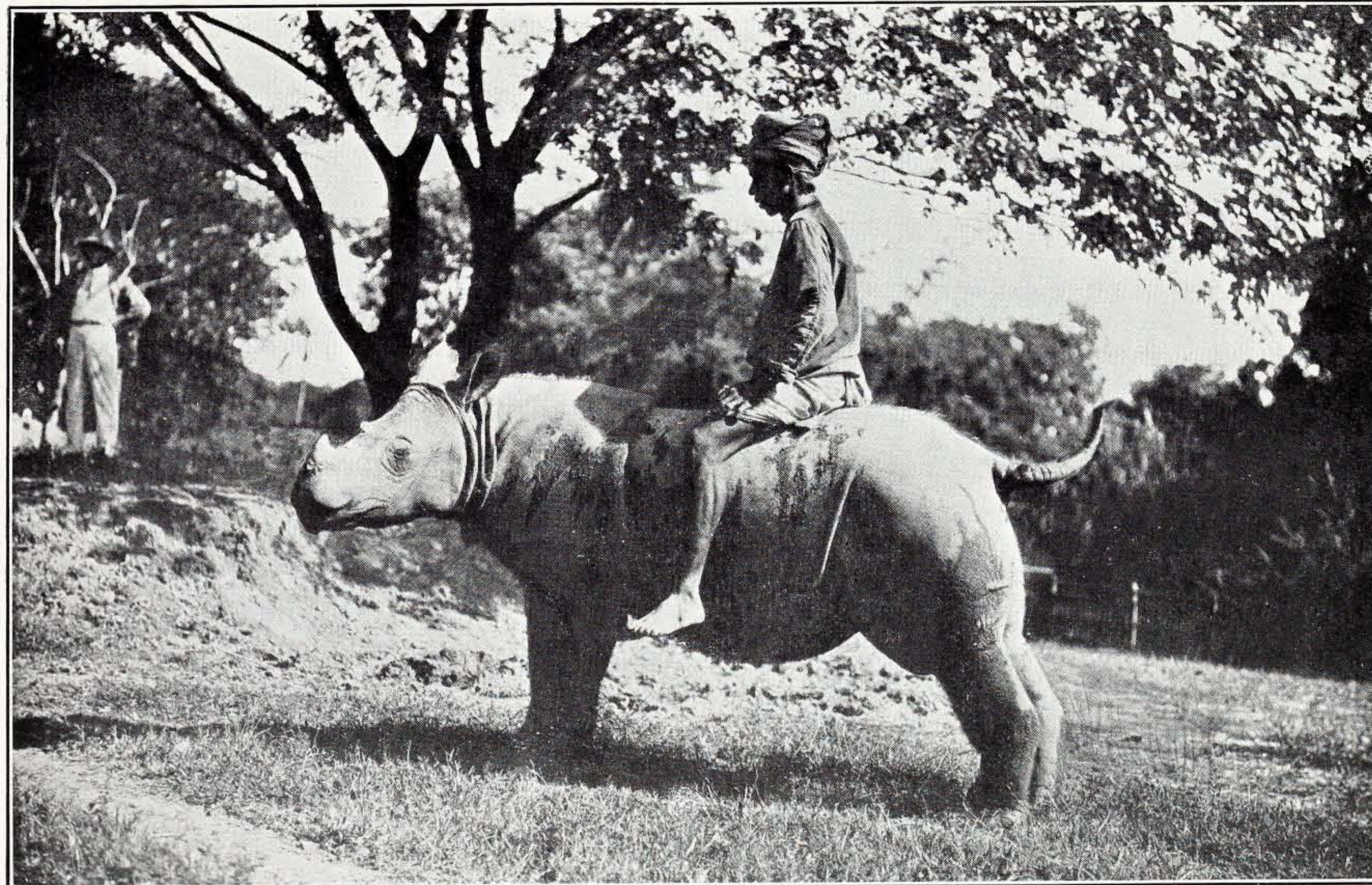
(11) A male Anoa, *Bos depressicornis.* This animal is unfortunately blind in one eye, the injury having been caused by that frequent source of trouble in menageries—a Nilgai, *Boselaphys tragocamelus.*

(12) A nice herd of twelve Thameng, or Burmese Brow-antlered Deer, *Cervus eldi.*

The Emus, a Ceram Cassowary, a Yellow-necked Cassowary, and a gigantic land tortoise should also be mentioned.

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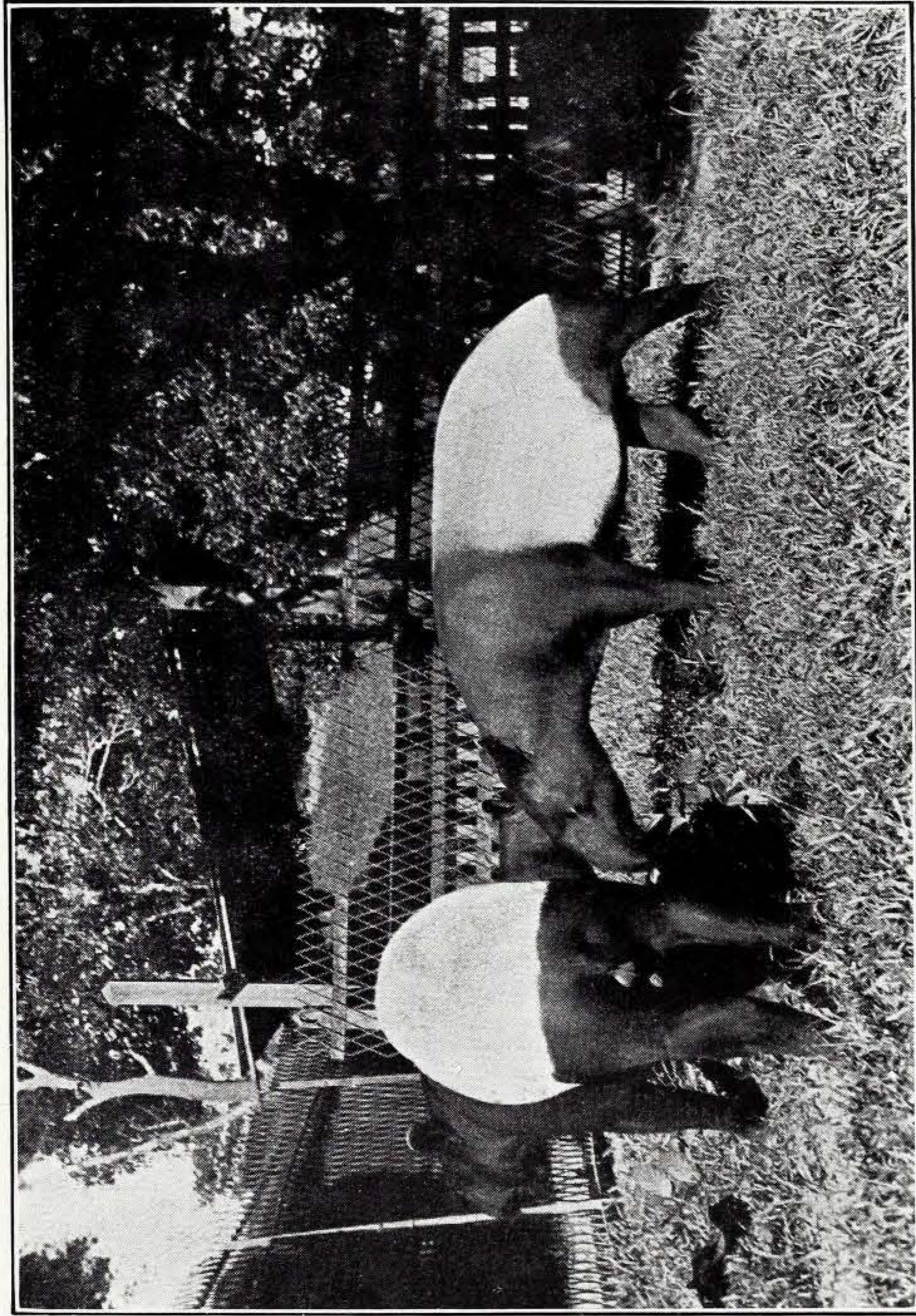
(\*) *Bus sondaicus* of Blanford, "Fauna of British India," Mammalia, 1891, page 489.



RHINOCEROS.

In Victoria Memorial Park, Rangoon.

PLATE XI.



TAPIRS.

In Victoria Memorial Park, Rangoon.