

GOVERNMENT OF EGYPT
PUBLIC WORKS DEPARTMENT.

ZOOLOGICAL GARDENS,

Giza, near Cairo.

REPORT ON MISSION TO EUROPE,

1905

BY

STANLEY S. FLOWER, DIRECTOR.



CAIRO :
NATIONAL PRINTING DEPARTMENT,
1906.

CONTENTS.

| | PAGE |
|--|------|
| PREFACE | 5 |
| I. NOTE ON THE ZOOLOGICAL GARDENS OF THE WORLD ... | 7 |
| List of Zoological Gardens | 8 |
| II. ANNOTATED LIST OF THE PRINCIPAL INSTITUTIONS VISITED ON THIS TOUR... .. | 12 |
| Zoological Gardens | 12 |
| Aquariums | 27 |
| Zoological Museums | 30 |
| III. MOST NOTEWORTHY BUILDINGS SEEN | 33 |
| IV. MOST NOTEWORTHY ANIMALS SEEN, OTHER THAN ANTELOPES | 24 |
| V. NOTES ON LIVE ANTELOPES SEEN | 35 |
| List of Antelopes living in the Giza Gardens | 41 |
| VI. LIST OF LIVE ANIMALS OBTAINED FOR OUR MENAGERIE ... | 42 |

(I).—The Zoological Gardens of the World.

The first Zoological Garden properly so called appears to have been established in very early times in China; and the Chinese thus early realizing (what many modern Europeans still fail to do) the educational value of such an institution called it "The Intelligence Park." In Greek and Roman times, as is well known, collections of wild beasts were made in foreign lands and brought to the chief towns for exhibition; but, except perhaps in the case of Alexander the Great sending specimens to Aristotle, this was not from purposes of interest in the animals themselves or for science, but for display and public slaughter.

In later times Royal personages frequently kept menageries of wild animals, aviaries of birds and ponds of fish; partly for sport, partly as pets and partly for exhibition to their personal guests and visitors.

In these collections, many of which still exist, was the origin of the modern Zoological Gardens; the change came gradually in Europe, but in America nearly 340 years intervened between the overthrow of the Imperial Mexican Zoological Gardens about 1520 and the foundation of the Philadelphia Zoological Society in 1859.

In England the first recorded Royal Menagerie was at Woodstock, Oxfordshire, in the time of King Henry I (1100-1135), which was transferred to the Tower of London apparently in the reign of King Henry III (1216-1272), and kept up there till after 1828. A second English Royal Menagerie existed at Windsor. The Dresden menagerie was started by Kurfurst August 1 in 1554. King Louis XI of France (died 1483), who is said to have introduced and established the Canary-bird in Europe, kept up a collection of live animals at Touraine; this Royal French Menagerie was continued in Paris, at the Louvre, till in 1583 King Henri III "had all the lions, bulls, bears, etc. killed with shots of acquebus." The famous menagerie of Versailles was founded by King Louis XIV (1643-1715).

Of existing Zoological Gardens the senior appears to be the Imperial Menagerie of Schönbrunn, Vienna, founded 1752, then that of Madrid 1774, then Paris 1793.

A new departure was made by London with the establishment of the Regent's Park Gardens in 1828 and the Survey Zoological Gardens a little later; these were soon followed by Dublin 1830, Clifton 1835 and Manchester 1836.

The Low Countries then took up the idea; the Zoological Garden of Amsterdam being founded in 1838, and that of Antwerp in 1843.

The senior German institution appears to be Berlin 1844. In the second half of the 19th century Zoological Gardens began to be quickly established not only in Europe but in Australia, America, Asia and finally Africa.

In Egypt H.H. the Khedive Ismail Pasha established a collection of live animals in the Gardens of Gezira Palace. The late Sir William Flower records in his diary of 2nd April, 1874, seeing there:—

“ 2 African Elephants, 7 Giraffes, 16 Lions (of all ages), 3 Leopards, 2 Servals, 1 Spotted Hyaena, 3 Nylghaies, 4 Hartebeests, 2 Leucoryx, smaller Antelopes, Deer, Kangaroos, Secretary Birds, Flamingos, good collection of Pheasants and fowls, Emu, etc.”

A list of public Zoological Gardens is appended, but many fine private menageries also exist. In the British Isles alone may be mentioned the collections of live wild animals kept by the Duke of Bedford at Woburn Abbey, Bedfordshire, Lord Powerscourt at Powerscourt, Ireland, Sir Edmund Loder at Leonardslee, Sussex, the Hon. Walter Rothschild at Tring Park, Hertfordshire, the late Mr. G. W. Duff Assheton Smith at Vaynol, North Wales, Mr. C. Leyland at Haggerston, Northumberland, the Rev. B. Hemsworth at Monk Fryston Hall, Yorkshire, and Mr. Leadbeater in Buckinghamshire. Also in Holland the famous collection belonging to Mr. F. E. Blaauw at Gooilust, near Hilversum, and in America the great Game Park established by Mr. Austin Corbin in New Hampshire.

LIST of Zoological Gardens, arranged alphabetically under continents and in Europe, under countries; those visited by the present writer are marked with an asterisk.

AFRICA

- *1. Giza, Cairo, Egypt; founded 1891. Capt. S.S. FLOWER, Director.
- *2. Khartoum, Sudan; founded 1901. Mr. A.L. BUTLER, Superintendent.
- 3. Pretoria, Transvaal. Dr. J. W. B. GUNNING, Director.

AMERICA

- 4. Buenos Aires; founded 1874. Senor C. ONELLI, Director.
- 5. Buffalo,
- 6. Cincinnati, founded 1875. Mr. S.A. STEPHAN, Director.

7. Denver, Colorado. Mrs. ALICK-LONG, Proprietress.
- Georgetown, British Guiana, closed.
8. New York, Central Park; founded 1865.
9. New York, Bronx Park; founded 1898. Mr. W. T. HORNADAY, Director.
- Blumenau, Brazil, founded 1870.
10. Para, Brazil.
11. Philadelphia; founded 1859. Mr. A. E. BROWN, General Manager.
12. Pittsburgh, Pennsylvania.
13. Rio de Janeiro. Mr. KIRSCHNER, Director.
14. San Francisco.
15. Toledo, Ohio.
16. Washington; founded 1890. Dr. F. BAKER, Superintendent.

ASIA

- *17. Bangkok, Siam. Property of H. M. the King of Siam.
18. Bombay, Victoria Zoological Gardens.
19. Calcutta; founded 1875. Mr. R. B. SANYAL, Superintendent.
20. Kurrachee.
21. Saigon.
- *22. Singapore. Mr. H. N. RIDLEY, Director.
in Botanical Gardens, menagerie said to have been reduced 1905.
23. Trivandrum, Travancore; founded 1859. Major F. W. DAWSON,
Director.
24. Yeddo, Japan.

AUSTRALIA

25. Adelaide; founded 1879. Mr. A. C. MINCHIN, Director.
26. Melbourne; founded 1857. Mr. W. H. D. De Le SOUËF, Director.
27. Perth; founded 1898. Mr. E. A. Le SOUËF, Director.
28. Sydney; founded 1879. Mr. A. S. Le SOUËF, Secretary.

EUROPE

AUSTRIA:—

- *29. Schönbrunn, Vienna; founded 1752. Herr A. KRAUS, Inspector.

BELGIUM:—

- *30. Antwerp; founded 1843. M. M. L'HOËST, Director.
— Brussels; founded 1851, closed 1878.
- *31. Ghent; founded 1851.
- *32. Liege; founded 1861.

BRITISH ISLES:—

- *33. Clifton; founded 1835. Capt. VILLIERS, Superintendent.
- *34. Dublin; founded 1830. Mr. HUNT, Superintendent.
- *35. London, Regents Park; founded 1828. Mr. R. I. Pocock, Superintendent.
- London, Surrey Z. G.; founded about 1829, closed 1856.
- *36. Manchester; founded 1836. Messrs. JENNISON, Proprietors.
- 37. Southport, Lancashire; founded 1906. Mr. W. S. CROSS, Proprietor.

DENMARK:—

- *38. Copenhagen; founded 1859. Herr J. SCHIOTT, Director.

FRANCE:—

- Lyons; founded 1872? closed?
- *39. Marseilles; founded 1855.
- 40. Nice-Cimiez. Comtesse DE LAGRANGE, Proprietress.
- *41. Paris, Jardin des Plantes; founded 1793.
- *42. Paris, Jardin d'Acclimatation; founded 1854-1860.

GERMANY:—

- 43. Aix-la-Chapelle; founded 1886? and closed 1905?
- 44. Augsburg.
- *45. Berlin; founded 1844. Dr. L. HECK, Director.
- *46. Breslau; founded 1865. Dr. F. GRABOWSKY, Director.
- *47. Cologne; founded 1860. Dr. L. WÜNDERLICH, Director.
- *48. Dresden; founded 1861. Herr A. SCHÖPF, Director.
- *49. Düsseldorf; founded 1874.
- 50. Elberfeld; founded 1879.
- *51. Frankfort-on-Maine; founded 1857. Dr. A. SEITZ, Director.
- *52. Halle; founded about 1900. Dr. G. BRANDES, Director.
- *53. Hamburg; founded 1863. Dr. H. BOLAU, Director.
- *54. Hamburg, Stellingen; founded about 1902. Herr C. HAGENBECK, Dir.
- 55. Hanover; founded 1863. Dr. E. SCHÄFF, Director.
- Jena.
- 56. Karlsruhe; founded 1864.
- 57. Königsberg; founded 1895. Herr E. CLAUSS, Director.
- 58. Krefeld; founded 1877.
- *59. Leipzig; founded 1876. Herr E. PINKERT, Director.
- 60. Lübeck.
- 61. Mülhausen.
- München-Gladbach.
- 62. Münster; founded 1875.
- 63. Nymphenberg.

64. Posen; founded 1881.
— Stettin; founded 1882, since closed.
65. Stuttgart; founded 1870. (Royal Menagerie from 1812). Herr A. NILL,
Director

GREECE:—

66. Athens.

HOLLAND:—

- *67. Amsterdam; founded 1838. Dr. C. KERBERT, Director.
*68. Hague; founded 1863. Major D. N. DIETZ, Director.
*69. Rotterdam; founded 1854. Dr. J. BUTTIKOFER, Director.

HUNGARY:—

70. Buda-Pest; founded 1867.

ITALY:—

- *71. Genoa. Di Negro Gardens, with Zool. Museum. Marquis DORIA,
Director.

PORTUGAL:—

72. Lisbon.

RUSSIA:—

73. Helsingfors, Finland.
74. Moscow; founded 1864.
75. St. Petersburg; founded 1871.
— Warsaw, Poland.

SPAIN:—

76. Barcelona.
77. Madrid; founded 1774.
— Xeres; founded 1864? since closed.

SWEDEN:—

78. Skansen, Stockholm.

SWITZERLAND:—

- *79. Bale; founded 1874. Dr. G. HAGMANN, Director.

TURKEY:—

80. Constantinople. Property of H. I. M. the Sultan.

(II).—Annotated List of the Principal Institutions
visited on this tour.

ZOOLOGICAL GARDENS.

I.—SCHÖNBRUNN.

The Zoological Gardens at Schönbrunn, Vienna, are perhaps the best in all Europe; though the collection of animals cannot of course compare in number or variety with London or Berlin, the clean and neat appearance of the grounds, the artistic effect of all the buildings being built in one style, and the healthy appearance of the live stock, are superior to anything I have seen in any other country.

These gardens are the property of H.I.M. the Emperor of Austria, and the public are admitted free to the greater part of the grounds. There is no disfiguring restaurant with its accompanying rows of tables and chairs, and the general effect of a visit to this institution is of supreme, calm, healthy enjoyment. In most of the buildings for housing the animals architectural simplicity and purity of design, artistic harmony with the surroundings, practical arrangements for the comfort of the animals and the work of the staff are combined in such an excellent manner as can only have been accomplished by many years of thoughtful conscientious working of the master-minds who have had control of this wonderful place.

The Schönbrunn Lion Houses are perhaps the most practical buildings for the purpose in any European menagerie: in 1900 when designing the new Lion Houses for the Egyptian Zoological Gardens, I, in general plan, took these Austrian ones as my model; the houses were built at Giza in 1901, and have so far proved a complete success.

The labels at Schönbrunn were all of uniform pattern, black lettering on white enamel plates. The following notice is on nearly every cage:—
“Es ist nicht gestattet, den Thieren Futterzuzuwerfen oder dieselben zu berühren.”

In September 1905 the collection of Monkeys was small, and except for a nice Douroucoli *Nyctipithecus* contained nothing of special interest, there were apparently no Lemurs.

On the other hand there was a very fine series of the Carnivoræ, including seven Lions, two Tigers, five Spotted Leopards (two of which were very richly marked), five Black Leopards, two very fine red European

Lynxes, an Eyra, a magnificent male Chita of large size, richly and darkly marked, presented by Prince Henry Liechtenstein over six years ago, and two European Seals in an ornamental pond.

The Chiroptera and Insectivora were apparently not represented, but the Rodentia well so by Crested and Tree Porcupines, Agouties, Cavies, Pacas, Coypus, Squirrels, European and American Marmots, and six Capybaras, which latter were seen to great advantage in a fine, large enclosure with rockery, pond and running water.

Of the remaining Mammals may be specially mentioned one African and three Indian Elephants, two Asiatic two-horned Rhinoceros, three Tapirs, a pair of Nubian Wild Donkeys, a pair of Chapman's Zebras, a fine stallion Burchell's Zebra (this race with almost unstriped legs is said to be almost extinct, and of recent years I only recollect seeing one other specimen, an old animal in Herr J. Ehlbeck's Menagerie at Genoa in May, 1903), one Anoa cow, many Chamois, a fine series of Sheep and Goats, a grand male Reindeer, three Sudan Giraffes, a very beautiful pure white Australian Opossum *Trichosurus*, and a Sloth.

There is a large and beautifully kept collection of Birds, and where wanted electric light is provided for their use during the long winter nights. A group of eight Blue-Jays *Coracias garrulus* in one out of doors cage made a pretty sight. One particularly pleasing aviary was fitted with gravel, turf, bushes and running water and contained Oyster-catchers, Ruffs, Stone-Curlews and Tortoises. An enclosure containing about twenty-five Flamingoes should also be mentioned. A fine Capercaillie, and a white Ostrich were two of the most noticeable birds in the Gardens.

The Reptile collection is not large, and no poisonous snakes are kept at Schönbrunn.

2.—JARDIN DES PLANTES, PARIS.

This historic and magnificent institution, which for over a century has done so much for the advancement of science, is open free to the public, but some parts are entirely reserved for the work of the staff and specialists, and others only open at certain hours, or on certain terms, such as the presenting of tickets, previously obtained for the purpose.

The tameness of the large numbers of wild Wood Pigeons which frequent these Gardens is a pleasing feature.

The majority of the Animal Houses are old, and have done good service in the past in helping the more modern Zoological Gardens to form ideas as to the installation of their collections. The "Grande Volière" or Flying Cage," is however by far the best and most handsome thing of its kind that I have seen, and by its clever proportions and elegant curves

does not detract from the look of the grounds in the way that the tent-shaped structures recently erected in several public gardens do.

In September 1905 the collection of monkeys would have been disappointing to visit, but for two very interesting individuals, one a pure white specimen of the Patas, the other an enormous adult male Mandrill: I saw eleven Lemurs, nine of which were of the typical genus, and the remaining two Mouse-Lemurs.

Other animals that should be specially mentioned were two African Elephants, male and female, the former being an enormous animal, three Indian Elephants, three Chapman's Zebras, two Mountain Zebras, five North African Hartebeest, a fine male Pyrenean Ibex, several domestic Goats from West Africa of a dwarf breed, two Hippopotamus, a Goliath Heron, a Heloderm, four Elephant Tortoises, of which two were very large, and also some fine Alligators showing to great advantage in an out of doors pond: evidently the Paris authorities have been troubled as we have been in Egypt, by visitors molesting the crocodilians, as there is a notice posted up:—"Défense de jeter des pierres aux crocodiles. Ces animaux sont placés sous la sauvegarde du Public."

3.—LONDON.

The Zoological Gardens in Regent's Park contain without doubt the most *valuable* collection of wild animals ever brought together, and one of the largest and most varied: during recent years the stock has varied from 2,500 to 2,900 head. The collection of monkeys is particularly fine and valuable, there is a large series of Antelopes, four Giraffes, an unrivalled collection of Zebras and a very fine display of Reptiles and Batrachians; but this old established institution is too well known to need further remarks in these notes, and I will only call attention to a very nice new aviary for Plovers recently built in the Gardens, between the Lion House and the Great Lawn.

4.—STELLINGEN.

On high ground just outside the city of Hamburg these new Zoological Gardens are approaching completion under the skilled guidance of their founder Herr Carl Hagenbeck.

In September, 1905, the collection already on exhibition in the grounds included one Chimpanzee, one Celebes Ape, several Baboons and Macaque monkeys (some very big male *Macacus nemestrinus* were noteworthy), a black Spider Monkey, twenty three Lions (several of these had very fine and dark manes), two Tigers, two Jaguars, a Puma, one Black and several

Spotted Leopards, three very fine Snow-Leopards, a large European Lynx, a Genet, a Mongoose, two Striped Hyænas, a Siberian Wolf, eight or nine Bears (including some very pleasing young Polars) a Capybara, some Patagonian Cavies, four Indian Elephants, three Zebras-hybrids, two Prejevalski's Horses, many other horses, poneys, mules, donkeys, deer, sheep, goats, zebus and yaks, two American Bison, two Anoa's (one of which was fawn coloured), ten or eleven Antelopes, a Wart Hog, six to eight Kangaroos, a Cockatoo, a Cassowary, a very nice collection of pheasants, ducks, cranes, ibis, etc., and also some Reptiles, including a very large Reticulated Python and some large Elephant Tortoises.

5.—HAMBURG.

The Zoological Society of Hamburg possesses a beautiful and centrally situated garden, stocked with a very rich collection of about 2,400 animals representing about 840 species.

A large number of donations are received, especially from Captains and Officers of ships calling at the Port of Hamburg.

The wild Chaffinches in these Gardens are very pleasing and very tame, hopping about the chairs and tables of the open air restaurant begging, in company with the ordinary House Sparrows, crumbs from the visitors.

In September, 1905, there was a fairly good collection of Monkeys, and about ten Lemurs, including a South-East African Galago.

A very good collection of Carnivoræ, especially rich in Bears and in the smaller species: perhaps the finest individual animal was a magnificent Puma, but two European Lynxes, a very nice Otter, two Seals and three Sea-Lions should also be mentioned.

Of other Mammals I would specially call attention to two Beavers, the series of twenty-seven Antelopes, a half grown African Elephant, a pair of large Indian Elephants, the male with absolutely huge tusks, a Hippopotamus, one Indian and one American Tapir, a pair of Zebras (male *Equus chapmani*, female *E. antiquorum*), three Asiatic Wild Donkeys, a very curious Asiatic Wild Pig, two African Red-Pigs, a very fine American Bison Bull, a pair of Sudan Giraffes and a Tasmanian Devil. The following notice is on most of the cages:—"Bitte, nicht füttern."

Of the birds the Cereopsis Geese were noticeable. The collection of Reptiles was very fine, and especially rich in Crocodilians.

6.—BERLIN.

Berlin possesses the richest Zoological Gardens in Europe, and an immense collection of animals; at a first visit it appears to the visitor that it would be easier to enumerate the kinds not represented, than those that are.

In three months one could hardly do justice to this great institution, and unfortunately I could only in 1905 spare time for a stay of three days, which barely allowed me to even glance at everything, but enabled me to appreciate the great amount of good work Dr. Heck, Dr. Heinroth, and their very able staff are accomplishing, and makes me wish to revisit Berlin.

This menagerie for the numbers of its contents is first in the World, and in their variety and value second only to London, and as during the last few years Berlin has gone so very much ahead, it bids fair to before long excel even the sixteen year older institution in Regent's Park.

The present Berlin collection is said to comprise between 3,400 and 3,800 mammals and birds, but no reptiles (except a few small specimens in the hall of the Antelope House). The construction of a proper installation for Reptiles is, however, contemplated.

The Animal Houses in their fantastic designs and brilliant colours no doubt please the majority of the visitors, but to my mind greatly detract from the pleasure of seeing the birds and beasts; as also do the numerous bandstands and immense restaurants with seas of tables and chairs, but which of course have their value in bringing in revenue to the institution.

The Restaurant department, indoors and out of doors, is said to have seating accommodation for 12,000 people at once; and is at times all occupied; as many as 80,000 visitors having entered the Gardens in one day, on a fine Sunday in Spring.

The frequent Concerts do not allow one to hear so much of the singing of birds as in some other Gardens, but the almost tame Chaffinches hopping about the outdoor Restaurant are very nice.

Here also the baneful practice of indiscriminate feeding of animals by visitors is discouraged by the oft recurring notice. "Füttern streng verboten."

The collection of Monkeys was hardly equal to the other branches of this institution, but on the other hand there were from 18 to 22 Lemurs in beautiful condition and representing rare and interesting forms; two specimens of the red variety of the Ruffed Lemur were very handsome, and a *Propithecus coronatus* was the gem of the place, and I think the animal that pleased me most in all the German Gardens.

The Carnivoræ were superb, and the series so complete, no other collection can compare with it. Where all was so good, both great and small, it is impossible to give a short list of those specimens most worth seeing, but perhaps the four that most impressed themselves on my mind were a grand Siberian Tiger, a Snow-Leopard, the Giant Otter, and the Fossa *Cryptoprocta ferox*.

Other specially noteworthy mammals were a Pronghorn Antelope, two Anoa's, a pair of Sudan Giraffes and a Giraffe-calf born in Berlin 24th

June, 1905, a pair of African Elephants (of great interest as showing their differences in appearance with regard to their localities of origin), a pair of Indian Elephants ("Hathi" and "Changi," formerly at Giza, and looking very fat and comfortable in their new home), one Rhinoceros, two Hippopotamus, a magnificent series of Antelope and Deer, five Zebras (including *Equus böhmi* and *E. crawshayi*), Nubian, Somali and Asiatic Wild Donkeys, two Prejevalski's Horses, two South African Hyraces, a nice Hedgehog *Erinaceus dealbatus*, three specimens of the rare Brazilian Cavy called "Moko" *Cerodon spixi*, and lastly two Echidnas.

Among the many hundreds of beautiful birds, I was particularly struck by two Eagles *Haliaëtus pelagicus* and *Aquila audax*, and a grand Vulture *Vultur occipitalis*.

7.—BRESLAU.

The Schönbrunn (Vienna) Menagerie, not being dependent on the gate-money of the public, stands on a different footing from almost all the other Zoological Gardens of Europe, and thus excepting the Imperial Austrian institution, I would say that the Breslau Zoological Gardens appeared to me the cleanest and best managed I have ever had the pleasure of visiting, but my visit was all too short, and though I stayed a day longer there than my programme had allowed, it was with great regret that I left Breslau.

The Breslau Gardens are severely handicapped in comparison to many others in two ways; first their low lying site, which before now has been flooded by the waters of the River Oder, and secondly by their geographical situation for away from all the great sea-ports where the wild animals of distant Continents arrive in Europe. But in spite of this the grounds are in beautiful order, and the garden, from a horticultural point of view, one of the prettiest and best kept in Europe, and also the menagerie is well stocked with a representative collection from every quarter of the globe. Comparatively few foreign animals reach Breslau as donations, and the management has to spend more money than most similar sized institutions in purchases and land transport.

The feature of the Breslau menagerie is the animal houses; those for Elephants, for Monkeys and for small Birds being particularly well designed, both from the point of view of the staff in caring for, and the public in viewing the animals. But it is most famous for its success in keeping animals; here lived the celebrated Gorilla "Pussi" for 7 years 1 month and 3 days, and here have been bred many of the Malayan Tapirs to be seen in the various menageries of Europe.

The collection numbers about 1,800 live animals, representing some 650 species. The Monkeys were not numerous, and the Lemurs only represented by a few individuals of the typical genus and by *Microcebus*.

A fine series of Carnivora included a Tiger-Civet *Linsang maculosa* and a Brown Hyæna.

A Tenrek *Centetes ecaudatus*, an Echidna, one African Elephant, two Indian Elephants, a pair of American and a pair of Malayan Tapirs, a pair of Hippopotamus, neither of which have ever swum in an African stream, the male having been born in the Antwerp, and the female in the Central Park New York menagerie, some fine Wapiti Deer and a Chital Stag with really magnificent antlers, were among the more remarkable mammals.

The bird collection was for caging and management in advance of any other public garden; the birds all looked so happy, and their individual needs seemed so well provided for. The Birds of Paradise, Bearded Tits, Blue Tits, Wagtails and Hoopoes were among the nicest groups, and especially must be noticed two Bee-eaters *Merops apiaster*, a wonderful sight to see tame and in good feather in a cage.

Of the Reptiles at Breslau must be mentioned two Mississippi Alligators, probably among the largest in captivity, they appeared to be each about 3 metres in total length.

8.—DRESDEN.

The chief features of the Zoological Gardens of Dresden are a fine Antelope House, a cleverly designed Monkey House, exceptionally well-grown trees, a pleasing number of wild birds, and certain animals of particular interest.

First among these is a female Koolokamba Chimpanzee which has lived for ten years in Dresden, then a male Mias, or "Orang-utan," a very large specimen, wonderfully and horribly human in eyes and expression, with a huge red beard and long mustaches, this great anthropoid ape has been seven years in its present home and though of ferocious appearance seemed to be very docile and friendly with Director Schoepf and with the keeper and keeperess of the Monkey house.

There was also a very fine male Anubis Baboon, an Elk, a herd of nine American Bison, including a most grand old bull, three Zebras, a pair of Sudan Giraffes, an Anoa, and two Indian Elephants, one of which, an old female of irascible temper, has been over forty years an inhabitant of the Dresden Gardens.

9.—LEIPSIG.

The Leipzig Zoological Gardens possess several extremely artistic new buildings, especially the magnificent block used as main entrance, offices, restaurant and concert hall, and the Lion House.

An artificial grotto and "snow mountain," however, unfortunately detracted from the otherwise pleasing effect of the grounds.

The "Schmuckgarten," across a bridge to the left of the main gate, is a beautiful piece of work, as well kept and pretty a flower garden as any one could wish to see, full of effective ideas, such as sweet peas grown up the stems of young trees and yuccas forming the centre of small round beds of cannas and geraniums.

The collection of animals numbers about 850 individuals, representing about 230 to 240 species: and the Leisig menagerie is famous for its success in breeding animals.

In September, 1905, I saw a large number of Monkeys of common species, and also a male Sacred Baboon in full mantle, a Wanderoo, two Langurs and one specimen each of the American monkeys *Cebus apella*, and *Nyctipithecus vociferans*, but there were very few Lemurs.

The collection of large Felidae was very fine, comprising ten Lions, eight Tigers, four Spotted Leopards, two Black Leopards, three Snow Leopards, five Jaguars and two Pumas.

Other noteworthy animals were eleven Antelopes, two female Chapman's Zebras, one performing Indian Elephant, six American and two European Bison, a herd of dwarf West African Goats, two very tame Hyraces, two particularly fine Echidnas, some very showy specimens of Eagles and Vultures, and a Giant Japanese Salamander.

10.—HALLE.

The Zoological Garden of Halle on the Saal though only a few years old, and so far not possessing a large collection of animals, is nevertheless one of the most interesting in Europe. It occupies the whole top of a hill, clad with lilac, oak, fir and silver birch, and is laid out with winding paths and cleverly arranged paddocks at intervals in the wood, from several vantage points there are heavenly views over town, river, and distant hills and vales.

Of buildings the Halle Garden is especially remarkable, for an entirely original Monkey House, and for a series of roomy paddocks for Ibex, Thar, Wild Sheep, etc., which situated on the steep side of the hill, with the natural rock showing, masses of larva, etc., are the finest installations of their kind in the World.

In September, 1905, I saw in the Monkey House two West African Chimpanzees and a *White Spider Monkey*. In another building, with no artificial heat but free access to the outer air were specimens of *Macacus sinicus*, *M. rhesus*, *M. hecki*, *Cynopithecus niger*, *Papio hamadryas*, *P. babuin*; I was told these had been kept there all the last Winter, and though there was 15° Réamur (2° below Zero, Fahrenheit) of frost, not one died.

There were only two Lemurs in the collection.

Of other animals may be specially mentioned, a cleverly trained young Indian Elephant named "Bupari," a pair of Nubian Ibex (bred in the Giza Zoological Gardens) two Sea Lions, a Seal and one Penguin.

11.—FRANKFORT.

I have known the Zoological Gardens of Frankfurt-am-Main for the last thirteen years, and it is always a great pleasure to revisit them. Though the area of ground these Gardens occupy is small, they are most cleverly laid out, the horticultural work is of the highest order, and the menagerie very good both in numbers and variety. These animals are fortunate in being under the care of such a sympathetic and learned chief as the Director, Dr. Seitz; and the Frankfort public are indebted to the number of exhibits deposited here by the well known naturalist-traveller, Herr J. Menges of Limburg-a-Lahn.

In September, 1905, among the most noteworthy mammals may be mentioned, one Indian and one African Elephant, one Indian Rhinoceros, one Hippopotamus, two American Tapirs, one Zebra (the true *Equus böhmi*, I believe, according to Herr Matschie, but much like what is generally called *E. chapmani*), two African Wild Donkeys bred in the Gardens from Nubian parents, a Wild Sow from Algiers, a grand young male Roan Antelope, four Tigers, one of which a Siberian male appears to me the *largest* tiger I have seen in Europe though perhaps one at Berlin is a finer specimen, a good series of Jackals (two *Canis anthus*, two *C. caffensis* from Abyssinia, presented by the late Baron von Erlanger, this is a short-legged, thick-set Jackal, with small ears, and a long, bushy tail, the general colour is dark tawny, but the lateral line of the body and the terminal five sixths of the tail are black, one *C. hagenbecki* from Somaliland, one *C. aureus*, and one doubtful species, much like *C. mesomelas*, but with particularly long ears), one *Bassaris acuta*, a black Marmot *Arctomys bobax*, a West African Giant Rat *Cricetomys gambianus*, a very fine Anteater *Myrmecophaga jubata*, a probably unequalled elsewhere collection of Kangaroos, two Marsupial-Bandicoots *Perameles nasuta*, two very handsome white-spotted black Dasyures, and a large Echidna.

And among the birds attention may be called to the Australian Butcher-Crow *Cracticus destructor*.

The Insect House is a particular feature of the Frankfort Gardens.

12.—COLOGNE.

I have paid visits to these Gardens, in 1876, 1887, 1892 and 1905, and with great pleasure watched their growth and improvement. The Sea-

Lions pond is one of the best and prettiest in Europe, and the row of cages for the Wild Pigs is particularly well designed. The large Bird House, recently built in the style of a Russian Church, I regret to say I cannot admire.

The special feature of the Zoological Gardens of Cologne is the large collection of water birds; swans, geese, ducks, flamingos (the Red Flamingos, from Central America, are very effective), cranes and pelicans. There is a beautiful series of ponds, surrounded by fine vegetation, which gives a large number of lovely views of bird life in green surroundings.

The abundant supply of water is all pumped from a well in the grounds.

The Cologne labels are of enamelled metal, white lettering on a blue ground.

Last September the animals that appeared to me of most interest in the collection were two Mias or "Orang-utans," an exceptionally fine lot of Baboons, including a large male Drill and two male Sacred Baboons both in full mantle, a Galago, a Slow-Loris, a patriarchal Lion who has lived 27 years in Cologne and was the father of two litters of cubs in 1905, a young Puma born in the Gardens, an African Wild Dog *Lycaeon*, one *Bassaris acuta*, a Seal, four Sea Lions, three Indian Elephants one Hippopotamus remarkable for its small size, two Malayan Tapirs, one American Tapir, two Chapman's Zebras, two Anoa's, a pair of Sudan Giraffes, two Marsupial-Wolves *Thylacinus*, and one Echidna.

13.—DÜSSELDORF.

The Düsseldorf Zoological Gardens are distinguished for the very large size of the paddocks for the ruminants, which are on a grander scale than I have seen attempted in any other of the public gardens of Europe.

Another feature of Düsseldorf is the great Aviary or "Flying Cage."

The extensive grounds are very prettily laid out, and there are numerous pieces of really good gardening work to be seen.

A natural stream running through the grounds gives an idea of reality and object to the ponds and canal.

In September, 1905, there was a nice collection of beasts and birds in the Düsseldorf menagerie, including a very fair number of monkeys, and of the large Carnivora, many Wild Boar, and an immense number of water-fowl and poultry.

Particular attention should be drawn to the Sheep, represented by various domesticated breeds, by the Mufion, and by a herd of nineteen, or more, head of the Barbary Wild Sheep *Ovis lervia*, including one magnificent ram.

Other important exhibits were an Indian Elephant, four Zebras, a very fine Echidna, and various birds of prey in excellent condition.

14.—ROTTERDAM.

The Zoological Gardens of Rotterdam possess remarkably good new blocks of administrative buildings, containing a very complete series of offices, stores, workshops, and rooms and stables specially fitted for the accommodation of sick and newly arrived animals. The forage stores are particularly ingenious, and so arranged as to entail as little wastage as possible, and to save time and labour on the part of the storekeeper in supervising and checking and the keepers in drawing the daily supplies needed for the menagerie. The rat-proof corn bins are sufficient in number to keep each description of grain separate, and hold a months supply each. The bins are filled from the first floor of the buildings, and the amount of each article in store can be seen at a glance: the openings for issuing the grain to the keepers are on the ground floor; and simple mechanical arrangements are provided to prevent the grain deteriorating from pressure, and also to ensure a ready even flow to the expense openings; this apparently works so well that the daily issues do not have to be weighed or measured, as the amount of each grain that leaves the expense opening of the bin in a given number of seconds is exactly known. Sufficient space is also provided in the magazine for a number of keepers to draw supplies at the same time, and all without crowding, and thus under easy supervision. The arrangements for quarantining additions to the menagerie are equally simple and efficient: a waggon on arriving with new animals, enters the Gardens from the outside road under a covered archway, big gates at once close behind it to keep out any curious spectators who may have followed it in the streets, the boxes or crates are then lifted out by an overhead crane, if containing small creatures such as monkeys or birds the crane deposits them on an upper storey of the buildings, if antelopes or other large animals on the ground floor, in either case rooms are ready for their reception, provided with heating apparatus to keep them at any desired temperature and specially built to allow of thorough disinfection whenever wanted. In these places under the careful surveillance of skilled keepers, and free from the disturbance of the general public, the new animals can recover from the effects of the journey, and should they be suffering from infectious disease it will be discovered before they have come into contact with the other animals in the menagerie; another great advantage of this quarantine system is that in many cases it enables the staff to rid the animals of parasites both external and internal, which it would be much more difficult to do once the animals were turned out into their permanent quarters in the grounds, and also the parasites arriving with the new animal would often spread to other animals, already in the collection but previously free from the trouble. This quarantine system has been practised,

as far as our limited means allow, at Giza for the last four years with very good results: neglect of it has in some instances given a great deal of subsequent trouble.

These administrative Buildings at Rotterdam reflect great credit on the energetic Director, Dr. Büttikofer, not only in the careful way in which they have been thought out and designed, but also in the fact that they *have been built*. Many managers of menageries have planned and wished for such buildings, but have generally found that though it was comparatively easy to obtain money for exhibition buildings, it was almost impossible to be allowed to spend anything on works which though really essential auxiliaries to the exhibition buildings were not in themselves visible to the public. And it shows the wise confidence the authorities of the Rotterdam Zoological Gardens have placed in their Director that they have allowed him to appropriate the large sum these buildings and their fittings must have cost, for work the ordinary visitor neither knows of or cares about, but which in the end must repay the institution much more than their original cost in saving of wasted forage, labour and time, and the capital sum spent on the hospital for animals is as it were sunk in an insurance fund for the future well being of the inmates of the Menagerie.

Rotterdam is also being provided with a number of new animal houses; during my last visit there the Monkey House was almost completed, and the Reptile House well advanced; some smaller buildings were also in process of construction.

Both the Monkey House and the Reptile House are very original and interesting buildings, and in their design give evidence of immense care and great knowledge both in building construction and in the management of animals in captivity. Their success is eagerly looked forward to by the Directors of many other European Zoological Gardens, who are figuratively standing by to modify or rebuild their own installations, according to the experience that it is hoped will be gained at Rotterdam.

In most European menageries, as for instance London, Berlin, Breslau, Dresden and the old Ape house at Rotterdam, the more valuable monkeys are protected from being fed by the visitors by plate glass screens; in the new Rotterdam Monkey House wire netting screens of small mesh are provided, placed above the barrier which keeps the public some feet back from the cage fronts, which it is calculated will make it impossible for a visitor to throw food into the cages or within reach of the monkeys.

One of the most charming features of the Rotterdam Gardens is the botanical section, with well kept rock-garden, and *Victoria regia* and Orchid Houses.

In preparation for the opening of the new Monkey House the Rotterdam staff have got together a large collection of monkeys, especially rich in

rare West African species of the genus *Cercopithecus*, three Chimpanzees should also be noted, and among other things two Elk, two East Sumatran, Wild Pigs (the *Sus oi* of Mr. G. Miller), and an Eiderduck which had been over two years in the Gardens and was doing well.

15.—DUBLIN.

The two special features of the Gardens of the Royal Zoological Society of Ireland are, firstly the Lake, beautifully surrounded by trees and high sloping banks, frequented by wildduck, coot and large flocks of lovely seagulls; and secondly the birds living at large on the lawns and paths, including a heron, pelicans, swans, geese of several species, peafowl and guineafowl.

A large new aviary or "Flying Cage" was being constructed on the far side of the lake. Like in many of the Dublin menagerie buildings, the influence of the Regent's Park, London, designs was noticeable; and this aviary, like the older and smaller Dublin one, was "tent-shaped."

Of the animals in these Gardens at the time of my last visit in October, 1905, may be mentioned, besides the world-famous collection of Lions and the large *Felidae*, an Albino Vervet Monkey, a very nice individual of Humboldt's Woolly Monkey, an Indian Elephant, a Chapman's Zebra, an Anoa, a Sudan Giraffe, and an enormous male Kangaroo.

16.—MANCHESTER.

The Zoological Gardens, Belle Vue, Manchester, are in some ways the most interesting in Europe; the casual visitor might be more impressed by many others, but to one like myself whose trade is to feed and manage wild beasts in captivity and to study their lives so as to make them as enjoyable as circumstances permit, the Belle Vue Gardens are most instructive.

Speaking generally the Schönbrunn (Vienna) Zoological Gardens are in plan and management unique, so are the Jardin des Plantes (Paris); the Regent's Park (London) Gardens were originally adapted from Paris and then improved and developed on their own initiative, the older Central European Zoological Gardens were almost without exception copied from London, and latterly Berlin has set the lead in many features, which have been copied or improved on in many towns, and during the last few years the Regent's Park Gardens have been remodelling themselves apparently on ideas obtained from the Continent; but the Manchester Gardens are quite distinct from all others, and for about seventy years the Messrs. Jennison have been developing them on original and practical lines,

Unfortunately the fact that this institution is supported entirely by the gate-money of the public is only too apparent, and to add to its popularity and receipts, the grounds contain all sorts of diversions, such as numerous restaurants, merry-go-rounds, shooting-range, race-course, dancing-platform, panorama, etc., etc., but I suppose that if these discordant elements were not included at Belle Vue it would not have been possible to bring together or maintain the fine menagerie of which the City of Manchester may well be proud.

The Monkey House is a very large one, and though well stocked, there are other monkeys beside in the grounds in cages open to the outside air on one side.

The Lion House (with some mural paintings by the well known Zoological artist, Mr. R. E. Holding, and others) contains perhaps the finest indoor cages of any Zoological Gardens in Europe; some others are better arranged, but still the results at Manchester are good and both Lions and Tigers have been bred here.

The Sea Lions installation is remarkable for its great covered hall, containing a large swimming tank for the Sea Lions, and room for hundreds of visitors to watch their evolutions during inclement weather. Outside is another tank for the animals use in good weather.

The Diving Birds House is another particular feature of the Belle Vue Gardens, the raised and glass-sided tank is about thirty three feet long, and on the opposite side of the building there is accommodation for a large crowd of spectators, in tiers, to see the Cormorants or Penguins swimming under water.

The gigantic Tortoises, deposited here by the Hon. Walter Rothschild, M. P. (who was also the kind donor of the largest of the Elephant Tortoises now at Giza), are kept in a large glass-fronted enclosure in the Elephant House, the floor of this cage is well raised above the ground level on which the visitors stand and thus the Tortoises are seen to advantage, but unfortunately the lighting is not good as it all comes from the front and consequently the plate glass is apt to become a looking glass in which the visitors see themselves, instead of seeing the tortoises beyond. At one end of the cage is a shallow tank of water, and the whole is prettily decorated with plants. Besides the Tortoises, I noted on a former visit in July, 1903, that small lizards and some birds *Liothrix* were also kept in this cage, which helped to liven it up, and formed a pleasing contrast to the slow moving monsters for whom the enclosure was otherwise reserved.

The Reptile House is however the most remarkable building here for ingenuity and exhibition purposes, it forms one end of a well stocked and pleasing conservatory and contains one huge cage about seventy two feet in length, nine feet wide and about twelve feet high; at intervals there are

arrangements for sliding in from the back wire partitions, by which it can be divided up into as many six separate cages if so desired.

The whole front of this magnificent cage is of sheets of plate glass, the roof is also all glass and thus shows up the animals to great advantage and what is very important for so many reptiles allows them to obtain as much sunlight as the English climate permits. Along the back runs a service passage for the keepers, separated from the cage itself by a wooden partition, about 6 feet high, with doors at convenient intervals, and above the wood, the partition is carried up to the roof in glass.

The floor of the cage, well raised about the ground level of the house, is of wooden boards, sanded. Under the cage floor itself are hot-water pipes, and wire gratings allow the heated air to rise into the cage.

Inside the cage branches of trees, and a tank of water are provided for the reptiles use.

A feature of these Gardens are the combinations of different sorts of animals living amicably in the same cages; thus Guinea-pigs run about in the Zebra's enclosure; a party of Marmosets and Fruit Bats share a cage; Coypu Rats are kept in a "Flying Cage" with Gulls, Pelicans, Storks, Heron, etc., and one aviary contains two Penguins, an Adjutant Stork, Mandarin Ducks, Rails, etc.

The collection of monkeys is excellent, both in numbers of individuals, variety of species and in condition. In July, 1903, I counted 98 monkeys and 8 or 9 lemurs, in October 1905 80 monkeys and 4 lemurs. The adult male Drill is probably the finest individual monkey living in captivity in Europe, and alone worth a visit to Manchester; he was obtained in May 1895, and was then supposed to be about six months old.

Other noteworthy animals in October, 1905, were the female Hippopotamus from the Nile, purchased on the 19th July, 1876, three Indian Elephants, a recently acquired male Sudan Giraffe, two Chapman's Zebras and three Sea-Lions.

The old male Indian Rhinoceros who had been purchased on the 20th June 1876 I was sorry to find had died since my last visit to Manchester, but I saw his skin, stuffed and mounted.

The following notice is put up: "Caution. The Keepers have strict orders to Expel any Visitor from the Gardens found Teasing the animals or birds."