

POPULAR OFFICIAL GUIDE  
TO THE  
**New York Zoological Park**  
AS FAR AS COMPLETED



WITH  
MAPS, PLANS AND ILLUSTRATIONS

**New York Zoological Society**

OCTOBER 1, 1901

Only authorized guide

Price, 25 cents

FOURTH EDITION





MAP OF THE  
**NEW YORK ZOOLOGICAL PARK,**  
 AS FAR AS COMPLETED.

Only the Finished Walks and Roads are Shown.  
 Buildings to be Erected are Indicated by Dotted Lines.

- 1. Ducks' Aviary.
- 2. Flying Cage.
- 3. Aquatic Birds' House.
- 15. Wolf Pens.
- 15A. Fox Pens.
- 20. Aquatic Mammals' Pond.
- 21. Otter Pools.
- 22. Badgers' House.
- 23. Small Mammals' House.
- 26. Prairie-Dog Village.
- 27. Reptile House.
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- 33. The Buffalo Range.
- 36. Prong-Horned Antelope Range.
- 37. Elk Range.
- 38. The Moose Range.
- 39. The Caribou Range.
- 40. The Red Deer Range.
- 42. The Virginia Deer Range.
- 43. The Mule Deer Range.
- 45. Rocking Stone Restaurant.
- 46. Northwest Entrance.
- 48. Northeast Entrance.
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- 53. Southwest Entrance.
- 54. Service Road Entrance. (For Business only.)
- 56. Black-Tailed Deer Range.
- 57. Axis Deer Range.
- 58. Fallow Deer Range.
- 59. Women's Cottage.
- 60. Men's Cottage.
- 61. Nursery.



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ELK IN THE ZOOLOGICAL PARK.

*Sadie T. Ingle's Book  
Nov 3<sup>rd</sup> 1901.*

# POPULAR OFFICIAL GUIDE

TO THE

# New York Zoological Park,

AS FAR AS COMPLETED.

BY

WILLIAM T. HORNADAY

Director and General Curator



WITH MAPS, PLANS, AND ILLUSTRATIONS

*FOURTH EDITION*

New York Zoological Society

OCTOBER 1, 1901

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(1901)

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## PREFACE.

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THE opening of the Zoological Park marks another great step toward the education of the people of the City of New York. It will bring the beauties and wonders of living Nature within reach of hundreds and thousands who are unable to travel. Like its predecessors in this field of popular education, the Park is maintained by the City, while its collections of animals and all of its present buildings are due to the generosity of citizens of New York. We look to the continued and increasing support of all classes of people for whose education and amusement the Park is designed, rather than for the exclusive interests of science.

Although the Park is only one-third of the way toward completion, the Zoological Society believes that visitors will welcome a popular and reliable guide to what has already been accomplished. One year ago we began active work, and after two years of planning and organization ceased to speak publicly of our plans for the future. This handbook describes and pictures only what has actually been accomplished up to the day of going to press.

We bespeak for the Director and his colleagues on the Zoological Park staff, as well as for the Architects, indulgence for such shortcomings as are inseparable from such a difficult undertaking as this, during its first year. As rapidly as possible the incomplete parts of the Park will be taken in hand and brought to a finish. It has been no trifling matter to provide plans and surveys, building materials and workmen for our twenty-two installations, proceeding simultaneously with the construction by the City of miles of walks, roads, sewers and water-lines; to finish ponds and entrances, trim the forests, establish a nursery,

grade and plant miles of walk - borders, and build retaining walls ; to select a staff of assistants, collect animals, write labels, disburse \$170,000 in small sums, without loss or dispute, and finally, during the last few weeks to improve Lake Agassiz sufficiently to make it a full and wholesome body of water.

That all the above has actually been accomplished in one year's time, without costly mistakes, or losses on account of changes in plans, and with no friction whatever, is certainly a cause for congratulation. We have enjoyed the constant and capable co-operation of the Park Department for the Borough of the Bronx and its engineers, as well as the generous support of the Mayor and other City authorities.

EXECUTIVE COMMITTEE  
OF THE ZOOLOGICAL SOCIETY.



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## Statistics of the Zoological Park,

NOVEMBER 8, 1899.

Final plan of the Zoological Park approved by Park Board, November 22, 1897.

Zoological Society assumed control of grounds, July 1, 1898.

First building begun, August 11, 1898.

Animal buildings completed to November 8, 1899 .....10

Groups of Dens, Aviaries, and other installations for animals .....12

Animal ranges completed .....11

Wire fences erected.....5¼ miles

Wrought-iron fences erected .....2,470 feet

Walks constructed.....9,750 “

Water lines laid.....6,110 “

Sewers constructed .....4,775 “

Service road built .. .....3,000 “

Ponds constructed..... 4

### LIVE ANIMALS IN THE COLLECTIONS ON NOVEMBER 8, 1899.

Mammals .....	43 species,	157 specimens.
Birds.....	36 “	175 “
Reptiles .....	78 “	511 “
	—	—
Total.....	157	843

# THE NEW YORK ZOOLOGICAL SOCIETY.

## Ex-Officio Managers:

HON. ROBERT A. VAN WYCK, *Mayor.*

HON. GEORGE C. CLAUSEN, *President Department of Parks.*

## President:

HON. LEVI P. MORTON.

## Executive Committee:

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JOHN S. BARNES,      CHARLES T. BARNEY,

HON. LEVI P. MORTON, *ex-officio.*

---

CHARLES T. BARNEY, *Treasurer, 66 Broadway.*

---

## Park Commissioner, Borough of the Bronx:

HON. AUGUST MOEBUS.

---

## OFFICERS OF THE ZOOLOGICAL PARK:

WILLIAM T. HORNADAY, . . . . . *Director and General Curator.*

RAYMOND L. DITMARS, . . . *Assistant Curator, in charge of Reptiles.*

C. WILLIAM BEEBE, . . . . . *Assistant Curator, in charge of Birds.*

HERMANN W. MERKEL, . . . . . *Chief Forester.*

H. R. MITCHELL, . . . . . *Chief Clerk and Disbursing Officer.*

GEORGE M. BEERBOWER, . . . . . *Civil Engineer.*

---

## Architects and Engineers:

HEINS & LA FARGE, *Architects.*

W. BARCLAY AND H. DEB. PARSONS, *Consulting Engineers.*

## Gifts to the Zoological Park.

The buildings, aviaries, dens and cages, shelter houses, and other installations have been constructed, and the main collections of animals have been purchased, with the funds of the Zoological Society contributed by the following persons :

### FOUNDERS.

BARNES, JOHN S.	OTTENDORFER, OSWALD.
CADWALADER, JOHN L.	PYNE, PERCY R.
CARNEGIE, ANDREW.	SCHIFF, JACOB H.
DODGE, WILLIAM E.	SLOANE, WILLIAM D.
*GOELET, ROBERT.	TAYLOR, HENRY A. C.
GOULD, MISS HELEN MILLER.	THORNE, SAMUEL.
GOULD, GEORGE J.	TREVOR, MRS. JOHN B.
*HUNTINGTON, C. P.	*VANDERBILT, CORNELIUS.
MORGAN, J. PIERPONT.	VANDERBILT, WILLIAM K.
MORTON, LEVI P.	WHITNEY, WILLIAM C.
WOOD, MRS. ANTOINETTE ENO.	

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### ASSOCIATE FOUNDERS.

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BERWIND, EDWARD J.	OSBORN, HENRY F.
CARTER, JAMES C.	SCHERMERHORN, F. AUGUSTUS.
CHISHOLM, HUGH J.	SCHUYLER, PHILIP.
TIFFANY & Co.	

\* Deceased.

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BLISS, GEORGE T.	OSBORN, MRS. WILLIAM H.
CLARK, GEORGE C.	POOR, HENRY W.
COOK, HENRY H.	PYNE, MRS. PERCY R.
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HEWITT, ABRAM S.	PHELPS.
ISELIN, ADRIAN.	THORNE, EDWIN.
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KENNEDY, JOHN S.	THORNE, SAMUEL, JR.
LEWIS, MRS. GEORGE.	THORNE, S. BRINCKERHOFF.
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MORRIS, MRS. A. NEWBOLD.	TWOMBLY, H. MCK.
MORRIS, MISS EVA VAN CORT-	VON POST, H. C.
LANDT.	*WEBB, WILLIAM H.
	*WOLFF, A.

The plans, specifications, surveys, and other preliminary expenses incurred for the Zoological Park, to the extent of \$17,000, have been paid by the Annual Members and Life Members of the Society.

Individual gifts of animals are acknowledged on the labels, and in the Annual Report of the Society.

\* Deceased.



## GENERAL STATUS OF THE ZOOLOGICAL PARK.

**Origin.**—The New York Zoological Park originated with the New York Zoological Society, a scientific body incorporated in 1895, under a special charter granted by the Legislature of the State of New York. The declared objects of the Society are three in number—“ A public Zoological Park ; the preservation of our native animals ; the promotion of zoology.” At present the Society consists of 17 Founders, 7 Associate Founders, 28 Patrons, 79 Life Members, 554 Active Members and 10 Corresponding Members.

Ex-Governor Levi P. Morton is the President of the Society. The affairs of the Society are managed by a Board of Managers of thirty-six persons, which meets three times each year. The planning and general development of the Zoological Park, as well as the general business of the Society, is in the hands of an Executive Committee of eight persons, of which Professor Henry F. Osborn is Chairman and Chief Executive Officer. Mr. Madison Grant is Secretary of the Society, and his office is at No. 11 Wall Street. The remaining members of the Executive Committee are the following: John L. Cadwalader, Charles T. Barney, John S. Barnes, Philip Schuyler, Madison Grant, and W. W. Niles, Jr. Mr. William T. Hornaday is the Director and general Curator of the Zoological Park, and the offices of the Zoological Park staff are at present temporarily located in the Elk House, near the intersection of 183d Street and the Southern Boulevard. The Society assumed control of the grounds on July 1, 1898, and began the first excavation, for the Bird House, on August 11th. The Park Department began work on the Aquatic Mammals' Pond, on August 29, 1898.

**Sources of Income.**—The funds devoted to the development of the Zoological Park have been derived from the following sources :

1. From the Zoological Society, obtained by subscriptions from private citizens—all funds for plans, for the erection of buildings, aviaries, dens and other accommodations for animals ; and for the purchase of animals.

2. From the City of New York—by vote of the Board of Estimate and Apportionment—all funds for the construction of walks, roads, sewers and drainage, water supply, public comfort buildings, entrances, grading, excavating of large ponds and lakes, and annual maintenance of the grounds and collections.

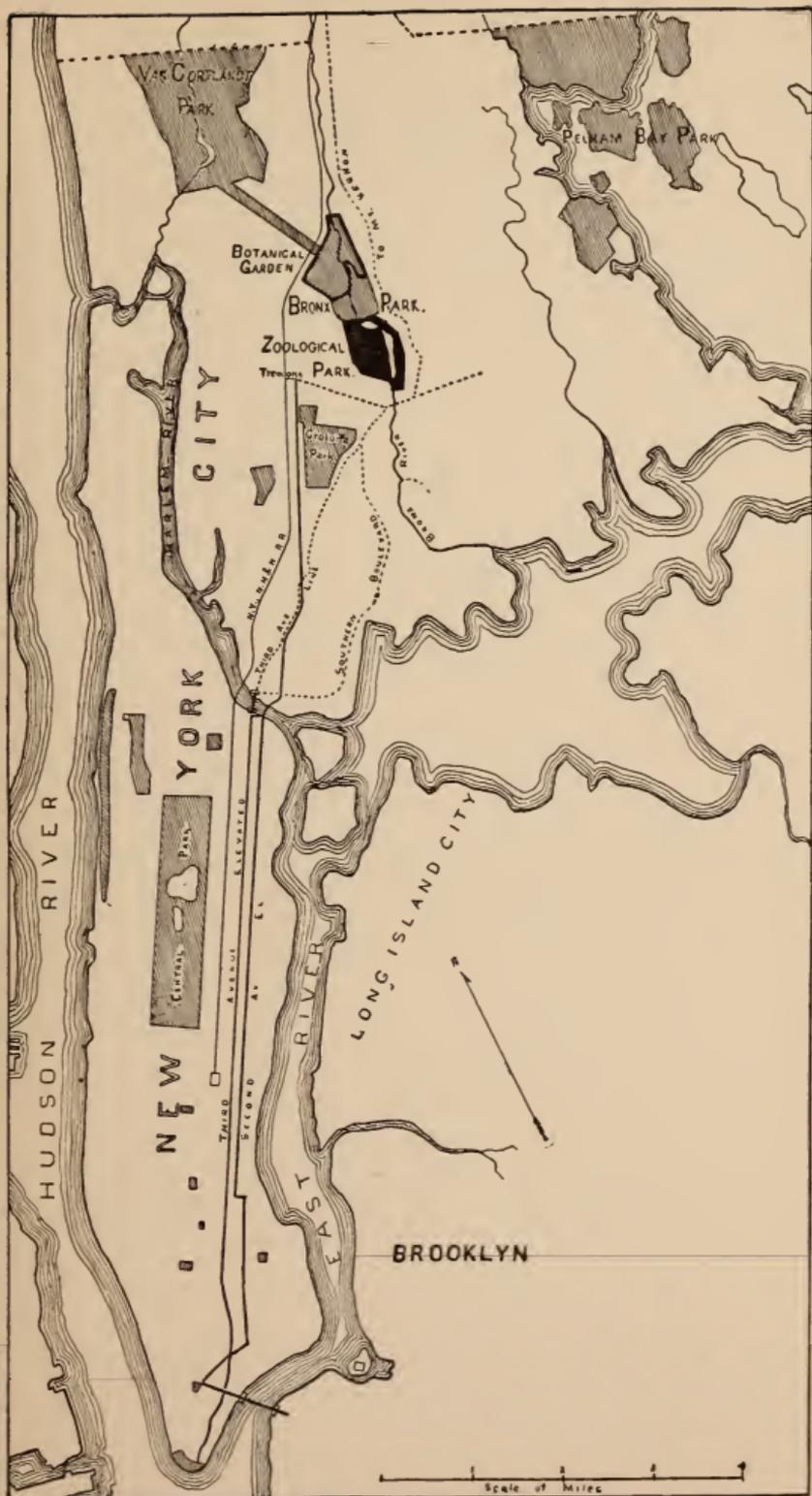
Up to October 1, 1899, the Zoological Society had expended, of its own funds, for plans and construction \$137,181, of which \$119,954, had come from its special subscription fund, and the remainder from its general fund, made up of the annual dues and fees of its members.

Up to the same date, the City of New York had appropriated and partly expended \$125,000 for “ground improvements,” and \$30,000 for six months’ maintenance.

**Privileges.**—Because of the fact that the Zoological Society has undertaken to furnish all the animals for the Zoological Park, the City of New York has agreed that all the revenue-producing privileges of the Park shall be controlled by the Society. *All net profits* derived from the restaurants, boats, automobiles, riding animals, the sale of photographs, books, etc., and all admission fees, are to be accounted for to the City, and expended by the Society *in the purchase of animals for the Park*. It is well that all visitors should know, that *all net profits realized in the Park go directly toward the increase of the animal collections*.

In due course of time the Society will maintain a supply of boats for hire, motor carriages to carry visitors through the Park, stopping at various stations to see the collections, and riding animals of various kinds for the amusement of the children.

**Location.**—The Zoological Park is the geographical center of that portion of Greater New York known as the Borough of



SKETCH MAP SHOWING LOCATION OF ZOOLOGICAL PARK.

the Bronx. From east to west it is half-way between the Hudson River and Long Island Sound, and from north to south it is midway between the mouth of the Harlem River and Mount Vernon. From the City Hall to the Reptile House the distance is eleven miles. The northwest entrance is three-fifths of a mile from Fordham station on the Harlem Railway.

The area of the Park is 261 acres, divided as follows :

Land area west of the Boston Road,	150	acres.
Land area east of the Boston Road,	77	“
Bronx Lake, .....	25	“
Lake Agassiz, ... ..	5½	“
Aquatic Mammals' Pond, Cope Lake and Beaver Pond, .....	3½	“
<b>Total area .....</b>	<b>261</b>	<b>“</b>

## MEANS OF ACCESS.

**Via Trolley Lines to West Farms.**—At present the means of access to the Zoological Park leave much to be desired. The only street railway lines which actually reach the Park are those which converge at West Farms. They are the following :

The Third Avenue and Boston Road line from 129th Street.

The Southern Boulevard line.

The Tremont Avenue and Westchester line, and

The Williamsbridge and Mount Vernon line.

Visitors to the Park over any of these lines should alight at the West Farms junction, from whence a walk of four blocks up the Boston Road leads to the southeast corner of the Buffalo Range.

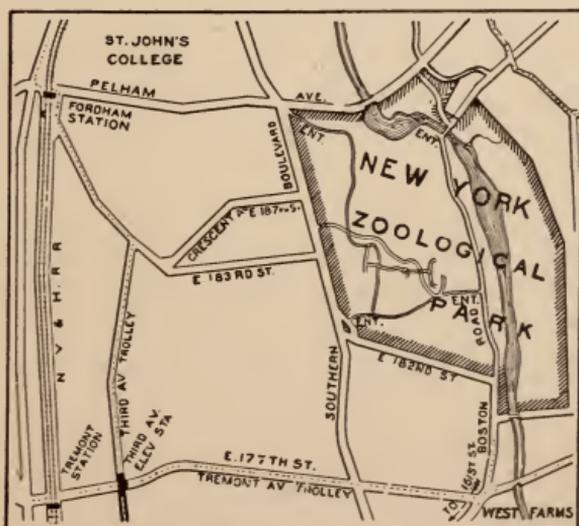
**Via the Third Avenue Elevated.**—At present the nearest street railway west of the Park is the Third Avenue line. The present terminus of the Third Avenue Elevated Railway is at Tremont Avenue (177th Street), and visitors coming

from points south of 129th Street will do well to take the Elevated to that point, transfer to the Tremont Avenue trolley, and for a total fare of eight cents land at West Farms.

**Via the Sixth, Eighth, and Ninth Avenue Elevated.**—The most expeditious way to reach the Zoological Park from the West Side is by elevated cars to 135th Street, thence by the 135th Street trolley line, transferring again to a West Farms trolley car at 138th Street and Third Avenue.

**Via the Harlem Railroad.**—A very convenient way—and also the quickest way—to reach the Park from lower New York is to take the Harlem railroad from the Grand Central station to Fordham station (twenty-five cents for the round trip), from whence a carriage may be taken to the Park, at the very reasonable fare of twenty-five cents for each person. It is reasonably certain that by May, 1900, omnibuses will carry visitors from Fordham to the northwest entrance for ten cents.

At present, Harlem trains leave the Grand Central station for Fordham at the following hours, on week days: Morning, 8.35, 9.35, 10.35, 11.15; afternoon, 12.15, 12.45, 1.35, 2.15, 3.15, 3.45, 4.15. Return trains leave Fordham, afternoon, 1.10, 2.10, 2.40, 3.30, 3.40, 4.40, 5.10, 5.30, 6.10, 6.30.



SKETCH MAP SHOWING VICINITY OF PARK.

Sunday trains leave the Grand Central station as follows: Morning, 8.50, 9.50, 10.50, 11.50; afternoon, 12.50, 1.50, 2.50, 3.50, 4.50; and leave Fordham, returning, at 12.30, 1.30, 2.30, 3.30, 4.30, 5.30 and 6.30.

The running time between Fordham and Forty-second Street is about twenty-five minutes.

Although present facilities for transportation to the Park are very inadequate, the public may rest assured that ere long this condition will be greatly improved. When the people of New York begin to visit the Park, quick transit will soon be forthcoming.

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## ADMISSION.

**Free Admission.**—On all holidays, and on Sunday, Tuesday, Wednesday, Friday, and Saturday, the Zoological Park is open free to the public.

**Pay Admission.**—On every Monday and Thursday, save when either of these days falls on a holiday, all members of the Zoological Society who exhibit their membership tickets, and all other persons holding tickets from the Society, will be admitted free. All other persons seeking admission will be admitted on payment of twenty-five cents for each adult, and fifteen cents for each child under twelve years of age. Tickets are sold only at the entrance gates.

**Holidays on Pay Days.**—Whenever a legal holiday falls on a Monday or Thursday, admission to the Park will be free on that day; but *the following day*—Tuesday or Friday—*will be a pay day.*

**Hours for Opening and Closing.**—From May 1st to November 1st the gates will be opened at 9 A.M. daily, and closed half an hour before sunset. From November 1st to May 1st the gates will open at 10 A.M. A warning will be sounded throughout the Park fifteen minutes before the gates are closed.

**Entrances, Walks, etc.**—At present only the portion of the Zoological Park situated west of the Boston Road has been enclosed. Access to this area is provided by four entrances, one situated at each corner, save that the one nearest to West Farms

is situated on the Boston Road, at the northeast corner of the Buffalo Range. From three of these entrances—the exception being that at the Boston Road Bridge—broad walks lead into the Park and through it, reaching all the collections of animals now installed.

Regarding the walks, visitors are asked to bear in mind that a great amount of construction work remains to be done, and if they find occasionally that walks have been crossed and mutilated by the wheels of wagons loaded with building materials, they are asked to be patient, and consider each inconvenience as something unavoidable under present conditions. It is almost unnecessary to say that the present system of walks is to be greatly extended in 1900.

During the very extensive grading and excavating operations in Baird Court and Cope Lake, now under contract, the northeast entrance, at the Boston Road Bridge, will be kept closed, to avoid leading visitors into a *cul-de-sac*, where no collections are to be seen, and no walks exist.

**Carriage Roads.**—The only wagon road which enters the portion of the Park now occupied by animals is the Service Road, of Telford macadam, which enters from the Southern Boulevard, half-way between 183d and 184th Streets, and runs half a mile eastward, to the Store House, Reptile House, Bear Dens, and Rocking Stone Restaurant.

*This road is for business purposes only*, and is not open for the vehicles of visitors. It is utterly impossible to admit carriages to the centre of the Park, save those of officers entering on business, and *visitors must not ask for exceptions to this very necessary rule.*

In due course of development, a very fine public carriage road and concourse will be constructed from Pelham Avenue Bridge to the lower end of Baird Court and the Lakeside Restaurant, giving easy access to the most important group of buildings. This will be open to carriages, daily.

The Boston Road, which runs through the Park from south to north, near the western bank of the Bronx Lake, is open at all hours. It has recently—and for the first time—been finely improved by the Park Department for the Borough of the Bronx,

and a drive through it affords a fine view of the eastern side of the Buffalo Range, and the finest portion of the heavy forest of the Zoological Park.

As a matter of course, the ranges of the buffalo, antelope, deer, moose, and elk, are in full view from the Kingsbridge Road and Southern Boulevard, and the Zoological Society has planned that the view from those avenues shall be left open sufficiently that the herds may be seen to good advantage.

In a comparatively short time the two remaining sections of Telford road will be constructed, thereby enabling the Society to carry out its plan to run automobile carriages through the Park to convey visitors to the various collections. It is hoped that this plan can be put in operation within one year from the opening day.

**The Rocking Stone Restaurant, No. 45,** or "Public Comfort Building No. 1," has been designed to serve all the purposes that its name implies. It contains dining-rooms in which full meals may be obtained, lunch-rooms wherein choice food will be served at popular prices, and in the basement spacious toilet-rooms will be found.

## PHYSICAL ASPECT OF THE GROUNDS.

The extreme length of the Park from north to south is 4,950 feet, or 330 feet less than one mile ; and its extreme width is 3,120 feet, or three-fifths of a mile. Roughly estimated, one-third of the land area is covered by heavy forest, one-third by open forest, and the remaining third consists of open meadows and glades. The highest point of land in the Park is the crest of Rocking Stone Hill, the elevation of which is 94.8 feet above sea level.

**Topography.**—Speaking broadly, the Zoological Park is composed of granite ridges running from north to south. In many places their crests have been denuded of earth by the great glacier which once pushed its edge as far south as New York City. In the valleys lying between these glacier-scraped ridges great quantities of sandy, micaceous soil have been deposited ; but in one spot—the Aquatic Mammals' Pond—what was once a green, glacial lake fifteen feet deep, presently became a vast rock-walled silo filled with vegetable matter, which, only one year ago, was a trembling bog of peat. Everywhere in the Park glacial boulders of rough granite or smoothly rounded trap rock, varying in size from a cobble-stone to the thirty-ton Rocking Stone, have been dropped just where the warm southern sun freed them from the ice. The Park contains thousands of them, many of which have been removed from walks and building sites only with great labor.

In three of the four principal valleys of the Park, bogs have been converted into ponds, and in the largest and deepest of all, lie Bronx Lake and Lake Agassiz. The bed-rock underlying or cropping out in the Park exhibits pink granite, gray granite, rotten gneiss, and quartz in bewildering variety. Occasionally

in trench-digging a ledge is encountered, which yields good building stone for rough work, but the majority is so full of mica as to be worthless.

The water-levels in the various portions of the Park are as follows :

	Above Sea Level.
Surface of Bronx Lake . . . . .	20.40 feet
Surface of Lake Agassiz . . . . .	31.70 “
Surface of Cope Lake and Duck Ponds . . . . .	47.00 “
Surface of Aquatic Mammals' Pond . . . . .	65.00 “
Surface of Beaver Pond . . . . .	44.00 “

The floor levels of some of the important buildings are as follows :

	Above Sea Level.
Of the Antelope House . . . . .	88 feet
Of the Reptile House . . . . .	78 “
Of the Lion House . . . . .	64 “
Of the Aquatic Birds' House . . . . .	57 “

**Soil.**—The soil varies from rich black muck in the valleys, to light and very dry soil, full of mica and sand, on the ridges and meadows. Where not packed hard, the latter is very porous, and the heaviest rainfall is quickly absorbed, or carried away on the surface. As a result, the valleys are always moist and rich in grass, and the slopes and ridges are always dry and warm.

**Streams and Ponds.**—The Zoological Park contains about 34 acres of still water, of which Bronx Lake comprises 25 acres, Lake Agassiz  $5\frac{1}{2}$  acres, Cope Lake, the Aquatic Mammals' Pond, and Beaver Pond together, about  $3\frac{1}{2}$  acres. The two larger lakes are fed by the Bronx River, which drains a valley about 12 miles long. Even in the driest seasons the volume of water carried down by the Bronx River is sufficient to keep the lakes well filled, and the water is by no means so impure as many persons have been led to believe. The areas of still water available for animal collections are very generous for an institution like this, and are highly prized.



THE ROCKING STONE.



**The Waterfall.**—At the lower end of Lake Agassiz, and about 300 feet above the Boston Road Bridge, is a natural waterfall nearly 12 feet in height, where the Bronx River falls over a rugged ledge of pink granite. In times of high water the foaming flood that thunders over the rocks makes an imposing spectacle; and it constitutes, so far as known, the only natural waterfall in a city park. As soon as a small special appropriation can be secured, the Society proposes to add very greatly to the beauty of this feature by extending the rock ledge about 200 feet farther, to the rocky side of Wilson's Hill, thereby greatly increasing the water area of Lake Agassiz, and at the same time forming a beautiful island.

**Forests.**—The crowning glory of the Zoological Park is the magnificent forest growth which covers, thickly or thinly, about two-thirds of its land area. It consists chiefly of white, scarlet and burr oaks, chestnut, tulip, sweet gum, hickory, beech, sassafras, maple, wild cherry, hornbeam, dogwood, tupelo, white pine, hemlock, and cedar; but there are at least thirty other species of trees and shrubs. Thanks to the wise foresight and broad views of David and Philip Lydig, who for nearly eighty years were the sole owners of nearly the whole of the Zoological Park site, the virgin forest was not cut down for firewood or lumber, but was carefully preserved for posterity. As the legal custodian of this splendid domain of Nature, the Zoological Society is as rapidly as possible going over the entire forest, to arrest decay and death, and take all needed measures for the preservation of the trees. It is safe to say that nowhere else within fifty miles of New York can there be found any more beautiful forests than those in the central and eastern portions of the Park, which, let it be borne in mind, are to be kept open for visitors to wander through at all hours, save those of darkness.

**The Rocking Stone,** a colossal cube of pinkish granite, poised on one of its angles, on a smooth pedestal of rock, is the Zoological Park's most interesting souvenir of the glacial epoch. Across the bare face of the rocky hill, in which lies the Crocodile Pool, there are several glacial scratches pointing directly toward the famous boulder; and who will say it had no part in making one of them?

The Rocking Stone stands on a smooth table of granite on the southern shoulder of the hill overlooking the Buffalo Range. Its extreme height is 7 feet 6 inches ; breadth, 10 feet 1 inch ; thickness, 8 feet 1 inch, and its weight, as roughly calculated, is 30 tons. A pressure of about 50 lbs. exerted on the most northern angle of the stone causes its apex to swing north and south about two inches.



YOUNG MOOSE.

# AMERICAN HOOFED ANIMALS.

<p>DEER FAMILY, or <i>Cervidae</i>.. (Conspicuous types only. The North America Cervidae re- quire a thorough revision.)</p> <p>ANTELOPE FAMILY, or <i>An- tilocapridæ</i>.....</p>	<p>Elk.....</p> <p>Mule Deer.....</p> <p>Columbian Black-Tailed Deer.....</p> <p>Virginia Deer.....</p> <p>Mexican Deer..... and other species.</p> <p>Moose.....</p> <p>Woodland Caribou.....</p> <p>Arctic Caribou.....</p> <p>Prong-Horned Antelope.....</p> <p>Buffalo: American Bison.....</p> <p>Musk Ox.....</p> <p>Rocky Mountain Sheep.....</p> <p>Nelson's Mountain Sheep.....</p> <p>Stone's ("Black") Mountain Sheep.</p> <p>Dall's ("White") Mountain Sheep.</p> <p>Mountain or "White" Goat.....</p> <p>Baird's Tapir.....</p> <p>Dow's Tapir.....</p> <p>Collared Peccary.....</p> <p>White-Lipped Peccary.....</p>
<p>CATTLE AND SHEEP FAM- ILY, or <i>Bovidae</i>.....</p>	<p><i>Cervus canadensis</i>.</p> <p><i>Odocoileus macrotis</i>.</p> <p><i>Odocoileus columbianus</i>.</p> <p><i>Odocoileus virginianus</i>.</p> <p><i>Odocoileus mexicanus</i>.</p> <p><i>Alces americanus</i>.</p> <p><i>Rangifer caribou</i>.</p> <p><i>Rangifer groenlandicus</i>.</p> <p><i>Antilocapra americana</i>.</p> <p><i>Bison bison</i>.</p> <p><i>Ovibos moschatus</i>.</p> <p><i>Ovis montana</i>.</p> <p><i>Ovis nelsoni</i>.</p> <p><i>Ovis stonoi</i>.</p> <p><i>Ovis dalli</i>.</p> <p><i>Oreamnos montanus</i>.</p> <p><i>Tapirus bairdi</i>.</p> <p><i>Tapirus dowi</i>.</p> <p><i>Dicotyles angulatus</i>.</p> <p><i>Dicotyles labiatus</i>.</p>
<p>TAPIR FAMILY, or <i>Tapi- ridæ</i>.....</p>	
<p>PECCARY FAMILY, or <i>Di- cotylidæ</i>.....</p>	

15 MAMMALS:  
Order UNGU-  
LATA: Hoofed  
quadrupeds (of  
North Amer-  
ica only).....

## THE RANGES FOR HOOFED ANIMALS.

The western and southern sides of the Park consist almost wholly of open fields and woods pastures for buffalo, deer, antelope, and other hardy hoofed animals of large size. These are termed "ranges." Each range is surrounded by a high fence of hard steel wire, so strong that no animal can break through it, and yet so light as to be at a little distance actually invisible, thus avoiding the disfigurement of the Park.

**Warning.**—Visitors must never stand close beside a fence, because its elasticity between posts might enable a charging animal to strike any person so standing, and inflict a serious injury, even though the fence is not in the least affected by the blow.

Each range is provided with a shelter house for its occupants, and also one or more macadamized yards, called "corrals," into which the herds are driven whenever the ground in the ranges is so soft from excessive rains that the turf is liable to be seriously damaged by their hoofs.

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### THE MULE DEER RANGE, NO. 43.

**The Mule Deer, (*Odocoileus macrotis*).**—This fine animal is universally known throughout the Rocky Mountain region, which constitutes its home, as the "Black-Tailed Deer." Because of its very large ears, *and the absence of a black tail*, it is known to naturalists as the Mule Deer. Inasmuch as its tail is not black, the above more common name properly applies to *Odocoileus columbianus*, the true black-tailed Deer of the Pacific coast. In Manitoba this animal is called the "Jumping Deer," because when running at a gallop, it makes a series of stiff-legged jumps, or "bucks," of great length.

To anyone who sees this gait for the first time it is quite astonishing. I shall not soon forget my surprise when I first saw a heavily-antlered buck of this species dash out of a clump of stunted cedars, and go flying down the crest of a bare ridge in the bad lands of central Montana. He bounded past my position, in full view for a quarter of a mile, and I saw him to excellent advantage. He did not gallop, as do other deer, reaching out with his fore-feet, but for each leap he sprang into the air with stiffened legs, and went bounding forward as if the ground were an India-rubber cushion that threw him upward and forward every time he touched it with his feet. In reality his knees did bend a trifle just as his feet touched, to lift his body upward again, while his strong hind legs thrust him forward.

The Mule Deer is larger than the Virginia deer, and more strongly built. The weight of full-grown bucks ranges from 250 to 300 pounds, and specimens have been known to reach 325 pounds. The antlers of the Mule Deer are larger and handsomer than those of the Virginia deer, and are much better poised on the head. Instead of dropping forward, they partake more of the set of an elk's antlers, and many a "tenderfoot" hunter has mistaken a heavily-antlered Mule Deer for an elk. The antlers of a Mule Deer are easily distinguished from those of the Virginia species by the two Y-shaped prongs on each antler. It will be remembered that instead of these, the Virginia deer antler bears three straight, perpendicular spikes.

The Mule Deer make its home in the rugged ravines and bad lands so common along the creeks and rivers of the Rocky Mountain region, extending well eastward into the plains. Of late years it has been driven out of the most accessible of its former haunts, and forced to take shelter in the rugged fastnesses of the foothills and mountains. West of the Rocky Mountains it was formerly found along the whole Pacific slope, from Cape St. Lucas to British Columbia, although in northern California it is almost replaced by the next species.

## THE FALLOW DEER RANGE, NO. 58.

Quite near the Northwest Entrance, crowning the nne wooded hill which rises from the south shore of Cope Lake, is a triangular range of special attractiveness, which has been dedicated to a very handsome species of deer. Taking all things into consideration—form, antlers and color, and eliminating all marks of degeneration—the Fallow Deer is one of the handsomest of living deer.

**The Fallow Deer**, (*Cervus dama*), is the representative of a distinct group of deer which are distinguished by the possession of antlers widely palmated throughout the upper half of the beam. In some old Fallow bucks the antlers are quite moose-like, and give this small deer an imposing appearance far out of proportion to its actual size. The weight of a large buck in prime condition generally is between 180 and 200 pounds, and its shoulder height is between 36 and 40 inches. The largest antlers recorded by Mr. J. G. Millais, in his beautiful work on "The British Deer," measured 29½ inches in length, 28½ inches spread, width of palmation 8 inches, and the number of points 14. The extinct Irish elk, with the most colossal antlers ever carried by a cervine animal, was a near relative of the two living species of Fallow Deer.

Although a native of Northern Africa and the north shore of the Mediterranean, the Fallow Deer was acclimatized in England and Northern Europe so long ago that the exact date records of the event have disappeared, and the species is now at home in very many European forests and game preserves. The deer parks of England possess many fine herds, but they also exhibit one unfortunate result of long breeding in a semi-domesticated state—departure from the original type.

The typical Fallow Deer is in winter very dark brown, with light brown legs and under parts, and in summer light red with white spots—quite like the axis. From this standard, the variations run from pure white to the color of the wild type.

On the opening of the Park there were no specimens in the Fallow Deer Range, but in December a herd will be received as a gift from Mr. William Rockefeller.



THE MULE DEER.



## THE AXIS DEER RANGE, NO. 57.

The Axis Deer, (*Axis axis*), is the handsomest of all the tropical deer. Indeed, it may even be said to be the only species of the tropics possessing both form and pelage which are alike pleasing to the eye. In contrast with the many beautiful and splendidly colored antelopes of Africa, the deer of the trop-



THE AXIS DEER.

ics, all round the world, are poorly provided with those characters which make a handsome animal. With the sole exception of the Axis Deer, nearly all the other deer of the East Indies have thin, coarse, dull-colored hair, their antlers are small, and seldom have more than four points. This is equally true of the deer of Mexico, Central and South America. Even our own Virginia deer, so lusty and fine in the North, becomes in Flor-

ida and Texas so dwarfed that it has now been cut off entirely, and called another species.

Considering the severe plainness of all the other deer in the tropics, it is a little strange that the coat of the Axis should be the most beautiful possessed by any deer. But it is quite true; and apart from the majesty of the elk, there is no more beautiful sight in cervine life than the picture offered by a herd of Axis Deer feeding in a sunlit glade surrounded by forest.

This species adapts itself to out-door life in the temperate zone with surprising readiness, not even second in that respect to the eland. As a matter of course the Axis can not withstand the fierce blizzards of midwinter, as do the elk and other northern deer; but a reasonable degree of care in providing it with a dry barn, and shelter from cold winds, enables it to live even as far north as Northern Germany with perfect comfort. From what has been observed up to date, I believe it will presently be established that specimens acclimatized in the temperate zone always develop hair with a much darker ground color than the clean, bright tan-colored coat, so universal and so striking in the bamboo forests of Southern India, where the Axis is at home.

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## THE VIRGINIA DEER RANGE, NO. 42.

The Virginia Deer, (*Odocoileus virginianus*), is the species most widely known throughout the United States, partly by reason of the fact that it was the first species with which the early settlers of America became acquainted, partly because of its wide distribution, and also its persistence in holding its own. In various localities this animal is known under various names, such as "White-Tailed Deer," "Flag-Tailed Deer," and "Fan-Tailed Deer." Although not at all in need of it, quite recently it has received still another name—American Deer. Whether this species deserves to be permanently separated into several, remains to be seen. Already the small deer of Florida, and also of New Mexico and the Southwest, have been described as separate species; and if size is to be accepted as a factor in the differentiation of species, the diminutive proportions of the proposed

southern species are quite sufficient to establish their separate identity.

The Virginia Deer of Virginia and the northern United States is a fine animal—large, strong-limbed, heavily-antlered and hardy. Between it and the deer of Florida the difference is as great as that between a setter dog and a mastiff. Thanks to the fact that this species is a born skulker, and lives only in thick brush and timber, it still holds its own throughout the forest regions of the South generally, Pennsylvania, the Adirondacks, Maine, Michigan, Minnesota, the Dakotas, Montana, and Colorado. In the west it is often found inhabiting brushy river bottoms, while the mule deer lives in the rough ravines and “bad lands.”

This species breeds readily in confinement, and when protected in any large tract of brush or timber, increases rapidly. During the months of September, October, and November, the bucks are dangerous and untrustworthy. The peculiar formation of the antlers—three strong, spear-like points thrust straight upward from the beam—makes them dangerous weapons; and when an ill-tempered buck lowers his chin and drives straight forward with eight sharp spears of solid bone, and nearly three hundred pounds of weight to back them, he may well be considered a dangerous animal. He is to be feared less than the elk only because he is smaller.

The Range provided for this species was without tenants on the opening day, but this lack will be supplied very shortly.

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## THE BLACK-TAILED DEER RANGE, NO. 56.

**The Columbian Black-Tailed Deer**, (*Odocoileus columbianus*), is simply a small edition of the mule deer, save that it has a black tail, which the latter has not. Its antlers are slender, but possess the same double bifurcations as those of its nearest relative. Usually its colors are a trifle darker than those of the mule deer. This species occurs only on the Pacific coast, in Northern California, Oregon, Washington, and British Columbia.

An order has been placed for several specimens, and they are expected during the winter of 1900, for installation in the range adjoining that assigned to the mule deer.

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### THE RED DEER RANGE, NO. 41.

**The European Red Deer**, (*Cervus elephas*), is an understudy of the American elk, which it much resembles in form and in habits. Next to the elk it is the finest living deer, and for many generations has held its own against the dangers of in-breeding. In the parks and forest preserves of Great Britain, Germany, France, Austria, and Italy, it exists abundantly, but only as private property, subject to the guns of the owner and his friends. This species has been successfully crossed with the American elk.

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### THE CARIBOU RANGE, NO. 40.

**The Woodland Caribou**, (*Rangifer caribou*).—The first hoofed animal to arrive at the Zoological Park was a young female of this species, which was procured in Champlain County, Canada, and forwarded to the Society by one of our members, Mr. George S. Huntington.

The range of the Woodland Caribou extends from Newfoundland, Nova Scotia, and Maine, with many wide gaps, to the head-waters of the Yukon River, in Southern Alaska. The following localities are worthy of special mention: Northern Quebec and Ontario; James Bay; the northern end of Lake Winnipeg (occasionally); Lake of Woods, Minnesota; Oregon near Mount Hood; Northern Idaho; Northwestern Montana; the mountains of British Columbia, especially on the head-waters of the Liard and Dease Rivers, where A. J. Stone has recently found the species attaining a great size.

The Woodland Caribou attains nearly twice the bodily bulk of its more northern congener, the Barren-Ground Caribou, which at all times ranges so far north that the two species never reach common ground. In a state of nature it lives on browse, “rein-

deer moss," tree moss, and lichens, and it loves ice-covered lakes and ponds as much as any boy. Its loose-jointed and wide-spreading hoofs and enormously developed "dew-claws" have



YOUNG FEMALE WOODLAND CARIBOU.

been specially designed by Nature to enable this animal to run freely, as if on snow-shoes, over snow which to any small-hoofed deer would be quite impassable.

The female Woodland Caribou is provided with small antlers, which, like those of the male, are shed and renewed annually.

## THE MOOSE RANGE, NO. 39.

**The Moose**, (*Alces americanus*).—Of all large animals of the temperate zone, the Moose is one of the most difficult to keep alive in captivity. Fame awaits the man who can arrange for this animal a bill of fare which will induce it to live long enough in confinement to attain anything like old age and maximum size.\* Seldom do captive Moose survive the third year, at least in a zoological garden or park; but in the great private game preserves, whose acreage is written in five figures, they fare better.

The Moose is the largest member of the deer family (*Cervidæ*), and has solid, branching antlers, which he sheds annually. He is the largest of all living deer, and in every sense is a cervine colossus. His most remarkable points are the enormous length of his legs, the high crest on his shoulders, his shortness of body, the wide-spreading palmation, or flatness of the beam of his antlers, and the remarkable development of his nose. Nature gave him his great stride to enable him to wade swamps and lakes in search of the succulent stems and bulbs of the lily. His half prehensile nose, which far overhangs his mouth, is to assist him in manipulating the twigs and branches of the birch, maple, poplar, and other trees, which form the greater portion of his daily food.

The Moose is found throughout Alaska, to within fifty miles of Point Barrow on the Arctic Ocean, in British Columbia, Wyoming, Northern Minnesota, Canada, and Maine. Some of those killed in Alaska during the last three years have been actually gigantic in size. The largest Moose of which we have authentic measurements was one killed by Harry E. Lee, 7 feet 10½ inches in vertical height at the shoulders; girth, 9 feet 11 inches; and the largest pair of Moose antlers recorded up to October 1, 1899, measure 78 inches in width.

The first Moose received at the Zoological Park was captured in Northern Minnesota by the Indians of the White Earth Reservation. Other specimens will be added, until a herd of about twelve individuals has been formed.

## THE ELK RANGE, NO. 38.

The first three specimens received at the Zoological Park were a fine bull, cow, and calf, presented by the Park Department for the Borough of Brooklyn, through Hon. John M. Brower, Commissioner, and Mr. John De Wolf, Landscape Architect. These were closely followed by a herd of six fine specimens, three males and three females, which were presented and delivered at the Range by Mr. George J. Gould, and represent the choicest animals from his herd at Furlough Lodge, in the Catskills.

**The American Elk, or Wapiti, (*Cervus canadensis*).** Of all the numerous members of the Deer Family, this animal is second in size to the moose only; and in the autumn when its pelage is bright and luxuriant, its sides well rounded, its massive antlers clean and held conspicuously aloft, the Elk may justly be called the king of the *Cervidæ*. It is well that in the Yellowstone Park we have an unfailing supply of Elk, which bids fair to perpetuate this handsome species for another century.



THE ELK HOUSE.

Our Elk Range might well stand for a mountain park, in which is set, jewel-like, a natural lakelet of real value. In October, when the splendid groves of beech, oak, and maple along the eastern ridge put on all the glorious tints of autumn, and the big thicket of sumacs, ash, and haw on the northern hill fairly blaze with scarlet—then are the Elk also at their best. There is no finer picture in animate nature than a herd of Elk in October, with such a setting of greensward, tree-trunk, and foliage. The Zoological Society proposes to devote considerable attention to the photography of its live animals, and hopes to secure results of permanent value. The frontispiece of this book may be considered a suggestion of some of the possibilities to be developed.

The maximum shoulder height of the Elk is five feet four inches, or thereabouts, and the heaviest weight noted thus far is nine hundred and twenty-seven pounds.

The calves are born from May to July, and are spotted during the first six months. During the first year the antlers are merely two straight spikes, called “dag antlers.” As in all members of the Deer Family, the antlers are shed every year—which to many persons is almost beyond belief. Any person who visits a zoological garden in midsummer will see that the old antlers have dropped off bodily, just below the burr, and that new antlers, covered with hair, soft, full of blood, and with club-like “points,” have sprung up like mushrooms in place of the old ones. In supplying the great drain on the system necessary to support this remarkable growth, the elk grows thin, and the fear of hurting his tender young antlers makes him quite timid and inoffensive. He is no longer the tyrant of the herd, and a constant menace to his keepers.

At this point it is not amiss to call attention to the differences between *horns* and *antlers*.

A *horn* is a hollow sheath, growing over a bony core, and, except in the case of the prong-horned antelope, is never shed. Horns are worn by both sexes of all bison, buffaloes, cattle, antelope, sheep, and goats.

An *antler* is of solid bone throughout, growing from the skull; it is shed every year close to the skull, and quickly renewed. Usually antlers have several branches. They are worn





PRONG-HORNED ANTELOPE.

by all male members of the Deer Family—moose, elk, caribou, deer, etc., and also by the female caribou. The prongs on an antler are no index of the wearer's age. Some of the finest and most massive elk antlers have only twelve or fourteen points. During August and September the hairy covering, or "velvet," of new antlers is rubbed off against trees and bushes. This period is quickly followed by the mating season, during which the neck of the bull becomes unusually large, and often the animal becomes dangerous.

Although the Elk is essentially a timber-loving animal, it also wandered far into the plains bordering the Rocky Mountains on the east—until driven from them by man. The ideal home of this animal is the timbered foothills of our western mountains, up to 8,000 feet. Although once found from Virginia to Oregon, and from Northern Manitoba to the Gulf of Mexico, it is now numerous only in and adjacent to the Yellowstone Park, and in central Colorado, where it is well protected. The number of Elk in the National Park is variously estimated at from 30,000 head to a much larger number.

In a wild state, the Elk feeds on grasses, weeds, and the leaves and twigs of various trees and shrubs. Of all American deer, it is the most easy to acclimate and breed in captivity. Large herds are now being maintained and bred in numerous private game preserves in New Hampshire, New York, Minnesota, Massachusetts, and elsewhere.

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## THE PRONG-HORNED ANTELOPE RANGE, NO. 37.

The Prong-Horned Antelope, (*Antilocapra americana*), is an animal in which Americans should now take special interest. Beyond all possibility of doubt, it will be our next large species to become extinct, and if we may judge by the rate at which the bands have been disappearing during the last fifteen years, ten years more will, in all probability, witness the extermination of the last individuals now struggling to exist outside of rigidly protected areas. It is largely because of this fact that the Zoological Society has made a special effort to

procure at the very earliest opportunity a number of these animals, and install them in the Antelope Range. It is the intention of the Society to make liberal provision for the study of this species while it is yet possible to obtain living specimens, for fifty years hence our graceful and zoologically interesting Prong-Horn will be as extinct as the dodo.

Forty years ago this animal inhabited practically the whole of the great pasture region which stretches eastward from the Rocky Mountains to the western borders of Iowa and Missouri. Northward its range extended far into Manitoba; southward it went as far as the Rio Grande, and it also ranged southwestward through Colorado and Nevada to Southern California. Its chosen home was the treeless plains, where the rich buffalo grass and bunch grass afforded abundant food, but it also frequented the beautiful mountain parks of Wyoming and Colorado. It even lived contentedly in the deserts of the southwest, where its voluntary presence, coupled with the absence of water, constituted a conundrum which has puzzled the brain of many a desert traveller.

Although the Prong-Horn is keen-sighted, wary, and at all times an exceptionally timid and nervous animal, it is no match for man and long-range rifles. Its skin is of no value, but its flesh is delicious at all times, even in midsummer, when most other wild meat is out of flavor. The general settlement of the great pasture region sealed the doom of all the large game animals which once stocked it abundantly. Whenever a cowboy wanted an extra choice roast, or range-riding became too monotonous for him to endure, he killed an Antelope. Whenever an Eastern tenderfoot wanted to "shoot something," he was taken out on the range and turned loose, to hunt Antelope. The difficulty involved was only barely sufficient to insure a proper degree of interest and excitement. Almost any man with a modern rifle can kill an Antelope.

To-day, all observers agree that in all regions wherein the antelope are not rigidly protected, they are going fast. Those in the Yellowstone Park are protected against man only to be devoured by the wolves which infest the Park. Coyotes have been seen to run down and kill Antelope within sight of the town of Gardiner. So far as can be ascertained, Colorado is the only



THE BUFFALO HOUSE.



state which really is protecting its Antelope, and because of this fact the last Prong-Horn will die in that state. Professor Osborn reports that in July and August, 1899, he saw hundreds of Antelope in Garfield County. In 1898, Mr. Carl Rungius, the animal painter, reported an abundance of them in Uintah County, Wyoming, but this year he saw with astonishment and dismay that the herds have disappeared as if the earth had opened and engulfed them all.

For a century the Prong-Horn has been, next to the buffalo, the chief object of interest on our western plains. Their graceful forms and fleet movements have for long relieved the landscapes of the treeless country from utter barrenness, from the lifelessness which to every overland traveller presently becomes unbearably monotonous. It is not pleasant to think of the thousands of square miles of "divides," "coulees," "bad lands" and plains absolutely devoid of Antelopes, and tenanted only by coyotes and gray wolves.

Structurally, the Prong-Horn is so peculiar it has been found necessary to create for it a special zoological family, called *Antilocapridæ*, of which it is the sole member. This is due to the following causes: (1) This is the only living mammal possessing hollow horns (growing over a bony core) which sheds them annually; (2) it is the only animal possessing a hollow horn which bears a prong, or bifurcation; (3) it has no "dew claws," as other ruminant animals have; (4) the horn is placed directly above the eye; (5) the long hair of the body and neck is tubular; and, (6) that on the rump is erectile.

In size the Prong-Horn is the smallest ruminant animal inhabiting North America north of Mexico, unless it becomes necessary to place below it the small deer of Texas. It is nimble-footed and graceful at all times, save when it runs with its head carried low, like a running sheep. The doe brings forth two kids at a birth, usually in May or June, and during the summer months the bands are quite broken up. The winter coat is shed—in great handfuls—during late spring and early summer, and the new coat of short, gray hair makes the Prong-Horn look strange and unnatural. By October, however, his new coat is at its brightest, he is fat and vigorous, and in every way at his best. As winter approaches (November) the Antelope assemble

until great herds are formed, sometimes a hundred and fifty animals being found together.

Unfortunately, the Prong-Horned Antelope is not a hardy animal. The kids are very difficult to rear; they are at all times easily hurt by accident, and even in a state of nature this species suffers more severely in winter than any other North American ruminant. Often the herds drift helplessly before the blizzards, with numerous deaths from freezing and starvation, and in spring the survivors come out thin and weak.

It seems a great pity—nay, even a misfortune—that Montana, Wyoming, Texas, and California, do not really protect their remaining bands of Antelope, and allow them to multiply and exist for a hundred years to come. Unfortunately, however, it is not the way of the West really to protect and preserve its wealth of game animals. Too many of the residents insist on doing as they please, and too many eastern “sportsmen” and “game hogs” are permitted to kill game beyond all reasonable limits.

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## THE BUFFALO RANGE, NO. 36.

Stretching from the site of the large Antelope House (No. 30) to the Boston Road, and from the Rocking Stone to the southern boundary, lies an open expanse of rolling meadow land, of about twenty acres in total area. It is almost surrounded by shade-trees. Its easterly edge is a low-lying strip of rich meadow, which lies under the shelter of the rocky, tree-covered ridge that forms the natural retaining wall of the higher plateau toward the west.

This is the Buffalo Range. It is the first enclosure seen on the left as the visitor enters the Park from West Farms by way of the Boston Road. In spring the low meadow which lies along the Boston Road is cut off from the main range by means of a concealed fence running through the trees along the high ridge, and two movable sections in the open portion of the line. This is the Breeding Range, for the special use of the cows and young calves, from May to August, when the two ranges are thrown into one.

On the north side of the main range, near the Rocking Stone



AMERICAN BISON.—“CLEVELAND.”

*Gift of Hon. Wm. C. Whitney. Captured wild in Panhandle of Texas, in 1887, by C. J. Jones.*



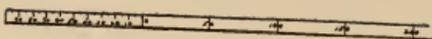
(No. 45), are the four corrals, and the Buffalo House. The latter is a rustic hillside barn, eighty feet in length, with a semi-circular front, affording shelter and feed storage for twenty-five Buffaloes. The main corral contains a bathing pool, and its central portion has been left unpaved. The flat roof of the Buffalo House is open to the public from the main walk, and has been specially designed as a convenient lookout over the main range and corrals.

**The American Bison, or Buffalo** (*Bison bison*), is the largest and the best known of all North American hoofed animals. What was once the universal herd, which occupied the whole pasture region of the West, was cut in twain in 1867, by the building of the first transcontinental railway. The great "Southern herd," of several millions of animals, was destroyed by skin hunters during the years 1871, 1872, 1873, and 1874, and the practical extinction of the Northern herd was accomplished between 1880 and 1884.

At present there are but three herds of wild Buffaloes in existence. The largest band, now containing by estimate only about eighty individuals, inhabits a wide stretch of barren and inhospitable territory southwest of Great Slave Lake. About twenty head remain in the Yellowstone Park, more than nine-tenths of the original herd having been slaughtered by poachers since 1890; but the remainder surely will go the same way ere long. A third bunch—if not recently exterminated—is said to inhabit Lost Park, Colorado, and to be protected by the State and the people. There are about six hundred Buffaloes alive in captivity, chiefly in large private game preserves.

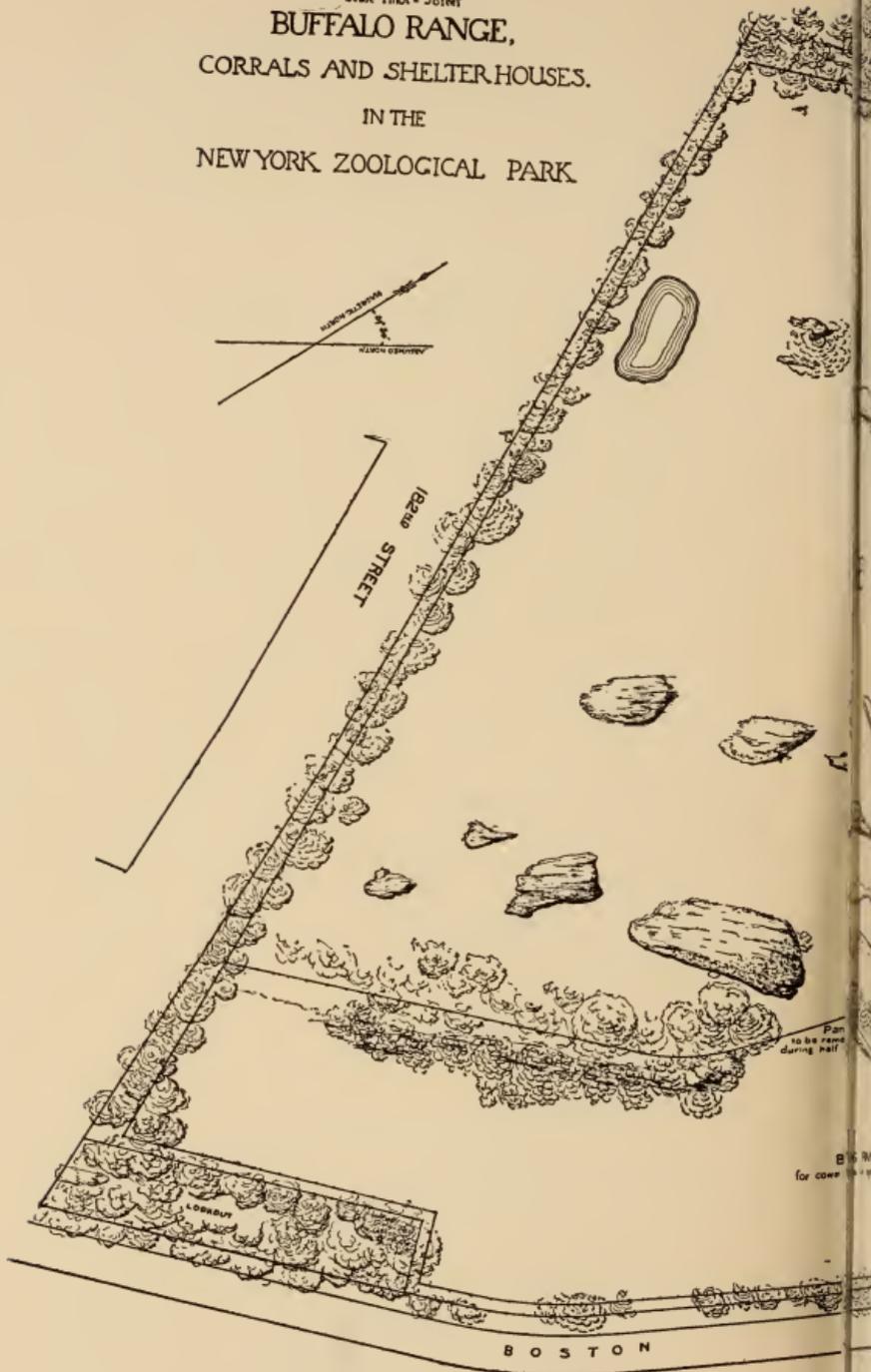
Usually Buffalo calves are born in May, June, and July. Full maturity is not reached until the end of the seventh year, when the horns of the male—at first a straight spike—have attained their full semicircular curve. Like all thick-haired animals of the temperate zone, the Buffalo sheds its coat in spring, and does not regain full pelage until October or November.

The Buffalo breeds in confinement about as readily as domestic cattle. In appearance, it is the most imposing of all bovine animals, and with two exceptions it is also the largest. In captivity its disposition is mild, though inclined to stubbornness.

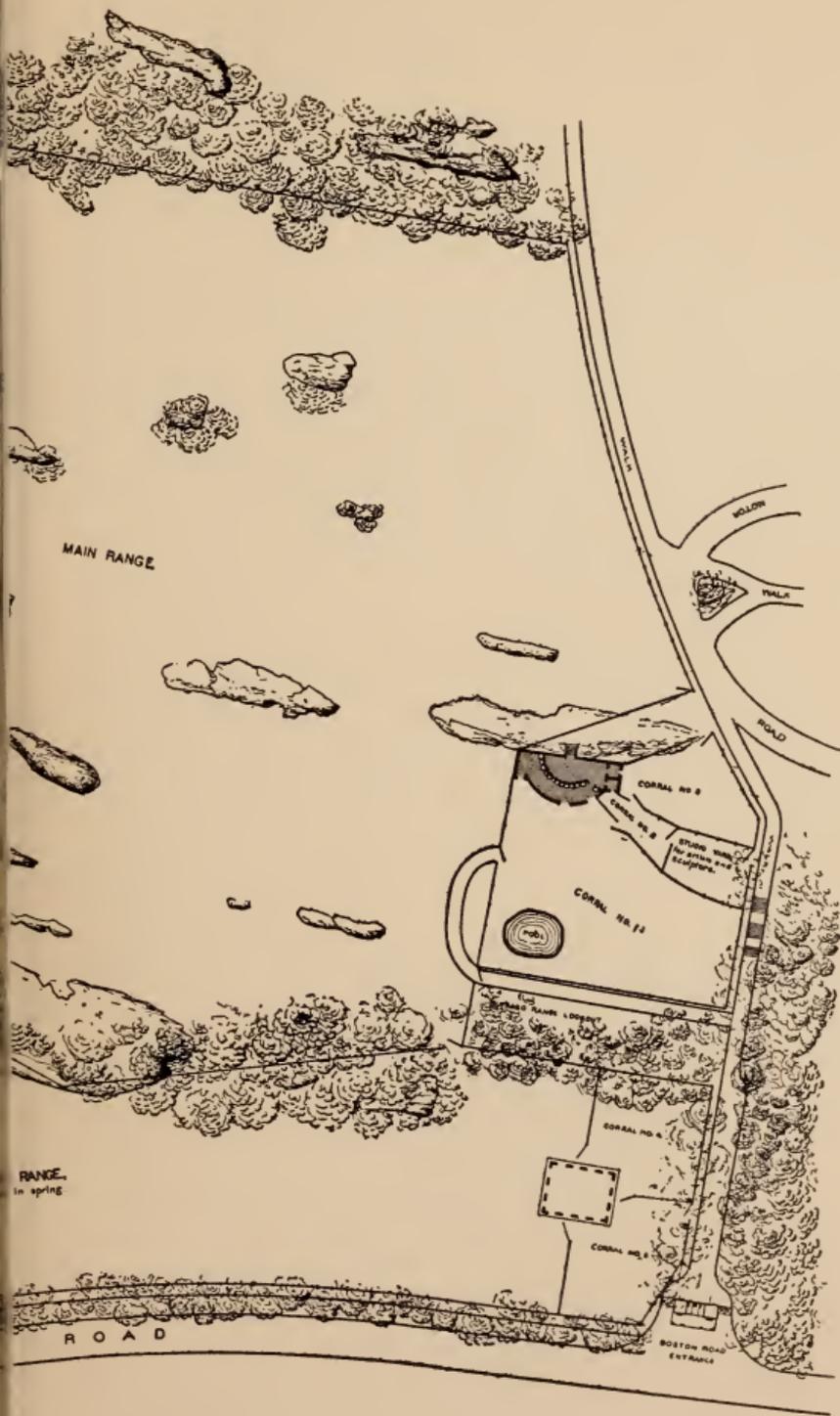


Scale Inch = 50 feet

# BUFFALO RANGE, CORRALS AND SHELTER HOUSES. IN THE NEW YORK ZOOLOGICAL PARK.



BOSTON  
for cover



Occasionally, however, an old bull becomes so vicious that it is necessary to seclude him from the herd, and treat him as a dangerous animal.

Our herd now (December 1, 1900) contains fourteen animals, derived from the following sources :

Adult bull, "McKinley," about eight years old. Gift of Hon. William C. Whitney, from his herd at Lenox, Mass.

Adult bull, "Cleveland," caught wild in 1887, in the Texas Panhandle by C. J. Jones, now fourteen years old. Gift of Hon. William C. Whitney, from the Corbin herd.

Selected by C. J. Jones, from the herds in Texas and Oklahoma, and purchased of him. Adult bull, five years old ; adult bull, four years old ; adult bull, four years old ; young bull, three years old ; adult cow, four years old ; young cow, three years old ; young cow, two years old.

Three adult cows, deposited by David J. Gardiner, from Wyoming.

Two male calves, born in the park, 1900, of Texas cows.

It is worthy of note that in order to prevent deterioration through in-breeding, these animals have been assembled from at least five different sources, and represent that number of independent lines of descent. Eventually the Society will maintain a herd of about twenty-five individuals.



## THE AVIARIES.

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### THE DUCKS' AVIARY, NO. 3.

There are no birds which take more kindly to captivity, or which better repay their keep and their keepers, than the ducks, geese, swans and pelicans. The only drawback to the maintenance of large collections of these birds in this latitude, is the annual struggle with our Arctic winter. On account of the fierce winter storms to which we must pay tribute, many species of swimming birds require to be taken out of their aviary, and housed in sheltered buildings, with moderate warmth. For this reason the pelicans, tree ducks of all species, and all species from the tropics, must necessarily be absent in winter from their aviary.

For the accommodation of a large, systematic collection of swimming birds, an aviary two hundred and fifty feet long by one hundred and forty-three in width has been constructed in the north end of Birds' Valley. To secure as much space as possible, the entire width of the open valley has been taken into the enclosure.

The Ducks' Aviary consists of a pond containing three islands, two of which are subdivided by low fences of wire netting into twelve separate enclosures. In the central portion of the South Island stand two rustic shelter houses, each of which furnishes shelter for the occupants of four yards. The North Island is devoted to a mixed collection of large water fowl—pelicans, swans, geese, ducks, and other species.

The Aviary has been so planned and constructed that each enclosure is provided with a section of the pond (three feet in depth), grass banks, gravel banks, sanded runways, shrubbery, earth, and a dry, rat-proof shelter house. The boundary fence has been provided with a rat-guard on the outside, over which, it is believed, neither rat nor weasel can pass.

**The Trumpeter Swan**, (*Olor buccinator*), being the largest bird in the Aviary, and also snowy white, is therefore the most conspicuous. Fine specimens are shown on the North Island, living contentedly with other species. These specimens were captured in Idaho, when young enough to take kindly to captivity.

**The Black Swan**, (*Cygnus atratus*), of South Australia and Tasmania, is as glossy black, excepting its primaries, as other swans are white. It is a large and handsome bird, and much sought by all persons who form collections of water fowl.

**The Coscaroba Swan**, (*Coscaroba candida*), is a fair connecting link between the swans and the ducks, partaking about equally of the characters of each. In size and color it is very much like our snow goose, (*Chen hyperborea*), but it is peculiar in possessing very long legs of a bright pink color, by which it is quickly recognized. Its bill, also, is pink, and the tips of its primaries are black. The Coscaroba Swan is a native of southern South America, and a few years ago specimens were so rare in captivity that a pair sold for \$300.

**The Brown Pelican**, (*Pelecanus fuscus*), when adult, is a handsome and showy bird, and one which not only is easily reconciled to life in a comfortable aviary, but positively enjoys it. The twelve specimens in the Aviary on the opening day were collected for the Society in Florida, in May, 1899, and all are quite tame. When their daily allowance of fish appears they crowd around their keeper, and with wide open pouches earnestly solicit contributions.

Thanks to the belief that the wearing of Pelican feathers is extremely unlucky, and will bring death to the family of the wearer within a year, these birds never have been attacked by the plume hunters, and it is one of the few large species which has not yet been either driven out of Florida, or exterminated. The pelicanery in the Indian River is one of the greatest sights in bird life to be seen in the United States.

**The Canada Goose**, (*Branta canadensis*), is one of the species shown on the North Island. Once common throughout many regions of the United States, continual persecution

by sportsmen and market hunters has so generally reduced its numbers, that it is now of comparatively rare occurrence. Without the long V-shaped flocks of Wild Geese, honking north in spring and south in autumn, the prairies of the west do not seem like the same country.

This exceeding rarity makes the visitation of nine superb specimens on November 8, 1900, to the Aquatic Mammals Pond, a most novel treat. Seven of the birds, including a fine gander, through the artifices of a trap, have been induced to remain with us, and have taken up a peaceful abode on the little lake with the six of a like kind presented by Mr. A. B. Frost.



THE DUCKS AVIARY.

**The Mallard Duck**, (*Anas boschas*), is one of our finest swimming birds, the joy of the sportsman who finds it in its haunts, the delight of the epicure who finds it on the bill of fare. Sluggish indeed must be the blood which does not beat faster at the sight of a flock of wild Mallards, free in Nature, and ready to leap into the air and away at the slightest alarm. Excepting the wood duck, this is the handsomest duck in North

America, and also one of the finest for the table. Its range covers practically the whole of the western continent down to Panama, and even extends to the Azores, North Africa, and Northern India. The drakes are readily recognized by the splendid iridescent green of the head.

**The Tadorna Duck** or "**Sheld-Drake**," (*Tadorna cornuta*), of Europe and temperate Asia, is another handsome species. Its body-color is pure white, its head is glossy green, its outer scapulars and primaries black, its bill is red, the feet and legs pink, and for a duck it stands rather high on its legs. It has a very wide range, extending quite across Europe and middle Asia to Japan. This duck breeds in sandy regions, where it has the strange habit of living in burrows which it digs in the sand, quite like the puffin.

**The Mandarin Duck**, (*Aix galericula*), is the Chinese counterpart of our beautiful **Wood or Summer Duck**, (*Aix sponsa*). Of all living ducks, the males of these two species are the most gorgeously colored and plumed, and they are also of elegant form. Although both species are much sought after, the number of available specimens continues to be limited to a comparatively small number.

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## THE FLYING CAGE, NO. 4.

This mammoth bird-cage is one of the wonders of the Zoological Park. It represents an attempt to do for certain large and showy water birds, precisely what has been done for the hoofed animals, the beaver, otter, and other species—give them a section of Nature's own domain. In this they can fly to and fro, build nests and rear their young in real freedom.

Near the lower end of Birds' Valley, as a sort of climax for the Ducks' Aviary when seen from the north, rises a lofty, web-like structure, in the form of a huge, gothic arch. It is 55 feet in height, 72 feet wide, and 152 feet long. The whole structure consists of a series of steel-pipe arches and purlins, the former eight feet apart, over which wire-netting has been tightly stretched.

The wire-netting seems peculiarly open. It is of the kind known as chain-netting, which offers the least possible obstruction to the eye. This cage is so large that a very respectable block of houses, three stories high and of ample dimensions, could stand within it without touching the wire. It completely encloses three forest trees of very considerable size, two hickories and an oak; and it contains a pool of water a hundred feet long, and shrubbery in abundance.

The idea of a very large cage for herons and egrets is not new, for there are in existence three other flying cages, somewhat smaller than this. The first was erected in the Rotterdam Zoological Garden about eight years ago by its Director, the late Dr. A. Von Bemmelin, whose experiment proved very successful. The other two are at London and in the Paris Jardin d'Acclimation.

The Flying Cage is the summer home of a mixed flock of such large and showy water birds as are most inclined to fly about within it, and afford students and the public an opportunity to study their movements and attitudes. Save for such allowances as must be made for accidents and epidemics, this enclosure will contain the following noteworthy species, along with others of less importance:

**The Flamingo**, (*Phœnicopterus roseus*), is a perfect connecting link between the herons and ducks, and resembles the former in the great length of its legs, and the latter with a perfect web foot. The species shown is that of southern Europe and northern Africa. The general plumage, in which it differs in a marked manner from its red American contemporary, is a beautiful rosy white. The wing coverts are pale scarlet, and the primaries are tipped with black. The peculiar curved bill, which quite closely resembles that of a duck, is red at the base, ending in a black point. With its remarkable form and showy plumage, the Flamingo always presents a striking appearance.

**The Wood Ibis**, (*Tantalus loculator*).—The Park opened with four fine, large birds of this species, from Florida, where they breed, in very greatly reduced numbers, on the headwaters of the St. Johns. This bird is a very satisfactory member of

avian society. Although amply large to lord it over the other birds of the cage, he quarrels with none, but peacefully goes his way, feeling with the point of his beak along the sandy bottom of the pool for something edible, or standing in quiet meditation on the bank. This is the largest of our ibises, and quite a handsome bird. Although not so fond of using its wings as are the herons and egrets, the Wood Ibis is for many reasons a very welcome tenant.

**The Scarlet Ibis, (*Guara rubra*),** is for its size the most showy bird in existence, not even excepting the birds of paradise. Excepting the black primaries, every feather on the adult bird in perfect plumage is of a brilliant Chinese vermilion color, visible in nature for a long distance. The immature birds are mottled and patched with white. This species once came as far north as southern Florida, but now it is found only from Cuba southward. They frequent the mud banks at the various mouths of the Orinoco, and not long since were quite abundant on the coast of British Guiana.

**The Glossy Ibis, (*Plegadis autumnalis*),** is a rare bird in captivity, and it is uncertain whether it will be possible to maintain this species perpetually in the Flying Cage and Aquatic Birds' House, but an effort in that direction is being made. The two specimens shown on November 8, 1899, were collected for the Society in the marshes on the headwaters of the St. Johns River in the spring of that year.

**The White Stork, (*Ciconia alba*),** is as large as our Wood Ibis, which it strongly resembles in form and habits. This bird is literally the household bird of Germany, and its place in the family has now become of more importance than its place in Nature. Throughout Holland, Germany, and very nearly the whole of eastern and central Europe, the White Stork is so prized and protected by the people that it has attained a state of semi-domestication. Nesting places are prepared for it, usually near or even upon human habitations, and it enjoys an immunity from molestation quite like that of the adjutant bird in India.

**The Great Blue Heron**, (*Ardea herodias*), is frequently called the "Blue Crane;" but the latter name is a misnomer. It properly belongs to our sandhill crane (*Grus canadensis*). Just why so large a number of people should be so persistent in this error is a psychological problem; but the fact remains that people will not say "Heron."

This Great Blue Heron is the largest and most noteworthy bird of our northern marshes. Thanks to the fact that it bears no desirable "plumes," and its flesh is not edible, it has been permitted to live. When not molested, it becomes quite trustful, and when wading along a shore, fishing for minnows, it affords for the field-glass or the camera a very interesting subject. In summer these birds are quite numerous in the marshes along the Shrewsbury River, between Sandy Hook and Long Branch, and an unfailing source of interest to excursionists. It is sincerely to be hoped that the evil eye of Dame Fashion will not fall upon this bird, and cause its extermination.

**The Little Blue Heron**, (*Ardea cœrulea*).—The immature birds of this species are snowy white, and so closely resemble snowy herons of the same age that only one well acquainted with both can distinguish between them. They are, however, easily distinguished by the fact that the snowy heron has black legs and a black bill, whereas the legs and bill of the Little Blue Heron are pale yellow. This species is still common in some parts of its Florida home, but one of the specimens exhibited was captured at Prince's Bay, Staten Island.

**The Louisiana Heron**, (*Ardea tricolor ruficollis*), once very numerous in Florida, is still found there, but in greatly reduced numbers. It ranges from Central America and the West Indies northward to the Gulf States, and occasionally to Long Island. The general coloring is dark blue, but a prominent distinguishing character is the chestnut brown on the sides of the neck.

**The Yellow-Crowned Night Heron**, (*Nycticorax violaceus*), as its name indicates, has a crown of pale colored feathers, with two or three white occipital plumes. It breeds from Southern Illinois to South America. Occasionally one strays

as far north as Massachusetts. It is rather a solitary species, and usually is found singly, or in pairs, along the borders of wooded streams. The specimens exhibited were collected for the Society in the most inaccessible portion of the head-waters of the St. Johns River, Florida.

**The Snowy Heron, or Snowy Egret,** (*Ardea candidissima*), when fully adult, is the most beautiful white bird in all the avian world. Its form is the embodiment of symmetry and grace, its plumage is immaculate, and the filmy "plumes" on its head and back are like spun glass. Its black legs and bill merely serve to intensify the whiteness of its feathers. The vanity of woman has been the curse of the Snowy Egret. Its plumes are finest during the breeding season, and it was then that the hunters sought them, slaughtering the old birds in the rookeries by thousands (when they were abundant,) and leaving the nestlings to die of starvation. If all women could know the price in blood and suffering which is paid for the accursed "aigrettes" of Fashion, surely but few could find any pleasure in wearing them. It is strange that civilized woman—the tender-hearted, the philanthropic, and the ever compassionate—should prove to be the evil genius of the world's most beautiful birds.

In the United States the Snowy Egret now exists only by accident, and the "plume hunters" are pursuing this and the following species in Central and South America, to their most remote haunts, sometimes even at the risk of their lives. Fashion has decreed that the Egrets must go.

**The American Egret, or Great White Egret,** (*Ardea egretta*), is, when adult, one of our largest birds with pure white plumage. Much to the misfortune of this species, it possesses about fifty "aigrette" plumes, which droop in graceful curves from the middle of its back far beyond the tail and wing tips. For these beautiful feathers, this bird has been pursued by plume hunters to the point of total extermination. The Society exhibits several specimens.

## THE AQUATIC BIRDS' HOUSE, NO. 5.

This building is the result of an attempt to solve an old problem in a new way—the care of large migratory water birds in the most uneven winter climate on earth. In comparison with the care in winter of flamingoes, large herons, egrets, ibises, and the like, the housing of perching birds, birds of prey and the parrots, is almost child's play. But the wealth of fine water birds in North America alone, and the interest attaching to them, seem to justify the labor and expense that have been involved in this building and its appointments.

**The Small Flying Cage.**—The dimensions of the building are 63x50 feet. Its whole central area is occupied by a large cage 16 feet wide, 38 feet long, and 16 feet high, filled with a choice mixed collection of flamingoes, brown pelicans, swans, egrets, storks, ibises, and ducks. The bottom of the cage contains a spacious pool of running water, surrounded by banks of sand and gravel.

Along the side walls of the building are two rows of cages, seven on each side, which contain groups of birds that are closely related to each other. Usually, each cage is filled with birds of the same group. These cages also contain running water, and an abundance of gravel. In the centre of the series along the eastern wall is

**The Diving Birds' Tank.**—This is a huge aquarium tank 9 feet long, 5 feet wide, and 4 feet deep, with plates of glass one inch in thickness on the front and both ends. It is filled with clear water, in which the movements of diving birds under water may be studied in detail. As soon as this feature can be fully completed and put in operation, the darters and other fish-eating birds which pursue their prey under water will be given access to the tank, and permitted to capture the live fish which will be placed within it. This feature was copied from the London Zoological Garden, and under favorable conditions it affords a highly interesting exhibition.

In order to suggest the haunts of the water birds inhabiting

the Aquatic Birds' House, to give distance, and to eliminate the dead walls which never seem so sadly out of place as behind cages filled with living creatures, the walls behind the side cages of the interior have been very artistically decorated, in oil colors, by Mr. Robert Blum. The entire western wall is occupied by a tropical landscape representing a scene on the edge of the Florida Everglades, while the eastern cages have for a background a northern marsh scene, highly suggestive of the marshes along the Shrewsbury River, New Jersey, with the Navesink Highlands in the distance. The artistic effect of these landscape backgrounds is very pleasing. What was at first an experiment is now a pronounced success, and this idea will be introduced in other animal buildings of the Zoological Park.

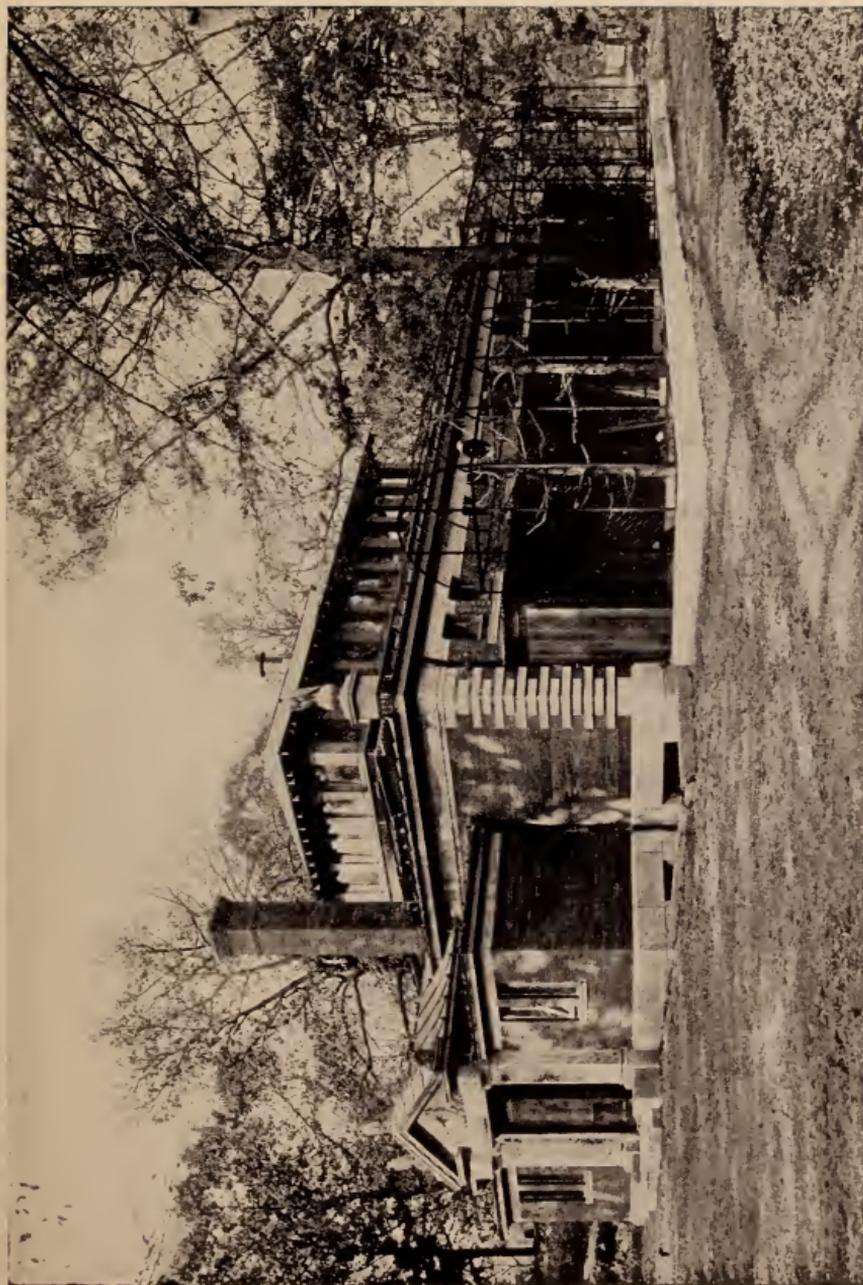
Inasmuch as the water birds shown in this building are the same species that have been described in the section devoted to the Flying Cage, it is unnecessary to repeat descriptions here.

**The Exterior Cages.**—Although the ten large cages on the exterior of the Bird House belong to the Aquatic Birds, until the great Eagles' and Vultures' Aviary has been erected they must be occupied by the birds of prey. The following are a few of the most conspicuous species :

**Bald Eagle, (*Halicæetus leucocephalus*).**—The appearance of the adult Bald Eagle, our National emblem, with its conspicuous white head and tail, is familiar to all ; but the immature birds, as shown by several of the specimens, lack the white in their plumage. These birds are found usually near water, and their food is chiefly fish. These they sometimes catch for themselves, but if ospreys are found in the vicinity, they are watched by the Eagles, and often are robbed of their hard-earned prey.

Recently many scores of these splendid birds have been killed, as a result of Fashion's latest whim—calling for long quill feathers for women's hats.

**Black Vulture, (*Catharista atrata*).**—These ill-favored but very useful birds are quite abundant, and even semi-domesticated, in some of our Southern cities. This is due to the



THE AQUATIC BIRDS' HOUSE.



protection accorded them, because of their valuable services as scavengers. They are said to devour every particle of exposed organic refuse, and in a warm climate these services are of more value than we in the north can realize. The bare head enables the bird to feed without danger of soiling its feathers.

**The Red-tailed Hawk, (*Buteo borealis*).**—The Hen Hawk, or Chicken Hawk, is one of our commonest birds of prey. It hardly merits its common name, as its favorite food is mice and other small mammals. This is the hawk seen, in the fall of the year, going south in flocks, sometimes of one hundred or more. Its distinguishing mark is its rich, rufous tail, and its four-notched outer wing feathers. The hats of our lady friends afford abundant opportunities for the study of these feathers.

**The English Peregrine Falcon, (*Falco peregrinus*).**—This bird was celebrated, in the days of falconry, as affording the finest sport. It is a typical bird of prey, combining the strength of a small eagle with the quickness and courage of a goshawk. The two fine specimens exhibited were presented to the society by Mr. H. N. Phelps.

**The Great Horned Owl, (*Bubo virginianus*).**—These nocturnal birds of prey inhabit heavily wooded regions, feeding on mice, and poultry when it is obtainable. The bright yellow iris, the conspicuous feather horns, and the apparently pivoted neck are curious features of these birds. Their reputation for wisdom is only founded on their external appearance, for in reality they are rather dull birds.

**The Barred Owl, (*Syrnium nebulosum*).**—This owl is more diurnal than its nearest relatives, and its almost black eyes seem well able to endure the sunshine. Its deep, penetrating call, “whöö-ö-ö, whöö-ö,” is one of the most weird and striking cries of the bird world. Another peculiarity, common to all owls, but more noticeable in this less nocturnal species, is the absolutely noiseless flight. The soft, downy feathers of the owl permit it to wing its way through the air with as little noise as a falling leaf.

**The Screech Owl, (*Megascops asio*).**—This little horned owl is our commonest species, and frequents the neighborhood of dwellings and orchards. Being nocturnal it is more common than is generally supposed, and its curious cry is the cause most frequently leading to its discovery. Its two phases of plumage, red and gray, occur independently of sex, age, or season. Its food consists of mice and insects.

**The Florida Burrowing Owl, (*Speotyto cunicularia floridana*).**—The habits of the Florida Burrowing Owl differ somewhat from those of its Western congener. There being no prairie-dogs in Florida, these birds make all their excavations for themselves. These are about six feet in depth, and at the end the round, white eggs are laid, usually six in number. The anomalous habits of these birds and their curious little gnome-like faces make them interesting inmates of a zoological garden.

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## THE WILD TURKEYS' ENCLOSURE, NO. 62.

At the northern end of Squirrel Ridge, where the Alligator Walk intersects the Rodents' Walk, an ideal quarter of an acre, of oak and hickory trees, underbrush, and bare rock, has been dedicated to the king of game birds.

**The Wild Turkey, (*Meleagris gallopavo*),** is a bird of magnificent size and presence, and the splendid metallic lustre of his plumage—a mixture of burnished bronze, copper, lapis lazuli, and fire opal iridescence—backed up by a great bulk of savory flesh, all combine to make this the finest game bird on earth. It was once fairly abundant throughout the eastern United States, and still is found in Pennsylvania, southern Ohio, Virginia, and other Southern States as far west as Texas. Three other species of *Meleagris* are now recognized—one in Florida, one in southern Texas and northeastern Mexico, and the fourth in Mexico, extending to western Texas and Arizona.

The fine flock exhibited in the Zoological Park was presented to the Society by Mr. A. Edward Pond.

## THE DENS OF THE CARNIVOROUS ANIMALS.

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### THE WOLF DENS, NO. 15.

At the northeastern corner of the Elk Range there is a huge, bare granite rock, two hundred feet long, shaped precisely like the hump of a bull buffalo. The high end of the hump is toward the north, and its crest is about fifteen feet above the ground on its eastern side. A fringe of small trees and bushes grows along its western side. On the east side, well sheltered by the rock itself from the cold west wind of winter, and also shaded by several fine trees which most opportunely grow close beside the ledge, the Wolf Dens and Fox Dens are situated.

In regard to the iron work, these dens are merely an understudy of the Bear Dens. The dimensions of each den of the series is 16 by 48 feet, and the height of the bars to the top of the overhang, is 9 feet 6 inches. The sleeping dens are of simple construction, all save one being of wood, trimmed with bark-covered slabs. At present the Wolf Dens are divided into four compartments.

**The Gray Wolf**, (*Canis nubilis*), is known by as many names as it has color phases. In the North, where it is white, it is called the "White Wolf," while in Florida, it becomes the "Black Wolf." In British Columbia, and around Great Slave Lake, both White and Black wolves abound, as well as the standard Gray, but on the Barren Grounds the white phase predominates. In Texas a "Red Wolf" is found, but apparently the red phase is of somewhat rare occurrence, and is never found in the North.

In the West this animal has recently come into prominence in a way that is striking terror to the hearts of ranchmen and others who have stock to lose. While all kinds of desirable game animals are decreasing at an alarming rate, the Gray Wolf not only holds its own, but is multiplying rapidly. The destruction by it of calves, colts, and sheep has become so great that nearly every western State has placed on the head of this bold marauder a bounty varying from \$2 to \$10. In some States this law has been in force for several years, but with no sensible diminution in the number of wolves.

The Gray Wolves which live in touch with civilization are by no means such bold and dangerous animals as they formerly were. In the early days, when wolves were numerous and fire-arms few and primitive, the Gray Wolf undoubtedly was a dangerous animal. But the breech-loading rifle has changed all that. Excepting for his stock-killing propensities, the Gray Wolf is now a skulking creature. In the United States this animal possesses the courage of a coyote, but in the Barren Grounds it is still fierce and dangerous. Mr. C. J. Jones, who in 1897-98 made a journey to the Barren Grounds after musk-ox calves, fought off fierce bands of these creatures for several days in succession. All of his dogs that were bitten by wolves died of hydrophobia, and Mr. Jones believes that hydrophobia is Nature's means of restricting the wolf population of the Arctic regions. However much the wolf may skulk and flee when the way is open, when brought to bay he knows how to fight. One snap of his powerful jaws and shear-like teeth is enough to disable almost any dog, and send it howling to the rear. It is no wonder that western dogs of experience are shy of approaching a Gray Wolf within snapping distance.

Excepting the localities from which it has been driven out by civilization, the Gray Wolf ranges over the whole North American continent from central Mexico to  $83^{\circ} 24' N.$

**The European Wolf**, (*Canis lupus*), is about the size of the North American gray wolf, and some zoologists consider the two species identical; but it is rather a common thing for European naturalists to regard North American animals as identical with the nearest allied species of Europe. Noteworthy

examples of this tendency are found in the Barren Ground caribou, moose, and beaver.

Of the two specimens of *Canis lupus* shown in the Wolf Dens, the brown, smooth-coated male, which came from the Moscow district, Russia, is exceedingly unlike the shaggy, long-haired pepper-and-salt gray wolf of North America. The light-colored female is from central Siberia.

**The Coyote, or Prairie Wolf, (*Canis latrans*),** is a personal acquaintance of nearly every trans-continental traveler. To those who have camped on "the plains," he is quite like an old friend; and the high-pitched, staccato cry—half howl and half bark—with which he announces the dawn, is associated with memories of vast stretches of open country, magnificent distances, sage brush and freedom. Because of his fondness for barking, Thomas Say, the naturalist who first described this species, christened it *Canis latrans*, which means Barking Wolf.

This animal averages about one-third smaller than the gray wolf, and while the finest male specimens are, in the autumn, really handsome animals, at other times the majority are of very ordinary appearance. At no time, however, even in the dark, is a Coyote a courageous animal. So far as man is concerned, a band of a thousand Coyotes would be as easily put to flight as one; but in hanging upon the ragged edges of civilization, and living by his wits, the Coyote is audacity itself. By inheritance, and also by personal experience, this animal knows to a rod how far it is safe to trust a man with a gun. If the hunter has left his gun behind him, the Coyote knows it at once, and boldly flaunts himself within stone's throw of his enemy.

Usually captive Coyotes are nervous and suspicious, but to this rule an interesting young specimen received by the Society from Warren, Minnesota, is a notable exception. It is as sociable and affectionate as any puppy, and very fond of attention.

The Coyote varies in color quite markedly, exhibiting the gray, brown and black phases. Formerly it was supposed that one species comprehended all, but Dr. Merriam's series of specimens from all parts of the West and Southwest have led him to separate these animals into eleven species, as follows:

DR. MERRIAM'S DETERMINATIONS OF THE  
COYOTES.

*With the type locality of each species.*

**1. Latrans Group.**

*Canis latrans*, Say. Council Bluffs, Iowa.

“ *pallidus*, sp. nov. Johnstown, Nebraska.

“ *lestes*, sp. nov. Toyabe Range, Nevada.

**2. Frustror Group.**

*Canis cagottis*, H. Smith. Rio Frio, near the City of Mexico.

“ *frustror*, Woodhouse. Fort Gibson, Indian Territory.

“ *peninsulæ*, sp. nov. Cape St. Lucas, Lower California.

**3. Microdon Group.**

*Canis microdon*, sp. nov. Mier, Tamaulipas, Mexico.

“ *mearnsi*, sp. nov. Quitobaquita, Pima County, Arizona.

“ *estor*, sp. nov. San Juan River, Utah.

“ *ochropus*, Esch. “California” (San Joaquin Valley).

“ *vigilis*, sp. nov. Manzanillo, Colima, Mexico.

In identifying a Coyote, there are but two courses open: (1) to name it according to its locality; or (2) to procure a full series of skins from all localities, to afford an opportunity for comparison.

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**THE FOX DENS, NO. 15A.**

Of the twelve species of Foxes found in North America, three species stand forth as the types of prominent groups, and it is very desirable that all three should be well known.

**The Red Fox**, (*Vulpes fulvus*), is the representative of the group which contains also the Cross Fox and Black Fox of the

Northwest. In spite of dogs, traps, guns, spades and poison, this cunning creature persists in living in close touch with the poultry yards of civilized man. His perfect familiarity with old-fashioned dangers enables him to avoid them all, and no sooner does a new danger menace him, than he promptly invents a way to escape it. The manner in which the Red Fox lives with civilization without being exterminated, really is surprising, and speaks volumes for the astuteness of this animal.

The geographical range of the Red Fox is very wide. From North Carolina and Tennessee, it extends northward through the whole northeastern United States, gradually bearing westward to Montana, and northward almost to the Arctic Ocean. It is the commonest species in Alaska, where it is found practically everywhere.

The typical Red Fox, and its two sub-species, the **Cross Fox**, (*Vulpes fulvus decussatus*), and the **Black Fox**, (*V. f. argentatus*)—the latter many times miscalled the "**Silver Fox**"—vary in all possible gradations of color from bright red to pure black. Often it is difficult to decide where one species leaves off and another begins. The Cross Fox stands midway between the Red and Black, with some of the yellow color of the former on the sides of the neck and behind the fore leg, while the remainder of the general color is grizzled gray-brown, laid across his shoulders in a more or less distinct cross. The Black Fox varies in color from very dark iron-gray to dark brown or black, with a slight wash of white-tipped hairs over the head, body and tail. The tip of the tail is always white, which is the only constant color mark about him.

Two fine Red Foxes from the Catskills, shown in the Fox Dens, show a very interesting color peculiarity which is rarely observed in this species. Each specimen has one hind-leg and foot snowy white.

**The Gray Fox**, (*Urocyon virginianus*), is the Fox of the South, even though it does range northward well into the territory of the red fox. This species is distinctly smaller and more lightly built than the red, its hair is not so luxuriant, it is more shy and retiring, and its colors change very little. When hotly pursued by dogs it often climbs trees that are quite per-

pendicular, to a height of twenty feet or more. In captivity Gray Foxes are forever trying to escape by climbing, instead of by burrowing, as would naturally be expected. In temper, they are treacherous to their keepers, and also to each other, and as "pets" are anything but desirable.

**The Swift, or Kit Fox,** (*Vulpes velox*), is the daintiest, prettiest and liveliest of all American foxes. From his delicate little nose to the tip of his well-trimmed tail, he is every inch a thoroughbred. His countenance is bright and pert, and when several specimens are kept together they are very playful. One striking feature of this little animal is what may well be termed its trimness. When in fair condition, its coat of thick, silvery gray fur is as smooth and even as if recently trimmed by a barber.

On the western plains, where it once had for companions the buffalo and prong-horn, the Swift is becoming rare. Its worst enemy is the deadly strychnine bottle of the ranchman.

The specimen shown in the Fox Dens on the opening of the Zoological Park is a new species, closely allied to the above, from Phoenix, Arizona, recently described by Dr. C. H. Merriam as *Vulpes macrotis*, or the **Large-Eared Swift**.

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## THE SEA-LIONS.

Of all animals which find permanent homes in zoological gardens and parks, very few afford the public more constant entertainment than Sea-Lions. They are delightfully active, and in one way or another—diving, swimming, climbing or hopping about—are nearly always "showing off." No one within a quarter of a mile of their pool need inquire where they are, for their loud and cheerful "Hook! hook! hook!" is heard far and wide, and draws visitors like a magnet.

**The Californian Sea-Lion** or "**Barking Sea-Lion**", (*Zalophus californianus*), is the species most easily caught alive, and the one usually seen in captivity. Its home is the coast of California, but it is said to enter the Sacramento River and travel upward for a considerable distance in pursuit



CALIFORNIAN SEA-LIONS.



of spawning salmon. Comparatively few Sea-Lions are now found on the mainland coast of California, and but for the fact that on the United States Light-House reservations their slaughter is prohibited by the Light-House Board, the people of California would now be waging a systematic war on the species, which soon would exterminate it.

The specimens exhibited in the Zoological Park were captured for the Society last May, near Santa Barbara. Their captors provided themselves with lassos, crept into the rocky caverns which served the creatures as sleeping-dens, lassoed them, and drew them forth. During the long journey across the continent they travelled in crates, were fed on raw fish, and twice a day were drenched with water. Inasmuch as these are warm-blooded animals, provided with lungs, not gills, they live and thrive in fresh water. Owing to lack of room, this species has never yet been known to breed in captivity, although many "pups" have been born in zoological gardens of newly caught mothers.

The California Sea-Lion is very similar in size, and, leaving the old males out of consideration, it is almost the exact counterpart in form of that apple of perpetual international discord—the Alaskan Fur Seal. The unfortunate fact that the latter animal has become known as a "Seal," has caused much confusion in people's minds regarding the classification of pinnipeds (fin-footed animals) generally. For this reason, it is proper to observe at this point that :

(1) *Sea-Lions* always have flat, triangular, naked front flippers, without claws ; they have long necks, and carry their heads high. There are nine species, of which the so-called "Fur Seal" is one.

(2) *Seals* always have short and stubby front flippers, which are covered with hair, and provided with nails. In most species the hair is coarse and valueless. The seal has a very short neck, and by reason of the weakness of its front flippers, it is not nearly so active, nor so interesting as the Sea-Lion.

**The Harbor Seal**, (*Phoca vitulina*), is the species common along our Atlantic coast, and since it serves so well as a type of the hair seals, or true seals, it will presently be shown in

the Park. In comparison with the active and vivacious Sea-Lion, it is a tame and rather uninteresting creature; but neither has any commercial value, save for purposes of exhibition when alive.

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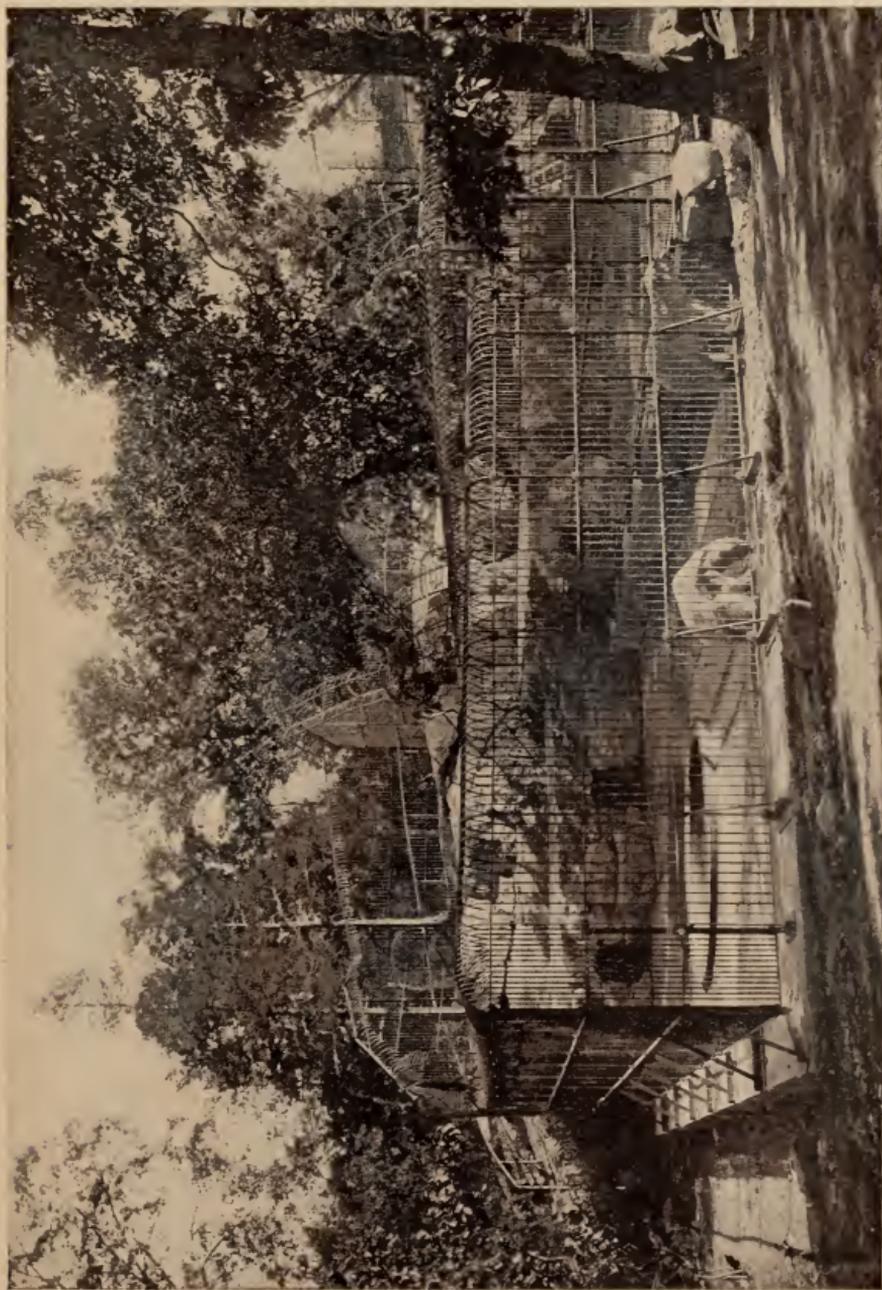
## THE BEAR DENS.

The Zoological Society which undertakes to form a fairly representative collection of the bears of North America, assumes no light task. This continent possesses more species of bears—and more that are large and dangerous—than all the rest of the world taken together. Owing to the great difficulty involved in forming a collection of bear skins and skulls representing all species and localities, the exact scientific status of the *Ursidæ* of North America is still somewhat unsettled. Nevertheless, a long step in that direction has been made by Dr. C. Hart Merriam, Chief of the Biological Survey, who, with about 200 skulls before him, has drawn and published preliminary conclusions, which may be tabulated as shown below. Although the whole subject is still under investigation, the public will be interested in this report of progress.

It is the intention of the Zoological Society to collect and exhibit specimens which will add as much as possible to available material for a complete revision of our *Ursidæ*. The members of the group of “big brown bears” inhabiting Alaska are very little known, save from the study of a few pelts and skulls.

Not only are North American bears numerous in species, but some of them are of large size, and uncomfortably savage in disposition. In captivity they require many things. Their open dens must be large, properly open to sunlight, and also properly shaded; the cage-work must be strong, high, and invulnerable against attack; the sleeping dens must be roomy, thoroughly dry, and the operation of their very numerous iron doors must be free but safe. The water supply and drainage of each den must be perfect, and every square foot of each den must be subject to the wash of the hose, and the rasp of the scrubbing brush.

The construction of first-class dens for big bears, and a great many of them, is serious business, and very expensive.



THE BEAR DENS, AND POLAR BEARS.



DR. MERRIAM'S PRELIMINARY SYNOPSIS OF  
THE BEARS OF NORTH AMERICA.

## FAMILY URSIDÆ : THE BEARS.

*Thalarctos maritimus.* Gray. Polar Bear.  
Arctic regions generally.

The Brown  
Bears.

- Ursus middendorffi.* Merr., sp. nov. Kadiak Bear.  
Kadiak Is., Alaska. (Largest of all.)
- Ursus dalli.* Merr., sp. nov. Yakutat Bear.  
Yakutat Bay, Alaska.
- Ursus sitkensis.* Merr., sp. nov. Sitka Bear.  
Alaska coast, near Sitka.

The Grizzly  
Bears.

- Ursus horribilis.* Ord. Grizzly Bear. (Silver-Tip.)  
Wyoming and Utah to Alaska.
- Ursus horribilis horriæus.* Baird. Sonora Grizzly.  
Southwest, New Mexico.
- Ursus richardsoni.* Reid. Barren-Ground Grizzly.  
Great Slave Lake region, and Barren-Grounds.

The Black  
Bears.

- Ursus americanus.* Pallas. Black Bear.  
Eastern North America.
- Ursus luteolus.* Griffith. Louisiana Bear.  
Louisiana and Texas.
- Ursus floridanus.* Merr., sp. nov. Everglade Bear  
Florida.
- Ursus emmonsii.* Dall. Glacier Bear.  
St. Elias Alps. Yakutat Bay.

**The Grizzly Bear, or "Silver-tip Grizzly"** (*Ursus horribilis*).—The rapid disappearance of this species from the United States renders all living examples of it specially interesting. Already the Californian Grizzly (described by Dr. Merriam as *Ursus horribilis horriæus*), is almost a creature of history, and the Rocky Mountain species is fast being thinned out by the ever-increasing hunters.

Of all bears, the Silver-Tip Grizzly is the most savage and dangerous. He is easily angered, and when wounded or harried not only becomes furiously vindictive, but he also possesses a degree of courage which renders him a dangerous antagonist. As a general thing, a Grizzly Bear, like a lion or tiger, will run as soon as he discovers the presence of his only enemy—man; but if he is wounded, or cornered—or *thinks* he is cornered—he assumes the aggressive, without an instant's delay. Unfortunately, the largest Silver-Tip Grizzlies ever killed have been too far from scales to make it possible to weigh them. Governor Roosevelt estimated the weight of his largest specimen, killed in the Big Horn Mountains, Wyoming, at 1,200 pounds, and declares that "he was a good deal heavier than any of our horses," and "fat as a prize hog." Judging from the size of some of the skins that have come from Wyoming Grizzlies, there is no reason to doubt the accuracy of the estimate, although it is probable that the great majority of Rocky Mountain Grizzlies killed during recent years have been under six hundred pounds in weight.

The most interesting specimen of the Rocky Mountain Silver-Tip now on exhibition (December 1, 1900) is a dark-colored and very handsome specimen, named "Engineer," not quite two years old, obtained in Meeker, Colorado, by Professor Henry F. Osborn, and presented to the Society by the Engineers' Club of New York City. At present the color of this individual is darker than the most common type of the Silver-Tip, which is sometimes almost as gray as a badger.

**The Kadiak Bear,** (*Ursus middendorffi*, Merriam), said to be the largest of all living bears, is found on Kadiak Island, Alaska, and the mainland adjacent thereto. The Society has very fortunately come into possession, as a gift from two of its members, Messrs. William White, and J. Barron Niles,



KADIAK BEAR.  
*Eighteen months old.*

of two brown cubs which were captured in May, 1899, at Hudson Lake, Copper River District, Alaska. At the time of their capture they weighed eight pounds each. On November 1st they weighed about ninety pounds each, and had begun to show a lighter color than a Silver-Tip of the same age from Colorado. In view of the lack of precise information regarding the brown bears of the far North, the development of these two fine specimens will be watched with keen interest.

Beyond question, they are of a different type from the well-known Silver-Tip Grizzly of our Rocky Mountains. The coat is very long, rather coarse, and although not inclined to curl, gives the animal a shaggy appearance. The coat of the Silver-Tip is as even and immaculate as if it had been combed and trimmed by a barber. The Alaskan bear has the high shoulders and long front claws of the typical Grizzly, but its head is much broader for its length. The muzzle is short, very thick, and cut off squarely at the nose, which gives the whole head a curious appearance of squareness.

In color the Alaskan bear differs as widely from the Silver-Tip as both do from the ordinary black bear. The coat of the former (in October, 1900, about eighteen months from birth) is, on the head, shoulders, back, and sides, of a general color half way between yellow ochre and Naples yellow. The legs and hinder parts are darker in color, corresponding most nearly to burnt umber. The hair of the crown, jaws, and throat is so long that the face seems to be surrounded by a ruff. On the top of the shoulders the hair is between five and six inches long, and on the abdomen it measures between eight and nine inches.

In view of the great scarcity of Alaskan bears in scientific collections, and the urgent need for more light on their classification, these two specimens are of uncommon interest and value. It is believed that they represent the giant brown bear species of Kadiak, (*Ursus middendorffi*), but it is impossible to determine to a certainty before they reach maturity.

**The Californian Grizzly**, (*Ursus horribilis horriæus*), is much larger than the Rocky Mountain species, and its fur is brown-gray rather than silvery gray. There is good reason

to believe that this species sometimes attains a weight of 2,000 pounds.

In a wild state Grizzly Bears live on berries and fruit of all kinds available, succulent roots, grubs, carrion if it comes handy, and live game if it can be killed. In the cattle-growing states bordering the Rocky Mountains, owing to their cattle-killing propensities, a bounty of from twelve to fifteen dollars per head is paid for their destruction.

**The Black Bear, (*Ursus americanus*).**—Until quite recently all Black Bears in North America were referred to a single species, with the type of which most persons are familiar. Even during the last twenty years living representatives of the Black Bear group have been found in nearly every state and territory of the United States, and also in northern Mexico, Province of Quebec, Alberta, Assiniboia, British Columbia, Alaska, and the Mackenzie River basin. On the opening of the Zoological Park the dens contained three specimens, one a very large adult male specimen from Florida, a female from the Adirondacks, in her second year, and another immature specimen from western Colorado.

With the above is shown a fourth specimen referable to the Black Bear group (*Ursus americanus*), brown in color, and of a type known universally throughout the West as the Cinnamon Bear. The scientific status of this creature is by no means satisfactory. Because of the fact that its skull and dentition reveal no constant difference in structure from those of the typical Black Bear, and in spite of the fact that a Cinnamon Bear can instantly be distinguished by its color, even at a distance of a quarter of a mile, Dr. Merriam and all other American mammalogists refuse to consider the Cinnamon Bear as a distinct variety, or, in fact, as anything else than a pure Black Bear! Possibly this view is correct, for it is well known that both brown and black cubs have been found in the same litter. One fact remains, however, which is significant. While in the northern gray squirrel (*Sciurus carolinensis*), and also in the fox-squirrel (*S. niger*), all possible gradations of color are found, from the typical gray and red to jet black, the color-line between the Cinnamon Bear and the typical Black Bear always is sharply drawn.

and every specimen is referable at a glance to one type or the other. The Cinnamon Bear deserves further investigation.

**The Polar Bear, (*Thalarctos maritimus*).**—In nearly every collection of living bears the individuals of this species are the most showy and attractive. Their white coats quickly catch the eye of the visitor, and whether young or old, they are generally the most active and playful of all captive bears. In cold weather, when other bears lie in the sun, or, if permitted, curl up in the straw of their sleeping dens, the Polar Bear will disport himself in the freezing cold water of his swimming pool, and joyously play with a cake of ice until the sight of it makes one shiver.

Although the Polar Bear inhabits practically the whole of the Arctic Ocean and its numerous islands, it is by no means the most northerly warm-blooded mammal. Nansen found fox tracks at 85° N., but the most northerly bear observed was on the 84th parallel. The favorite home of this animal is the edge of the great polar ice cap, where Neptune and the Frost King wage continuous warfare. He seldom ventures more than a day's journey inland, on any shore. In winter, as the edge of the ice-pack moves southward, and in summer when it retreats northward, he follows it in order to keep in touch with the ringed seals and walrus that also go with it.

The power of the Polar Bear to resist ice-cold water—nay, even to enjoy it—may fairly be regarded as one of the wonders of nature. On the coast of Alaska this strange creature will plunge into the Arctic Ocean and swim miles from shore, through tossing fields of broken ice, and wherever the mother leads, her cubs follow.

The world's supply of captive Polar Bears comes almost wholly from whalers and sealers, who improve every opportunity to capture cubs. A great number thus find their way into the hands of Mr. Carl Hagenbeck, of Hamburg, who supplied the two large specimens now occupying the most northerly bear den of our first series. The Grizzly Bear of the United States will soon cease to exist, but not so with the Polar Bear. Thanks to the Frost King, he needs from man no protection against man's propensity to exterminate all wild creatures. There will be

hundreds of bears around the northern end of Franz Josef Land as long as the seals and walrus remain for them to feed upon.

The Polar Bears' Den is situated at the north end of Rocking Stone Hill, about two hundred feet from the north end of the



THE POLAR BEAR.

first series of Bear Dens. It is reached by descending the steps leading toward the Beaver Pond, and turning to the right. From the Rocking Stone Restaurant, the Polar Bears are quickly reached by descending the hill toward the north.

**The Japanese Black Bear**, (*Ursus japonicus*), from northern Japan, easily recognized by his large, round ears, is one of the most sociable and good-natured bears in the collection.

## THE SMALLER QUADRUPEDS.

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### THE SMALL MAMMALS' HOUSE, NO. 23.

Most difficult of all collections to settle satisfactorily in a zoological park or garden, is the great *omnium gatherum* of small species which fall within the meaning of the term "Small Mammals." When fairly completed, every large garden provides separate rooms or small buildings for the various orders of small quadrupeds, but until this point is reached it is necessary to assemble many of them in one building.

From the first it has been the policy of the Zoological Society to erect no temporary buildings, and, despite many temptations, no departure from this policy has been made. The only concession to the idea of temporary installation has been the utilization of the greenhouse for the rapidly increasing collection of small quadrupeds. This building, which is 75 feet long by 25 feet wide, is heated by hot water, and admirably adapted to the display of small mammals. Its utilization for this purpose has led many persons to inquire why such structures are not in general use for the accommodation of the small cats and other carnivores, which are so difficult to keep in other buildings. In the matter of ventilation, which with all small carnivorous animals is a matter of vital importance, a modern greenhouse falls little short of perfection, while the light is equally satisfactory. In summer the opening of the ventilators and doors is equivalent to placing the whole collection in the open air.

Within a short time the Society will provide special accommodations for the Apes and Monkeys, Raccoons, Squirrels, and large feline animals, and for the small quadrupeds which do not belong in any of those groups, a special building will be erected. Of the small mammals shown on the opening day in the Zoological Park, only the most interesting are mentioned.

**The Great Ant-Eater, (*Myrmecophaga jubata*).**—This is one of the most remarkable animals to be seen in captivity, and when in May last the Society received a fine specimen direct from the Venezuelan forest, fifty miles south of Valencia, it was regarded as a good omen. It seemed like a good animal with which to start a Zoological Park.

The anatomical peculiarities of the Great Ant-Eater are apparent at a glance. The head is enormously elongated and tapers to a rounded point, where the mouth opens as a narrow slit, scarcely large enough to admit the diameter of a lead-pencil.



THE GREAT ANT-EATER.

Its front claws are large and strong, for use in tearing open ant-hills and decayed logs, and the creature walks upon them as if “club-footed.” Its tail is long and thick, and bears a luxuriant brush of coarse, wavy hair more than a foot wide. The negroes of British Guiana gravely inform travellers that the Ant-Eater uses his bushy tail as a broom, with which he sweeps up ants in order to devour them wholesale.

As may be inferred from the total absence of teeth, this strange creature lives chiefly upon crawling insects. In devouring the dreadful ants which in a South American forest often make life a burden, it helps to preserve the balance of Nature. In captivity the food of this animal consists of milk, raw eggs,

and ground meat. In taking its food it thrusts out from four to eight inches of round, black tongue, which, contrary to many published statements, is not covered with sticky saliva.

In a wild state the Ant-Eater is generally found on the ground, but it happens that the Society's specimen was found in a tree, about fifteen feet from the ground.

**The Orang-Utan**, (*Simia satyrus*), is on the third step below the human race; the first being occupied by the Gorilla, and the second by the Chimpanzee. The Malay name of this creature, as given above, but usually corrupted in English into Orang-outang, means "jungle man." This animal is found only in Borneo and a portion of Sumatra, and in a wild state attains a height of 4 feet 6 inches, and a maximum weight of two hundred and forty pounds. It is very seldom, indeed, that an adult Orang-Utan is seen in captivity. The life of a captive ape depends more upon its natural activity than its food. The surly gorilla never lives beyond a few months. The good-natured but indolent Orang-Utan occasionally survives two years of abundant food and no exercise, while the lively and aggressive chimpanzee often lives six or seven years.

Until recently it was universally believed that the mental capacity of the Orang-Utan was much below that of the chimpanzee, but the wonderful intelligence of an Orang named "Joe," who was owned and trained by Edwards Brothers, proved conclusively that the most intelligent Orang is quite the equal of the most intelligent chimpanzee.

The great apes are specially interesting because of their structural resemblance to man. Young specimens are very interesting and affectionate pets, but as they grow large and strong they become difficult to manage, and frequently are positively dangerous. In a savage state the Orang lives upon wild fruits, the young and tender shoots of the screw pine, and the leaves of certain trees. In captivity the best food for apes is boiled rice, tapioca, bananas, and other fruit.

**The Bengal Monkey**, (*Macacus rhesus*), is the species most common throughout India. Being "sacred" in the eyes of the Hindoos, he is a privileged highway robber, and lives on loot. Having for scores of generations done exactly as he

pleased, his nature has become arrogant and domineering, and his temper is so uncertain that he requires to be treated as a dangerous animal. It is to this animal that the famous Monkey Temple, at Benares, has been erected, and the great troop of two hundred and fifty Bengal Monkeys, which flock into the temple when called to be fed, constitutes the most novel sight of the sacred city.

**The Black Ape**, (*Cynopithecus niger*), at present represented by two fine specimens from the Far East, is a native of the Island of Celebes, only, but it has been introduced in the Philippines and the Island of Batchian. It is absolutely tailless, and may justly be regarded as a connecting link between the baboons and the true anthropoid apes.

**The Spider Monkeys and Capuchins**, of South America, occupy the large cage adjoining that of the orang-utans, and are specially interesting on account of their prehensile tails. The Spider Monkey is well named, being possessed of a small body and very long slender legs. The tail is used with as great facility as if it were a fifth leg and foot. Prehensile-tailed monkeys are found only in the New World. The highly interesting group of Howling Monkeys is very rarely represented in zoological gardens, for the reason that it seems to be a practical impossibility to keep any of its members alive in captivity.

**The Red Lynx, or Wild Cat**, (*Lynx rufus*), is an animal which from different localities exhibits so many different colors, it seems desirable to bring together a collection of specimens which shall represent all parts of the United States. Of the species named above, the collection already contains specimens from Florida, North Carolina, and Arizona, and others will follow rapidly. With a sufficient number of examples it may be possible to draw the line between this species and the next more satisfactorily than it has yet been drawn.

This animal has been made to do duty in more thrilling (?) stories of adventure than any other American animal, excepting the puma. Both these species have been greatly overworked, and it is hoped that some day the public will learn, once for all, that by man the Wild Cat is much less to be dreaded than the

common skunk. It is safe to say that nothing is farther from the thoughts of a Lynx than the idea of coming down from the safety of a tree to attack a man. A man with a club could be trusted to vanquish and put to flight a hundred wild cats.

**The Spotted Lynx**, (*Lynx maculatus*), stands midway between the Red Lynx and the big grizzly-gray Canada Lynx, (*L. canadensis*), with the huge paws and the long hair pencil on the tip of each ear. The very fine and strongly marked Spotted Lynx in the Small Mammals' House came to the Society as a gift from Mr. G. O. Shields, and it might well be taken as a type of the species. Its size, length of tail, and general proportions show a wide variance from the Red Lynx, and its large, round, cheetah-like spots, placed far apart on a dull gray ground of coarse and rather short hair, instantly mark the animal as being totally unlike either the Red Lynx or Canada Lynx.

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## THE AQUATIC MAMMALS' POND, NO. 20.

This body of water has been provided for the special benefit of otters, muskrats, capybaras in summer, and such other Aquatic Mammals as can be colonized in and around it.

**The Muskrat**, (*Fiber zibethicus*). As soon as possible a large colony of Muskrats will be placed in the pond, in the hope that its members will take kindly to the locality and inhabit it contentedly for a long period. It is hoped that they will soon construct two or three of their peculiar dome-shaped houses, which they raise above high-water mark, for use in winter, when their bank burrows are filled with ice, or ice-cold water. The house of this animal is built of a conglomerate of mud and rushes, or coarse grass, in the shape of a hollow dome which rises about three feet above the water. Of course the floor of the dome is above water level, and all entrances, usually two in number, are under water. In winter, when the ice freezes to a depth of a foot or more, it often happens that long, narrow lanes covered with very thin ice, lead from various portions of the pond to the houses. It is to be presumed that these ice-bound canals are kept from becoming thick ice by the frequent passing to and fro

of the Muskrats. Often the ice over the lanes is so thin and clear that the Muskrats may be seen swimming to and from their houses.

The scarcity of better fur has made the skin of the Muskrat of value to the furrier, and great quantities of skins are used annually in the manufacture of caps and gloves for United States soldiers. When the long, coarse hairs have been plucked out, and the fine under fur has been sheared and dyed a glossy black, it becomes "French seal."

Although the Muskrat is constantly trapped and destroyed, it is a very persistent animal, and firmly refuses to be exterminated, even in the Zoological Park. A small colony inhabits the upper end of Bronx Lake, being most at home immediately below the Waterfall; another colony lives in a very exposed situation which, in fairness to its inhabitants, cannot be revealed, while farther up the Bronx, in the Botanical Gardens, the Muskrats are so destructive to the new aquatic plants, it has become necessary to remove the animals entirely.

When the Zoological Society assumed control of the site of the Zoological Park, the Aquatic Mammals' Pond was a weedy bog of black earth, soft enough and deep enough to have entombed a mastodon. In excavating the five feet of earth that was taken out, a very interesting evidence of the glacial epoch was uncovered at the northern end of the valley. It is a terminal moraine, marking the southern edge of the great glacier, which once extended southeastwardly through the Borough of the Bronx and Long Island. The huge boulders, that lie like a barrier reef along the eastern side of the pond, are just as they fell from the melting edge of the great ice-sheet which brought them down from the North.

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## THE OTTER POOLS, NO. 21.

The American Otter, (*Lutra canadensis*), is unfortunate in being the bearer of valuable fur, and in the Northern regions, where the cold causes the development of fur that is available for the use of the furrier, this creature is so nearly extinct that trappers no longer pursue it. In the Southern States,

where its fur is short, rather coarse and "off color," the Otter still is found. In some portions of Eastern Florida, and along the coast of South Carolina, it is frequently taken. In captivity it often becomes quite tame, even affectionate, and always is interesting. Unless closely confined, however, it is prone to wander, and meet premature death.

In captivity the Otter usually is active and restless, and very much in evidence. Owing to the strength of its jaws, its ability to climb under certain conditions, and its restless activity, it is difficult to confine a full-grown Otter in anything else than a complete box of iron cage-work. But the Zoological Society has a strong desire to avoid box-cage construction for quadrupeds whenever it is possible to do so, and for this reason the experiment of confining our Otters with an iron fence and an overhang will now be tried. Whether it will prevent the escape of our Otters remains to be seen. If it will, the present arrangement is far more satisfactory than the customary box of wrought iron bars; but if it will not, a top of strong wire-netting will be laid over the three pools.

Few persons save woodsmen and naturalists are aware of the fact that in a wild state the Otter is a very playful animal, and is as fond of sliding down hill, over a wet and muddy slide, with a water plunge at the bottom, as any young person is of "shooting the chutes." Like the small boy with the sled and a snowy hillside, the Otter sometimes indulges in its sliding pastime for an hour at a time, with a keen relish for the sport that is quite evident to all who have ever watched it.

The Otter is a carnivorous animal, and in a wild state lives upon fish, frogs, crabs, young birds, small mammals, and, in fact, about any living thing which it can catch.

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## THE PRAIRIE-DOGS' VILLAGE. NO. 56.

The Western "Prairie-Dog," or Prairie Marmot, (*Cynomys ludovicianus*). Occupying a conspicuous hill-top near the Prong-Horned Antelopes' Range, and overlooking the Aquatic Mammals' Pond, is a circular enclosure, eighty feet in diameter, surrounded by an iron fence with an overhang,

with walls going down to bed rock. This contains about fifty fat and jolly little Prairie Marmots, one-half of which are the gift of a Montana ranchman, Mr. Howard Eaton. The soil of the enclosure has never been disturbed, and there is no danger that the little creatures ever will be smothered in their burrows, as frequently happens in earth that has once been dug up and filled in again.

Owing to his optimistic, and even joyous disposition, the Prairie-Dog has many friends, and "happy as a Prairie-Dog" would be a far better comparison than "happy as a King." His cousin, the woodchuck, has the air of being perpetually "in the dumps," but the Prairie-Dog—never. His so-called bark is really a laugh, and his absurd little tail was given to him solely as a means of visible expression of good nature. But he has his enemies and detractors. The coyote loves his plump and toothsome body; the "granger" hates him for the multitude of his holes, and puts spoonfuls of poisoned wheat into his burrow.

**The White-Tailed "Prairie-Dog,"** (*Cynomys leucurus*), a rare species in comparison with the foregoing, is represented in one of the yards of the Burrowing Rodents (No. 22), by several specimens which were presented to the Society by Mr. A. A. Anderson. They were taken on the donor's ranch in the Shoshone Mountains, east of the Yellowstone Park.

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## THE BURROWING RODENTS, NO. 22.

North America is wonderfully rich in species of gnawing animals, and the end is not yet. The investigations of our mammalogists are adding new species with a degree of rapidity and parallelism that is fairly bewildering. In March, 1895, a careful count of our species revealed four hundred and forty-two, representing twelve families, and many more species have since been added. During the last fourteen years, in three families alone, the increase of new species has amounted to more than four hundred per cent. With the greater number of our species of gnawing animals, most persons are totally unfamiliar.

It is the duty of the Zoological Society to do its utmost to

increase as much as possible the sum total of knowledge of our largest order of mammals. Manifestly, however, it is impracticable to do more than place before visitors a reasonable number of well-chosen types, which shall represent as many as possible of the twelve families, and also the genera most worth knowing.

The most serious obstacle in the way of anyone who attempts to exhibit collections of living rodents lies in the natural propensity of so many species to keep out of sight during the daytime. This is particularly true of the members of the Mouse, Pocket Gopher, and Pouched Rat families, comprising about three hundred species in all. With very few exceptions, the whole matter of the exhibition of collections of living rodents is something new, and every step is an experiment. In the belief that even the most shy burrowing animals will appreciate abundant room, perfectly natural surroundings, plenty of food, and immunity from annoyance, and eventually fall into the habit of spending many of the daylight hours above ground, as do prairie dogs, the Society has constructed a series of fifteen small yards, each 10 × 20 feet, bounded by walls going down to bed rock, and enclosed above by a box-like arrangement of very light wire-netting 5 feet high. The ground is chiefly undisturbed soil of a firm and gravelly nature, thoroughly drained, and all earth filling has been tightly rammed into place to prevent caving in the burrows. Above ground, each yard contains weathered rocks, stumps, and hollow logs in abundance.

In these fifteen yards, and the extensions presently to be made, each of which will hold specimens of at least two or three species, will be placed strongly marked types of those families whose representatives are most numerous in North America, and also the least known, only a few of which may be mentioned here.

**The Sewellel Family, (*Aplodontidae*)** contains five or six species and is of unusual scientific interest. The Sewellel, Mountain Beaver, Farmer or "Showt'l" (*Aplodontia rufus*, and *major*), is an animal of the size and general appearance of a large, short-tailed muskrat. It inhabits a few localities in remote regions in the mountain-valleys of Northern Cali-

ifornia, Oregon, Washington, and Southern British Columbia. It feeds like a beaver, climbs bushes four feet high, burrows in *wet* ground, and fights like a little fiend when brought to bay. Notwithstanding the size of this animal, it is very seldom seen, and is but little known.

**The Squirrel Family, (*Sciuridæ*),** is large (one hundred and forty-one species), very interesting, and entitled to much consideration. In the present enclosure will be shown many species of interesting Ground Squirrels, Chipmunks, and Marmots. The tree Squirrels will shortly be provided with isolated living trees, in close proximity to the Burrowing Rodents' quarters.

**The Rabbit Family, (*Leporidæ*),** is one of the most satisfactory to install and exhibit. Its members are large and showy, they become very tame, they are fond of attention, and all species love to bask in the sun, and disport above ground in the daytime. In time, all four of the great groups—Rabbit, Varying Hare, Jack Hare, and also the Pikas, forming the allied family *Ochotonidæ*—will be represented by specimens.

Just what can be accomplished satisfactorily with the most interesting members of **The Jumping Mouse, Pouched Rat,** and **Pocket Gopher** families, remains to be determined by trial. If they can be induced to show themselves to visitors, during daylight hours, they will be kept for exhibition; otherwise not.

The beaver has a large pond all his own. The muskrat will be quartered in the Aquatic Mammals' Pond, the porcupine will be given a tree to peel and live upon, and the agouti will be kept in the Small Mammals' House. The prairie-dogs are described above. As to the identity of the inhabitants of the Burrowing Rodents' quarters, the labels will be sufficient.

## THE BEAVER POND, NO. 33.

Hidden away in a deep valley between high hills of virgin forests lies the Beaver Pond. The spot is so secluded, so silent and primeval, that it seems like the heart of the Adirondack wilderness. Lying fairly in the lap of the granite hills is a three-acre oval of level swamp, which one year ago was full of woodland rubbish and choked by rank weeds. Fortunately for our purpose, the big forest trees stop at the edge of the swamp, but a dozen young maples stand on grassy tussocks, quite out in the water. The seclusion of the spot, the splendid forest, the food wood and the possibilities for a dam, all naturally suggested the Beaver. The natural elements for a Beaver's paradise were all there, and the way to the finished installation was clear.

In order that the building of a dam by the Beavers would not raise the water level so high as to flood the roots of a number of fine forest trees and destroy them, two feet of soil was taken out of the swamp, and at the same time a broad outlet was excavated. A fence of small iron bars, with an overhang, was designed to encircle an area of about three acres. Within the enclosure thus made stand thirty large forest trees—chiefly oak, sweet gum, and maple—which have been protected by guards of wire and corrugated iron. The small maples, however, are to be given over to the Beavers, to cut down and use as food wood, and also in their dam-building operations.

**The American Beaver**, (*Castor canadensis*), is a remarkable animal. In original thought it is equalled by few animals, and in industry by none. With the possible exception of the porcupine, it is the largest gnawing animal in North America, once was widely distributed, and its beautiful fur has been in demand ever since the days of the colonists. Unfortunately, the Beaver's intelligence was directed chiefly to the building of dams, canals, and houses, and procuring an abundant supply of food wood, rather than in providing itself with means of escape from its arch enemy—the man with a steel trap. Because of the constant demand for its fur, this animal has been so nearly exterminated throughout the United States, that practically none remain

save where they are rigidly protected. At present the largest colonies known are those in the Yellowstone Park, although in Canada and the Northwest many still remain.

The most wonderful thing about the Beaver is the manner in which he builds dams, to make ponds deep enough for his timber-floating operations, and to afford him a submarine passage to his house. Give him a valley and a stream of water, and he will gladly make a pond out of whatever raw materials are at hand. He uses the four-foot sticks from which he has eaten the bark for food, and with these, and an abundance of mud, he will raise a good strong dam to a height of four feet, and a width on the ground of ten feet or more. The mud used is dug out of the bottom and sides of the pond, and carried, while swimming, between his paws, with his front feet holding it against his breast. The sticks used in the dam are thrust endwise into the mud on top of the dam, and the mud used is patted down with his fore feet. The tail is not used as a trowel, but in swimming it is the Beaver's propeller.

In captivity the Beaver is not wholly a satisfactory animal. Like some human craftsmen, he positively declines to work under observation, and performs nearly all his tasks at night. He thinks nothing of gnawing down a tree a foot in diameter, and cutting its limbs into pieces which he can handle while swimming. If he can secure enough food wood of kinds to his liking, he eats little else. Besides building dams to create ponds in which he can take refuge when hard pressed, he constructs canals and houses for winter use. He also digs burrows into high banks; but his entrances to his various homes always are under water.

Owing to unavoidable delay in procuring iron with which to complete the fence around the Beaver Pond, this installation was not stocked with animals on the Opening Day. But this check is only temporary, and the spring of 1900 will see the Pond occupied by a number of Beavers. It is intended to colonize squirrels, swamp rabbits, raccoons, and opossums in the same enclosure.

## THE REPTILES.

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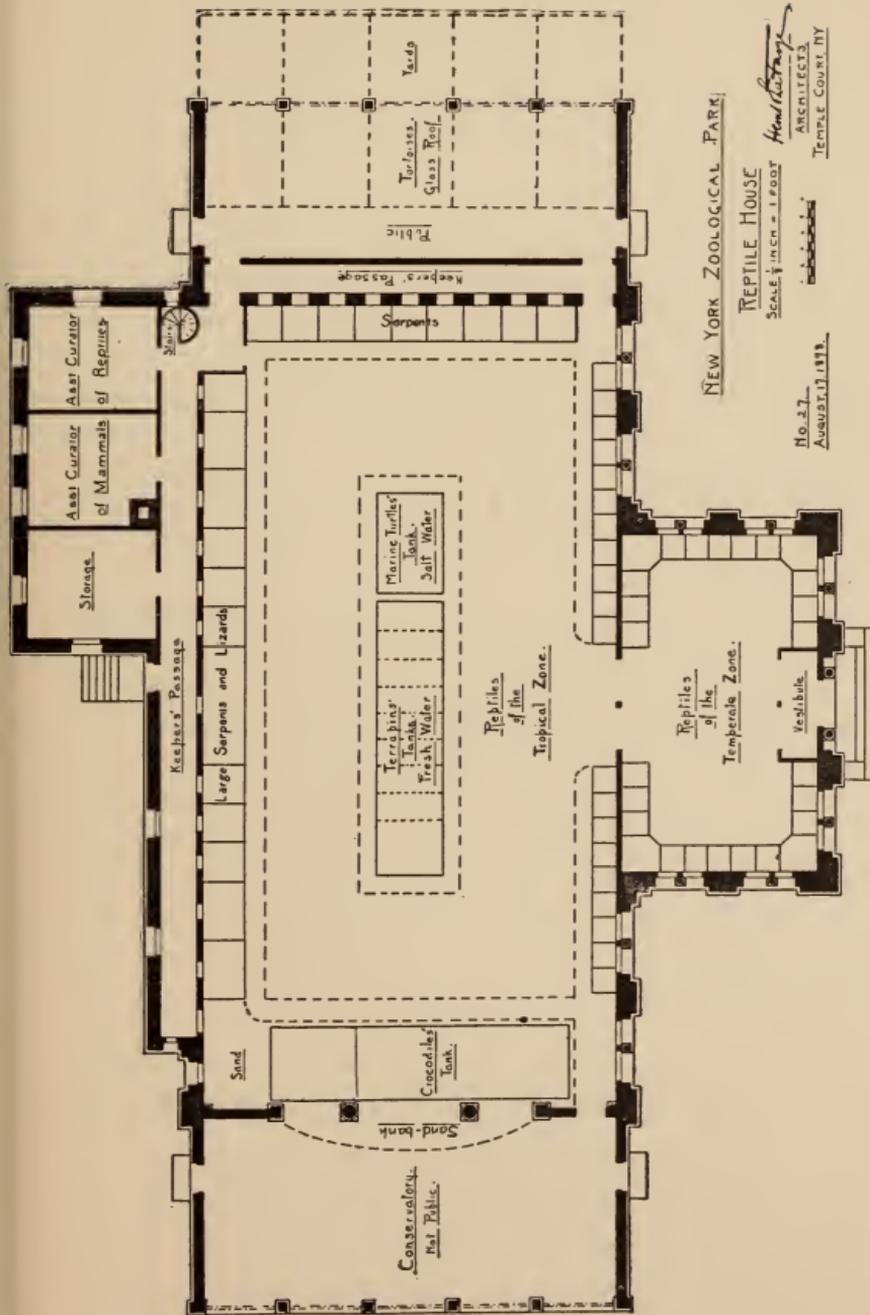
### THE REPTILE HOUSE, NO. 27.

The scientific museums of the United States are rich in exhibition collections of every description save Reptiles and Amphibians. Of living reptiles, but one collection worthy of the name has been seen on this side of the Atlantic, namely, that contained in the Reptile House of the Philadelphia Zoological Gardens. The American public has had no opportunity elsewhere to study living reptiles. It is not strange, therefore, that to many otherwise well-educated persons, the great world of Reptiles is practically unknown.

In view of this fact, and of the remarkable interest attaching to this Class, the Zoological Society decided that the first large building erected in the Zoological Park should be the Reptile House. The lions, tigers, elephants, and monkeys will follow the installation of satisfactory collections of saurians, lizards, turtles, serpents, and amphibians. Our Reptile House represents an earnest effort to present carefully selected examples of all these Orders, in a manner which may, if possible, afford the visitor and the student a general view of the important groups of living reptiles.

The accompanying ground plan shows the purposes to which the various portions of the building are devoted. In presenting this plan we once more take occasion to acknowledge to the Zoological Society of London our indebtedness to it for several features of its admirable Reptile House, which have been adopted in this. The small table cases along the southern side of the main hall are exact reproductions of those in use in London.

The length of the Reptile House, over all, is one hundred and forty-six feet, and its greatest width is one hundred feet. It is constructed of buff mottled brick, combined with granite and Indiana limestone. In the ornamental cornice of terra cotta,



reptilian forms, modelled by Mr. A. Phinister Proctor, the well-known animal sculptor, constitute an important element. The building is roofed with slate, heated by hot water, and cost, with its cages, about \$45,000. It is beautifully situated on the edge of a forest of primeval oaks, very near the geographical centre of the Park.

The great central hall is unbroken by a single column, and at one end it opens across the crocodile pool and its sand-banks, through three huge arches, into the green, jungly mass of the conservatory. Of the tropical vegetation massed behind the pool—palmettoes, bayonet cacti, yuccas, and the like, and the tillandsias, Spanish moss, resurrection ferns, and butterfly orchids, which grow on the live oak which leans out over the pool—nearly the whole came from Florida, along with five alligators, the first occupants of the pool. The plant life of the Reptile House is in charge of Mr. Hermann W. Merkel, Chief Forester of the Park.

In effect, the central hall appears to be one hundred and fifteen feet in length, by forty feet wide, exclusive of the cages. But, large as this building is, it would be an easy matter to fill all its available space with the reptiles of North America alone, choosing only the handsome and showy forms. As we contemplate the great number of species in our own reptilian fauna, the thought occurs, What can we do with the reptiles of the Old World? Manifestly, the only proper course is to choose from the reptiles of the world the forms which will make for visitors and students the most instructive and attractive series of important types.

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## THE CROCODILES AND ALLIGATORS.

**The Order of Saurians, (*Crocodylia*).** This important Order, the members of which are widely distributed throughout the tropics and sub-tropics of the world, contains nineteen species, which very readily fall into three great groups, or families—Alligators, Crocodiles, and Gavials. At this point it is well to correct certain very general misapprehensions regarding crocodilians.

Crocodiles are *not* confined to the Old World ; at least three species being found abundantly in tropical America.

The "movement" of a Crocodile's jaw differs in no manner whatever from that of an Alligator

Only a few species of Crocodiles are dangerous to man.

There is no authentic record of the loss of a human life through our common Alligator.

**The Alligator Family** embraces the well-known Alligator (*A. mississippiensis*) of the Southern United States, two species of Caiman (*C. trigonatus* and *palpebrosus*) of Central and South America, and three Jacares of South America. The head of the Alligator is very flat and its sides are nearly parallel, while the head of the Jacare is quite as triangular in shape as is that of the Mugger of India. This family contains six species, all of which are found in the new world only.

**The Crocodile Family** is widely represented throughout the world. Of the whole eleven species, the American continent contains four—the Florida Crocodile (*Crocodylus acutus floridanus*), attaining a length of fourteen feet, which was discovered at the head of Biscayne Bay, in 1875, by W. T. Hornaday ; the American Crocodile (*C. acutus*) ; the sharp-nosed Orinoco Crocodile (*Crocodylus intermedius*), found in South America ; and the small *Crocodylus rhombifer* which is found only in Cuba and the West Indies.

Of the seven remaining species, Asia contains four, and Africa three. Of the former species, one frequents salt water.

**The Gavial Family** contains but two species, the well-known Gavial of the River Ganges, with a beak like the handle of a frying-pan, and the Tomistoma, of Borneo, which more nearly approaches the true crocodiles.

SYNOPSIS OF THE CLASS REPTILIA.

(Nearly all these examples, save of the Crocodilia, are on exhibition in the Reptile House, and many others also. Species not shown will be supplied as early as possible.)

		ORDERS.	CONSPICUOUS EXAMPLES.	HABITAT.	
LIVING REPTILES.	SAURIANS, OR <i>Crocodilia</i> ...		Alligator.....	Florida.	
			Caiman.....	British Guiana.	
			Jacare.....	British Guiana.	
			Florida Crocodile.....	Southern Florida.	
			Sharp-nosed Crocodile.....	Venezuela.	
			Gavial.....	India.	
			Iguana ( <i>tuberculata</i> ).....	West Indies.	
	LIZARDS, OR <i>Lacertilia</i> ...		Green Lizard ( <i>L. viridis</i> ).....	Europe.	
			Chameleon ( <i>C. vulgaris</i> ).....	Africa.	
			Gila Monster ...	Arizona.	
			"Horned Toad".	Arizona.	
			"Glass Snake" ..	Florida.	
	TURTLES, OR <i>Chelonia</i> ....		Snapping Turtle.	Zoological Park.	
			Box Tortoise ...	Zoological Park.	
			Gopher Tortoise.	Florida.	
			Painted Terrapin.	New York.	
			Soft-shelled Turtle.....	Indiana.	
			Green Turtle ...	New York.	
	SERPENTS, OR <i>Ophidia</i> ....		Regal Python ( <i>P. reticulatus</i> ) ...	Malay Peninsula.	} Harmless.
			Black Snake ( <i>B. constrictor</i> ) ....	Zoological Park.	
		Garter Snake....	Zoological Park.		
		Hog-Nosed Snake	Zoological Park.		
		Diamond Rattlesnake .....	Florida.	} Venomous.	
		Water Moccasin.	Florida.		
		Coral Snake.....	Florida.		
	Cobra-de-capello.	India.			



THE REPTILE HOUSE.



## THE LIZARDS.

The Order of Lizards, (*Lacertilia*), requires at least six species to represent its best known types, all of which will at all times be on exhibition in the Reptile House. The **common Iguana**, (*Iguana tuberculata*), is a large and showy tree-climbing species from the West Indies, where it eats soft fruits, and in turn is eaten by the natives. The beautiful, emerald-colored **Green Lizard**, (*Lacerta viridis*), of Europe, is not only a beautiful species, but it is also one of the most satisfactory to keep in a vivarium—a good feeder and always posing. The **Chameleon** of the Old World, (*Chamæleo vulgaris*), because of its color phases and its remarkable form, is truly a great “curiosity;” but it should not be confused with our so-called American Chameleon, which belongs to another genus, and is also less interesting. Our well-known **Gila Monster**—(pronounced *He-la*)—*Heloderma horrida*, is a stupid, slow-moving creature from the Southwestern deserts, thick-set and stumpy in body, and it has the appearance of being covered all over with dark-brown, black, and yellow beads, such as Indians use in their bead industry. Its bite is sufficiently venomous that it inflicts a painful wound, but it is not necessarily fatal. The very popular **Horned Toad**, (*Phrynosoma*), of the Southwestern States, of which there are eight or nine species, should be mentioned if for no other reason than to place it where it belongs—with the Lizards, and not with the Toads. The famous **Glass Snake** (*Ophiosaurus ventralis*) is important because its resemblance to a snake is so perfect it is generally mistaken for one.

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## THE TURTLES.

The Order of Turtles, (*Chelone*), contains so many species that it has been found necessary to devote to its representatives the whole central space of the main hall of the Reptile House, and also a specially designed tortoise house of glass in the eastern end of the building. Until the Lion House is erected, this room will be occupied by a few of the large carniv-

orous animals. In the main hall are two features—one, a large square tank for marine Turtles; the other, a pool of running water between banks of earth, sand, and living plants. This tank is thirty-five feet in length, and by means of low, plate-glass partitions it is divided into ten cross sections, each of which can very comfortably provide for the wants of at least three species of Turtles of medium size. With a wonderfully rich Chelonian fauna on the western continent to provide for, there will be little room to spare for Old World forms, and the temptation to make this collection strictly occidental, is almost too great to be resisted. For the sake of brevity and clearness, only six types have been chosen for special mention.

The following species taken together fairly represent the different forms of Chelonians, from the highest to the lowest:

**The Snapping Turtle**, (*Chelydra serpentina*), which is the most courageous and pugnacious of all Turtles, is rather poorly protected by its shell, and must therefore fight for its place in nature.

**The Box Tortoise**, (*Cistudo carolina*), lives on land, and as a means of perfect protection has been enabled by nature completely to withdraw its head and legs within its shell, and by means of a hinge across the middle of the plastron, or lower shell, to close it tightly.

**The Gopher Tortoises**, (*Testudo carolina*), are large, thick-shelled, clumsy creatures, which burrow in holes in the sandy southern regions where they live.

**The Painted Terrapin**, (*Chrysemys picta*), is a species of wide and common distribution, and fairly representative of the host of fresh water Terrapins and turtles so common throughout the United States in ponds and streams of all sorts.

**The Soft-shelled Turtle**, (*Aspionectes ferox*). As to living relatives, this strange genus seems apropos of nothing. Like some of the marine Turtles its shell is greatly reduced in weight, so that it can float more readily; instead of being solid bone, it terminates in a wide, thin edge of cartilage, which is so soft that when properly boiled it constitutes palatable food

**The Green Turtle**, (*Chelone mydas*), like all sea Turtles, is provided with flippers instead of legs and feet, and it typically represents several species of sea turtles of large size and constant commercial value as food, which never come on land save to deposit their eggs in the warm sand of the seashore.

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## THE SERPENTS, OR OPHIDIA.

**The Order of Serpents**, (*Ophidia*). The large glazed cases along the northern side of the main hall are devoted to the larger serpents, while the smaller species are provided for along the south wall, and in the adjoining room. One serious difficulty in the management of a collection of living serpents lies in the fact that often the most valuable specimens are so nervous and shy in their feeding habits it is impossible to cage several together.

Out of the many species of serpents exhibited in the Reptile House, ten are chosen as fairly representing the principal groups.

**The Black Snake**, (*Bascanium constrictor*), a common species in the Eastern United States, is probably the highest type of the harmless snakes. It is a serpent of great vigor and activity in running, climbing, and swimming; it possesses great courage, and seeks prey of many kinds in all kinds of situations.

**The Regal Python**, (*Python reticulatus*), here represented by a fine specimen, twenty-two feet in length, weighing one hundred and seventy pounds, is the best representative of the rock Pythons of Asia and Africa. The island of Borneo is its centre of distribution. None of the constrictors are venomous, but their crushing power is almost beyond belief.

**The Anaconda**, (*Eunectes murinus*), is one of the largest constrictors of tropical America, and is noted for its aquatic habits. It is a handsome serpent, being of a rich green color, marked with round black spots.

**The Garter Snake**, (*Eutenia sirtalis*), is more frequently seen in the Eastern United States than any other serpent. Although the warfare against it is perpetual, regardless of the fact that it is as harmless as a fly, its numbers do not sensibly diminish.

**The Hog-Nosed Snake, "Puff-Adder," or "Sand-Viper"**, (*Heterodon platyrhinus*), represents a large and important Family, and, despite its dangerous appearance and terrifying names, it is quite harmless. It represents one of Nature's methods for protecting harmless and inactive creatures, by making them resemble others which are dangerous.

**Venomous Reptiles.** Because of the number of species of Rattlesnakes which have found lodgement in the United States, and the trouble they have caused in a few localities, we are specially interested in all serpents which are dangerous to man. The species named below represent the deadly genera which civilized man has most cause to fear.

**The Diamond Rattlesnake**, (*Crotalus adamanteus*), is too handsome, too showy, and too large to be chosen as the best average type of the genus *Crotalus*; but he is the king of his kind, and cannot be ignored. Three species shown side by side in our Reptile House afford striking examples of protective coloration. The Diamond Rattler of Florida and the South is yellow, brown, and black, to match the checkers of sunbeam and shadow that fall upon the sands under the palmetto leaves.

The most vicious snake in North America, and one of the ugliest in appearance is the **Water Moccasin**, (*Ancistrodon piscivorus*)—closely related to the beautiful **Copperhead**, (*A. contortrix*). It is more dreaded in the South than the Rattler, because it strikes on the slightest provocation, and without the Rattler's timely warning. Its colors are dull, its scales rough, its body ill-shaped and clumsy, its temper is vicious, and for every reason it is a serpent to be disliked.

**The Harlequin Snake, or Coral Snake**, (*Elaps fulvus*), represents a genus which contains many species, though but few of them occur in America.



SMALL CASE OF REPTILES IN THE REPTILE HOUSE.

The small lizard on one corner of case is an Iguana.



The most deadly of all serpents is the **Cobra**, (*Naja trapu-  
dians*), of India, which annually destroys there between 18,000  
and 20,000 human lives. For its bite, science has thus far been  
powerless to find an antidote, although Dr. Albert Calmetti, of  
Lille, France, experimenting extensively in this direction, has  
secured fairly successful results.

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## THE BATRACHIANS, OR AMPHIBIANS.

Among the many wonders of Nature, none are more inter-  
esting than those forms which serve to connect the great groups  
of vertebrate animals, by bridging over what otherwise would  
seem like impassable chasms. For a high example, consider the  
duckbill, or platypus, an Australian mammal about the size of  
the muskrat, which stands almost half way between the mam-  
mals and birds. It lays eggs, and has a bill and webbed front  
feet, like a duck.

Between the birds and the reptiles there is a fossil bird,  
called the *Archæopteryx*, with a long, vertebrated, lizard-like  
tail, which is covered with feathers, and the *Hesperornis*, a  
water bird with teeth, but no wings, which inhabited the shores  
of the great western lake which has already yielded to American  
paleontologists a great number of most remarkable fossil forms.

Between the reptiles and the fishes, stretches a wonderful  
chain of living links by which those two Classes of vertebrates  
are so closely and unbrokenly united, and by such an array of  
forms, that they constitute an independent Class, the Batrachia  
or Amphibia. In the transition from water to land, from fins  
and gills to legs and lungs, Nature has made some strange com-  
binations. In some instances the fins, legs, lungs, and gills have  
become so mixed that several notable misfits have resulted, and  
in some cases we see gills and legs going together, while in others  
lungs and fins are associated.

The Reptile House opens with ten species of Batrachians, and  
it is reasonably certain that this number will be maintained  
and increased. They are to be found in the small cases ranged  
along the south side of the Main Hall.

**The Bull-Frog**, (*Rana catesbiana*), is a fair representative of the Batrachians which stand nearest to the true land-going reptiles. During the early stages of its existence it is, in turn, a fin-tailed tadpole with no legs, a short-tailed tadpole with a pair of front legs, a shorter tailed tadpole with four legs, and finally a fully-developed, land-going Frog, with a voice like a small bull, and no tail whatever. Of the genus *Rana*, there are five species in the eastern United States, several of which inhabit the Zoological Park.

**The Wood Frog**, (*Rana sylvatica*), is frequently seen in moist valleys in the Zoological Park, where its chocolate brown back so closely matches the color of the dead leaves and moist earth, it is difficult to find, save when it takes one of its flying leaps. The specimens shown were taken near the Beaver Pond.

**The Tree Frog**, (*Hyla pickeringi*), is the commonest of the queer little tree-loving species which are so easy to hear, and so difficult to find. In spring their voices are the first to be heard in the swamps. The Zoological Park is full of *Hylas*, and their cheerful piping is heard at all seasons, especially in dry mid-summer, when dark storm-clouds gather and promise rain.

**The Common Toad**, (*Bufo lentiginosus*), is found in the Zoological Park, though not in such abundance as the two preceding species.

**The Spotted Salamander**, (*Salamandra maculosa*), because of its broad, bright yellow bands and blotches, laid on a rich, dark-brown body color, is one of the most showy of all Batrachians. It comes from Europe, and being much prized in collections, it frequently passes through the hands of dealers in reptiles. Its skin is very moist and clammy, which gives the creature the appearance of having been varnished. This is the creature which is supposed to be able to withstand fire—a belief which is purely imaginative.

**The Spotted Salamander**, (*Amblystoma tigrinum*), and the **Axolotl**, (*A. mexicana*), are widely different creatures from the preceding. Of the genus to which they belong, the former is by far the most widely distributed species. It is found throughout the greater portion of the North American continent, and as far south as Central Mexico. Thirteen other species of the genus *Amblystoma* are found in North America and Mexico. In the matter of "harmonizing with environment," the *Amblystoma* is one of the most remarkable creatures in existence. In its "larval" stage (corresponding with the tadpole stage of a frog), this animal possesses external gills, red and sponge-like in appearance, and its tail has a fin-like edge above and below, like the tail of an eel.

So long as this larval creature remains in water, its external gills remain and do duty, and the larval stage continues indefinitely. Remove it from the water, or let its home pool dry up, and, presto! its gills dry up, its tail loses its fin-like edges, and the creature goes about on land, breathing air instead of water, with lungs instead of gills. The Spotted Salamanders exhibited were captured in the Zoological Park.

**The "Water-Dog," or "Hell-Bender,"** (*Cryptobranchus horridus*), is a salamander-like amphibian, from eighteen to twenty-two inches long when adult, found more frequently in Pennsylvania than elsewhere. They are said to be very tenacious of life, and voracious in their food habits, feeding on worms, minnows, and crayfish, and often taking the hook of the fisherman in quest of that most repulsive of all American fishes, the cat-fish. Between cat-fish and Water-Dog there would seem to be small choice. Mr. William Frear offers this testimony in regard to the tenacity of life of this creature :

"One specimen, about eighteen inches in length, which had lain on the ground exposed to a summer sun for forty-eight hours, was brought to the museum, and left lying a day longer before it was placed in alcohol. The day following, desiring to note a few points of structure, I removed it from the alcohol in which it had been completely submerged for at least twenty hours, and had no sooner placed it on the table than it began to open its big mouth, vigorously sway its tail to and fro, and give other undoubted signs of vitality."

**The Congo Snake, or Amphiuma,** (*Amphiuma means*), is a creature which closely resembles a thick-tailed snake. A close examination, however, discloses a tiny pair of front legs; and far back, well toward the end of the tail, a small pair of hind legs appear. These are about as valuable to the animal as the tiger's clavicle is to him. There are but two species belonging to this strange genus, both of which are found in the stagnant waters of our Southeastern States. Still lower than the *Amphiuma*, is **The Mud Eel,** (*Siren lacertina*), of the Southeastern quarter of the United States, which possesses small external gills, and only one pair of legs, which are in front.

**The Menobranchus, or Mud Puppy,** (*Necturus maculatus*) possesses external gills and four legs, and inhabits many of the rivers of Ohio, Pennsylvania, Indiana, and also the Great Lakes and northern New York. It is often taken in fishermen's nets.

It is hoped that eventually it will be possible to procure and exhibit living specimens of the wonderful *Lepidosiren*, of Brazil, which by reason of the possession of lungs, and no external gills, is called a lung-fish.

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## THE CROCODILE POOL, NO. 28.

The Reptile House has for its foundation a hill of solid granite, a quarter of a mile wide by half a mile long, its breadth extending eastward from the Wolf Dens to the Bear Dens. At the southeastern corner of the building the hill reaches its highest point in a rounded knob of granite which has been bare and clean as a floor ever since the great glacier scalped it, and deposited the earth in the valley between that point and the Rocking Stone. Glacial scratches are plentiful on the exposed surface, all of them pointing southeastward, like so many arrows. During comparatively recent years, a number of red cedars have taken root in the earth that has been slowly accumulating around the hill-top, and lived in spite of dry and scanty soil.

Precisely on the top of the hill, Nature hollowed out a water

tight basin thirty feet wide and sixty feet long. Even in the driest seasons this rock-bound pool has always contained water, and its assignment to the Crocodiles and Alligators for summer use followed as a natural annex to the Reptile House. The south end of the pool was deepened by a little careful blasting, so managed with reference to the peculiarities of the ledge that the finished pool retains its circumference just as Nature modelled it. A tunnel was driven into the bottom of the rock basin, from the west, through which a supply pipe furnishes Croton water, and a sewer connection provides for emptying and cleaning the pool whenever it becomes necessary.

As intimated above, this pool will be inhabited every summer by the saurians of the Reptile House. Nothing save the impossibility of procuring bar iron prevented the completion of the enclosing fence in time for the opening of the Park, but the delay will be brief. During the winter, this pool will be occupied by the Sea-Lions, which are now temporarily installed in one of the Bear-Dens, awaiting the construction of the great pool in Baird Court, which is now under contract.

## THE SOCIETY'S PROGRAMME FOR THE FUTURE.

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The visitor who inspects all the existing features of the Zoological Park will observe that the Zoological Society's original intention to provide first for the most important American animals has been carried out. The installations and collections now in the Park have cost the Society, to November 1, 1899, the sum of \$144,227. The organization is pledged to raise, by subscription and otherwise, a total fund of \$250,000, and expend it all in animal installations and collections.

It will require two more years of active construction work to carry out the Society's programme and provide all the buildings that have been planned. The need for the Antelope House, for the hoofed animals of the tropics, is imperative, and that for the Monkey House is equally so. The Park actually requires these two buildings and the Administration Building, which is to contain the offices and library of the Society.

At present the elk herd is robbed of its shelter-house and feed-room in order that the officers of the Park may have a temporary suite of offices; and as for the Executive Committee and Board of Managers, there are at present no accommodations at all. The present temporary offices are filled with valuable maps, plans, books, pictures, and official correspondence, and although every reasonable precaution against fire is observed, the Society's records, excepting those in the fire-proof safe, are in danger. The business of the Zoological Park is in great need of the Administration Building, and it should be provided as soon as possible.

The following list of buildings and other installations for ani-

mals constitutes the Zoological Society's programme for the future :

**The Antelope House** (for Tropical Ruminants).—Length, 112 feet ; width, 78 feet. There will be eighteen large compartments, connecting with shaded yards outside. This building must accommodate the large pachyderms until the Elephant House is erected.

**Administration Building.**—Fifty feet square and three stories in height. To contain the offices, library, picture gallery, and studios for artists and students at work in the Park.

**The Bird House.**—A T-shaped building, of which one section measures 50 x 100 feet, the other 46 by 96 feet. Within there are 330 lineal feet of cages and 332 feet without.

**The Elephant House.**—An imposing structure, 78 x 144 feet, with 8 paved yards attached, swimming tanks, etc.

**The Pheasants' Aviary.**—Ten wire-covered runways, with a low and narrow shelter-house 150 feet long.

**The Eagles' and Vultures' Aviary.**—A series of large outdoor cages, aggregating 160 feet in length. Greatest height, 30 feet.

**The Polar Bears' Pool.**—A large concrete tank, with sleeping dens, at the north end of the present Bear Dens.

**The Cranes' and Storks' Aviary.**—A series of yards, with low and narrow shelter-house 100 feet long.

**The Squirrels' Enclosures.**

**The Upland Game Birds' Aviary.**

**Small Mammals' House.**—One hundred and fifty feet long, 25 feet wide. This building will accommodate the extensive assortment of miscellaneous species that cannot be installed in separate groups.







# Membership in the Zoological Society

Membership in the Zoological Society is open to all persons interested in the objects of the organization who desire to contribute toward its support and are endorsed by two members in good standing. In order to carry out all its plans the Society desires to increase its membership to a total of 3,000.

The cost of annual membership is \$10 per year, which entitles the holder to admission to the Zoological Park on all pay days, when he may see the collections to better advantage than on other days. Members are entitled to the Annual Report and all Bulletins, and admission to all lectures and special exhibitions, and ten complimentary tickets to the Zoological Park, for distribution. The annual membership fee is payable on May 1st of each year, in advance.

Any Annual Member may become a Life Member by the payment of \$200. Anyone who subscribes \$1,000 becomes a Patron; if \$2,500, he becomes an Associate Founder; if \$5,000, a Founder; and if \$25,000, a Benefactor.

Applications for membership may be handed to the Chief Clerk, at the Society's office, or forwarded by mail to Madison Grant, Esq., General Secretary, 11 Wall Street, New York.

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## PUBLICATIONS

The publications of the Society are for sale at the prices affixed below :

FIRST ANNUAL REPORT (1896-7), 63 pages, 7 maps and illustrations. Paper, . . . . .	40 cents
SECOND ANNUAL REPORT (1897-8), 143 pages, colored folding map, 18 illustrations. Paper, 75 cents; cloth, . . . . .	\$1 00
THIRD ANNUAL REPORT (1898-9), 78 pages, 9 illustrations. Paper, 40 cents; cloth, . . . . .	60 cents
FOURTH ANNUAL REPORT (1899-00), 102 pages, 14 illustrations. Paper, 40 cents; cloth, . . . . .	60 cents
FIFTH ANNUAL REPORT (1900-1), 138 pages, 21 illustrations, colored folding map. Paper, 75 cents; cloth, . . . . .	\$1 00
NOTES ON THE MOUNTAIN SHEEP OF NORTH AMERICA (Hornaday), 1901. Paper, . . . . .	40 cents
NEWS BULLETIN No. 1 (June 1, 1897), 4 pages, 11 illustrations (only 24 copies remaining), . . . . .	50 cents
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NEWS BULLETIN No. 3 (December, 1898), 8 pages, 5 illustrations, . . . . .	10 cents
NEWS BULLETIN No. 4, 8 pages, 8 illustrations, . . . . .	10 cents
NEWS BULLETIN No. 5, 16 pages, 15 illustrations, . . . . .	15 cents
DESTRUCTION OF OUR BIRDS AND MAMMALS (Hornaday), 50 pages, paper, from Second Annual Report, . . . . .	15 cents

Address, **MADISON GRANT, Secretary,**  
**11 Wall Street.**



