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1929

THE AMERICAN MUSEUM OF NATURAL HISTORY

GENERAL GUIDE
TO THE
EXHIBITION HALLS



EDITED BY
FREDERIC A. LUCAS

FOURTEENTH EDITION

1929



THE AMERICAN MUSEUM OF NATURAL HISTORY

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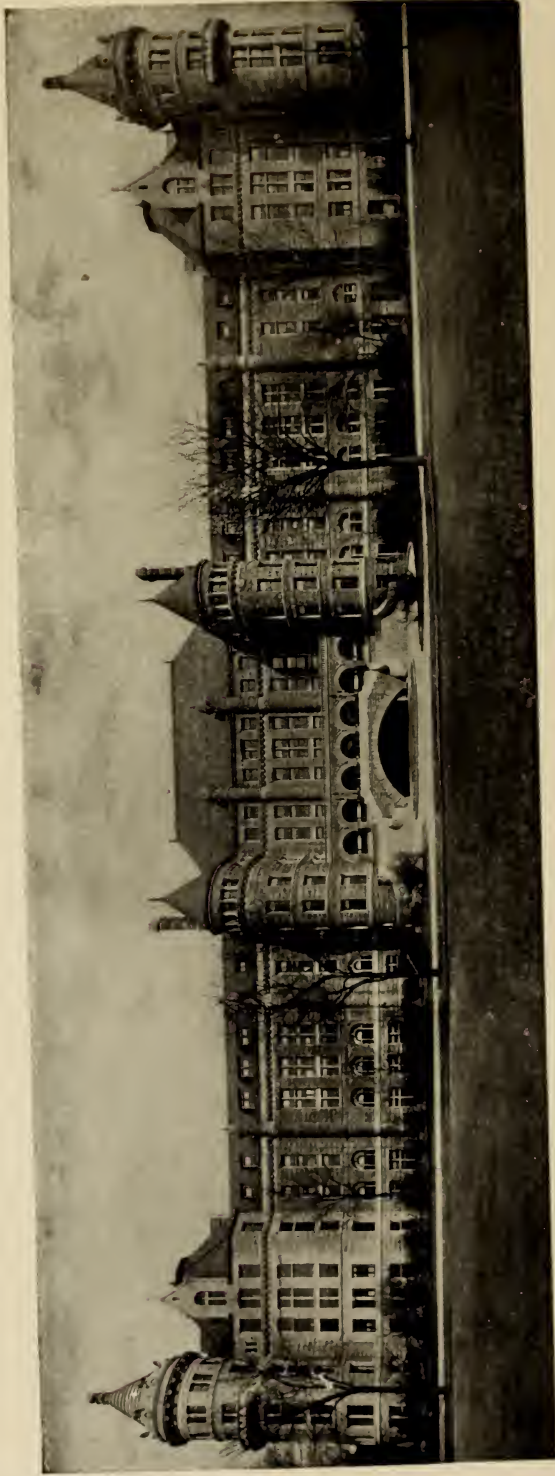
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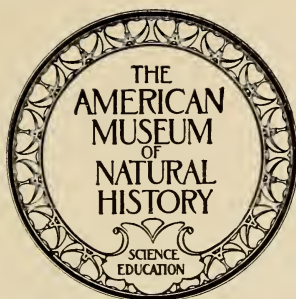
THE AMERICAN MUSEUM OF NATURAL HISTORY

South Façade, facing Seventy-seventh Street

The cornerstone of the Museum, which is intended to occupy all of Manhattan Square, was laid by General Grant in 1874. The material of the building is red granite, part from Nova Scotia and part from Texas. The portion completed is about one-third of the Museum as planned, and each façade is to be, like the present, 710 feet long, the most important architecturally to be that fronting Central Park. The total floor area of the present structure, including the most recently completed East Wing and Hall of Ocean Life, is more than fourteen acres, and the total cost about \$10,786,306.48. The School Service wing recently completed cost \$691,000

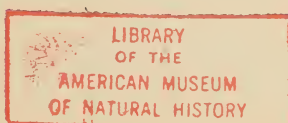
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BY
FREDERIC A. LUCAS, Honorary Director
Assisted by Members of the Museum Staff



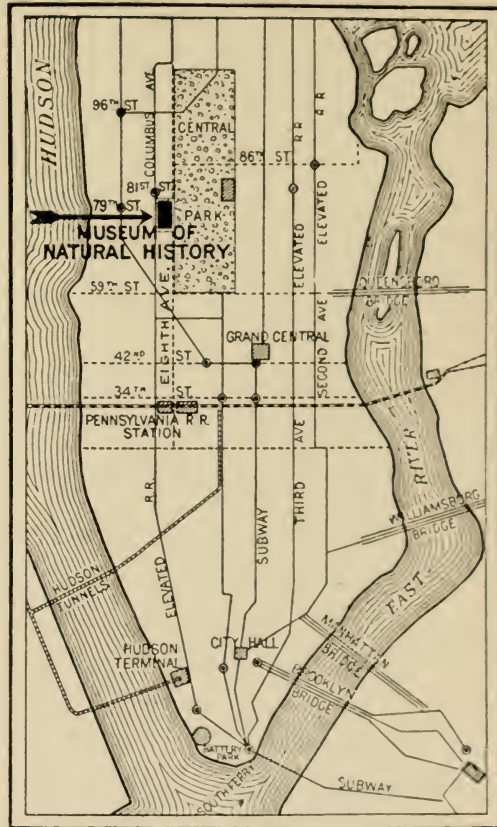
FOURTEENTH
~~THIRTEENTH~~ EDITION
1929

New York
Published by the Museum



HOW TO REACH THE MUSEUM

The Museum is located at 77th Street and Central Park West, and can be reached by the 8th and 9th Avenue surface cars, the 6th or 9th Avenue elevated to 81st Street station, or by the subway to 72nd or 79th Street station. The Museum is open free every day in the year: on weekdays, including holidays, from 9 A.M. to 5 P.M., on Sundays from 1 to 5 P.M.



From Grand Central Station take Broadway surface car to 77th Street, or subway shuttle to Times Square and local to 79th Street.

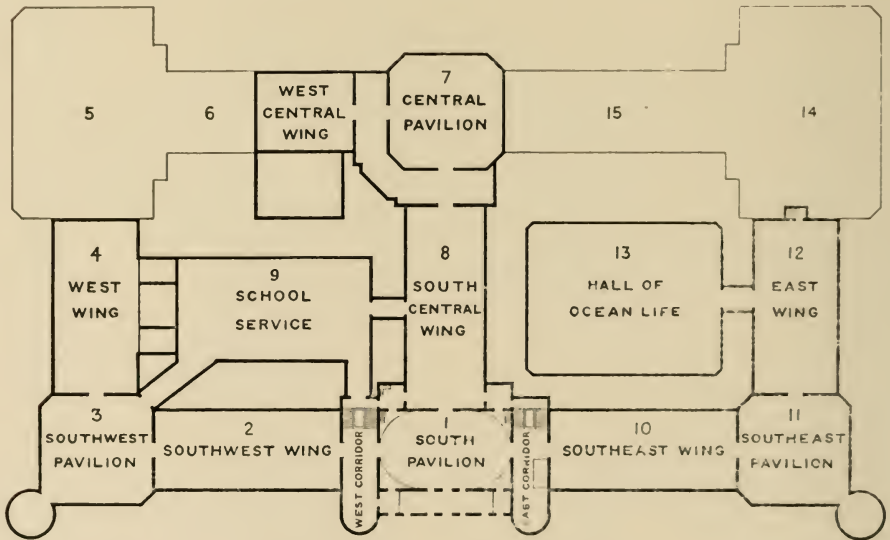
From the Pennsylvania Station take the 8th Avenue surface cars, or the subway local to 79th Street.

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PREFATORY NOTE

It is frequently necessary to rearrange the exhibits in order to provide space for new material or to put into effect advanced ideas regarding methods of exhibition, and as these changes are taking place all the time, it unavoidably happens that now and then discrepancies will be found between the actual arrangement of the specimens and that noted in the GUIDE. In some cases further information may be obtained from the GUIDE LEAFLETS which describe exhibits of special interest. See list of Popular Publications.



FLOOR PLAN OF THE MUSEUM

NOTE.—The names and numbers of the halls are to aid the visitor to locate the hall he desires to visit: they are not those officially applied to the various sections. See Key to Exhibition Halls on opposite page.

KEY TO EXHIBITION HALLS

See Floor Plan on Opposite Page

	<i>Location in Museum</i>	<i>Page</i>
Administrative Offices.....	Fifth Floor, South Pavilion.....	112
Africa, Collections from.....	Second Floor, West Wing.....	52
Apes and Monkeys.....	Third Floor, South Pavilion.....	66
Asia, Collections from.....	Third Floor, Southwest Pavilion.....	82
Auditorium.....	First Floor, North Corridor.....	21
Auduboniana.....	Third Floor, West Corridor.....	78
Birds, Local.....	Second Floor, West Corridor.....	45
Birds of North America (Habitat Groups).....	Third Floor, South Central Wing.....	71
Birds of the World.....	Second Floor, South Central Wing.....	53
Caves.....	Fourth Floor, South Central Wing.....	104
Central America.....	Second Floor, Southwest Wing.....	46
China.....	Third Floor, Southwest Pavilion.....	82
Darwin Hall.....	First Floor, Southeast Pavilion.....	35
Dinosaurs.....	Fourth Floor, East Wing.....	97
Eskimo Collection.....	First Floor, North Corridor.....	21
Fishes, Recent.....	First Floor, East Wing.....	41
Food Economics.....	First Floor, Education Hall.....	11
Fossil Invertebrates.....	Fourth Floor, South Central Wing.....	100
Fossil Mammals (Mastodon).....	Fourth Floor, South Pavilion.....	100
Fossil Mammals (Horses, Camels, etc.).....	Fourth Floor, Southeast Wing.....	91
Gems and Precious Stones.....	Fourth Floor, Southwest Wing.....	105
Geology, Historical.....	Fourth Floor, South Central Wing.....	100
Horse, Evolution of.....	Fourth Floor, Southeast Wing.....	93
Horse, under Domestication.....	Fourth Floor, West Corridor.....	104
Indians of South America.....	Third Floor, Southwest Wing.....	78
Indians of the North Pacific Coast.....	First Floor, South Central Wing.....	18
Indians of the Plains.....	First Floor, Southwest Pavilion.....	26
Indians of the South west.....	First Floor, West Wing.....	28
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Mexico.....	Second Floor, Southwest Wing.....	46
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Mexico.....	Second Floor, Southwest Wing.....	46
Minerals.....	Fourth Floor, Southwest Wing.....	10
Pacific Islands Collections.....	Fourth Floor, Southwest Pavilion.....	105
Peru.....	Third Floor, Southwest Wing.....	111
Philippine Collections.....	Fourth Floor, West Wing.....	51
Prehistoric Man.....	Second Floor, Southwest Pavilion.....	12
Public Health.....	First Floor, Education Hall.....	12
Reptiles and Amphibians.....	Third Floor, East Wing.....	89
Shells.....	First Floor, East Wing.....	43
Visitors' Room.....	First Floor, Right of Entrance.....	9
Whales.....	First Floor, Hall of Ocean Life.....	43
Woods of North America.....	First Floor, Southeast Wing.....	34

The halls are named according to the position they will have in the completed Museum building, which will consist of four long facades facing east, west, north and south respectively, each connected with the center of the quadrangle formed by a wing extending between open courts. Thus the hall at the eastern end of the south facade (the only facade completed) becomes the "southeast pavilion."



STATUE OF MORRIS K. JESUP IN MEMORIAL HALL

Mr. Jesup, President of the American Museum of Natural History for more than a quarter of a century, was a staunch supporter of the institution's two aims: to be a great educational institution for the people and also a center for activity in scientific research

SOUTH PAVILION

MEMORIAL HALL

Before entering the Museum one notices the "Bench Mark" established by the U. S. Geological Survey in 1911 on which is inscribed the latitude and longitude, $40^{\circ} 46' 47.17''$ N., $73^{\circ} 58' 41''$ W., and height above sea level, 86 feet.

On the right is a "pothole" from Russell, St. Lawrence Co., N. Y., formed by an eddy in the waters of a stream beneath the melting ice of the glacier that covered northern New York. The stream carried pebbles that, whirled around by the eddy, cut and ground this hole, which is two feet across and four feet deep.

On the left is a large slab of fossiliferous limestone from Kelley Island in Lake Erie near Sandusky, whose surface has been smoothed, grooved and scratched by the stones and sand in the bottom of the vast moving ice sheet or glacier that covered the north-eastern part of North America during the Glacial Epoch.

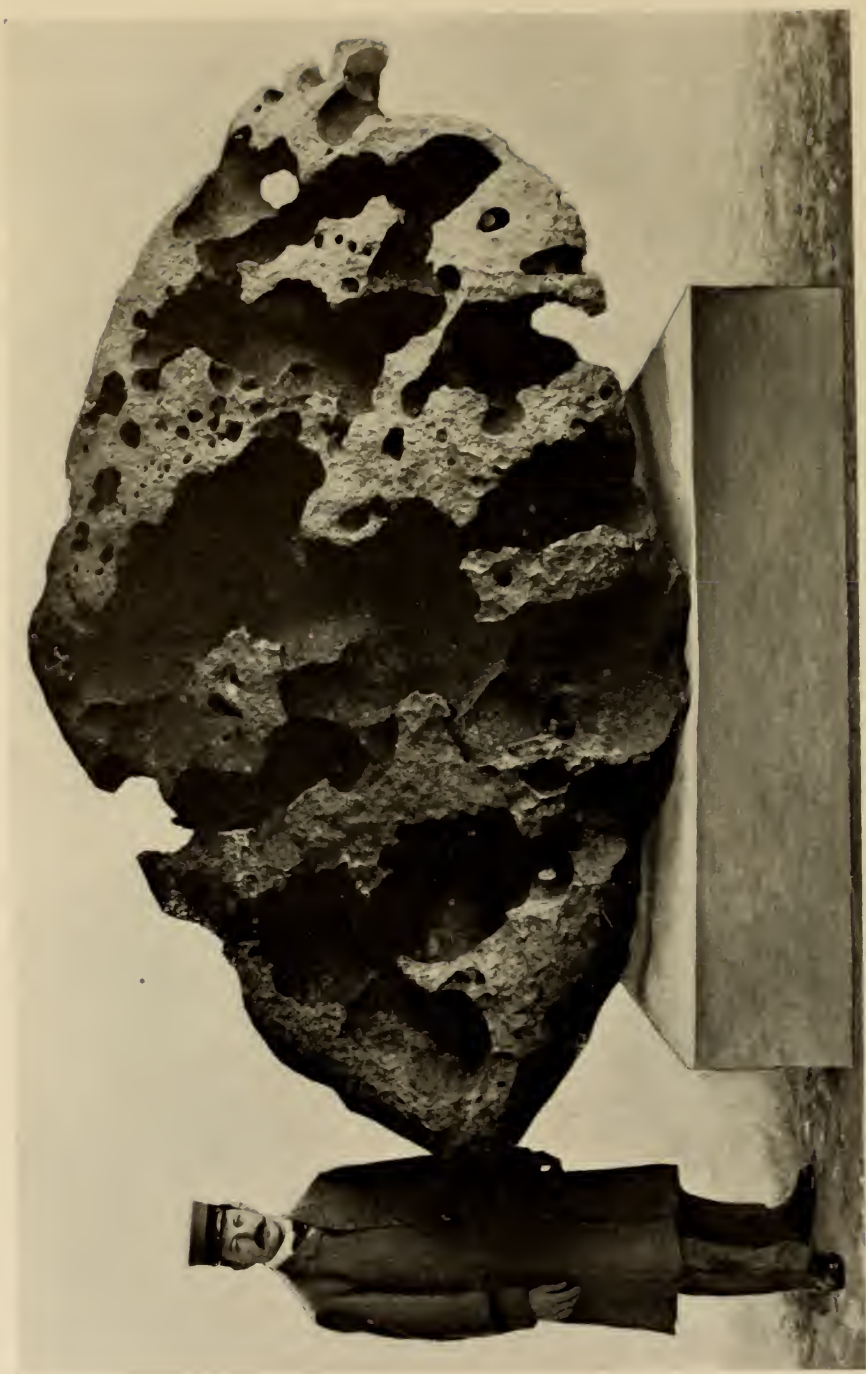
Just at the right of the entrance is The Visitors Room and Information Bureau where post cards, guide leaflets and other museum publications are for sale and where visitors may arrange to meet their friends; the sales booth also opens on Memorial Hall. Wraps and packages may be checked at the desk on the left, near the office of the Superintendent, and wheel chairs for children and adults may be obtained free of charge.

From the lobby the visitor enters Memorial Hall and faces the statue of Morris K. Jesup, a founder, trustee and benefactor of the Museum, and for twenty-seven years its President.

In niches around the wall are busts of noteworthy pioneers of Science in America and circling the hall is a portion of the collection of meteorites, comprising the larger examples, among them Ahnighito, weighing 36.5 tons, the largest meteorite in the world, brought from Greenland by Peary in 1897, and Willamette, weight 15 tons, the largest meteorite found in the United States, and the most curious. There is also the second largest boulder of jadeite yet discovered. Here too are sledges that with Peary and Amundsen respectively reached the North and South Poles.

ASTRONOMY

Directly adjoining Memorial Hall on the west, or left, is the Pro. Astronomic Hall containing among other exhibits the paintings by Howard Russell Butler of the eclipses of 1918, 1923 and 1925 and striking illustrations of the solar prominences, Bickmore Memorial Corridor,



THE WILLAMETTE METEORITE

The largest meteorite so far found in the United States and the most interesting yet discovered
Gift of Mrs. William E. Dodge, 1906.

named in honor of Prof. Albert S. Bickmore who inaugurated the work of the Museum with the schools, leads to the School Service Wing which contains the exhibits, offices and classrooms of the Department of Education and Public Health.

FIRST FLOOR

EDUCATION HALL

Opening from the west Corridor and North Pacific Hall, is Education Hall used for important temporary exhibitions and special meetings, and also containing the exhibits of Food and Public Health.

FOOD NEEDS AND FOOD ECONOMICS

The Food Exhibit presents in graphic form the needs of the human body and shows how these needs can most economically be met. The **Scope of Food Exhibit** first case on the right shows the composition of the human body as represented by a man weighing 154 pounds. Special emphasis is laid on the need for mineral salts and for the indispensable elements called vitamins, and models illustrate the contribution made by the commoner foods to the daily need of energy, protein, iron, lime and phosphorus.

The composition of certain common foods as regards protein, carbohydrate, fat, mineral salts, water and refuse, is graphically illustrated. A special series of models shows the size of 100 calorie portions of the more important foodstuffs, classified by costs.

Two cases are devoted to the problems of the world's food supply, its production and distribution. The importance of the rice, wheat and **World Problem of Food Supply** other grain crops is emphasized and the relation of cereal production to national prosperity is brought out by models and diagrams. Special data are presented in regard to the cost of food distribution, particularly as related to New York City, with suggestions as to the art of economical marketing.

In order to make the exhibit as practical as possible, an adequate daily dietary for an individual is exhibited, based on a moderate income, **Practical Data for the Housewife** also specimens and models illustrating a complete weekly food supply for a family of five persons, so adjusted as to meet all essential physiological needs at a minimum cost. A special set of models illustrates the relative importance of the cost of food as a factor in the family budget.

Finally there are shown specimens and models to illustrate the importance of certain valuable foods which would be of material value in our diet and should come into far more general use. The **Exhibit of Unutilized Foods** soy bean, which is the staple protein food of China, and the dasheen, introduced with success from the West Indies, are here exhibited with a series of valuable vegetable oils, potential food flours, edible mushrooms, and unutilized foods of our sea-coast, such as whale meat, shark meat, mussels and seaweed.

Aside from food the exhibits of the Department of Public Health fall in three main divisions.

SCHOOL SERVICE WING

PUBLIC HEALTH

Commencing at the west, or farther end, the first section of the exhibit deals with the natural history of water supply as it affects the life and health of man. The large painting illustrates the **Water Supply** the primary source of water supply, the sea, which by way of the clouds supplies the secondary sources, rivers and lakes. Diagrams, models and a relief map show the variations in rainfall at different points in the United States. Relief maps of the region about Clinton, Massachusetts, before and after the construction of the Wachusett Reservoir for the water supply of Boston, show the way in which surface water supplies are collected by impounding streams, and, near by, a model of a well sunk through impervious clay or rock down to water-bearing strata shows how ground-water supplies are obtained. Samples and models illustrate the variations in composition which occur in natural waters, from the swamps of Virginia to the deep wells of Iowa and the turbid rivers of the Ohio Valley.

Some of the principal micro-organisms, Algæ and Protozoa, which grow in reservoirs and impart tastes and odors to water, are represented by a series of glass models. Models are displayed which illustrate the purification of water by storage, filtration and disinfection, the filter models being elaborate representations of the plants at Little Falls, N. J., and Albany, N. Y. A series of relief maps shows the growth and development of the water supply of New York City, the location of the reservoirs and the course of the new Catskill aqueduct.

Following the water-supply exhibit is a series of models illustrating the dangers from improper disposal of the liquid wastes of the city and how they may be avoided. Actual points of danger **Disposal of City Wastes** in the neighborhood of New York are shown where polluted harbor waters, bathing-places, and shellfish beds constitute a

menace to health. Modern methods for the treatment of sewage on scientific lines are illustrated by a series of models of screens, sedimentation tanks, and filter beds of various types.

Cases are devoted to the group of Bacteria, especially in their relation to human life. Glass models show the various shapes and relative sizes of these minute forms, and in particular of the principal types which cause disease. A group of transparencies shows some of the more important disease bacteria as they appear under the microscope.



THE FLEA

One of the enlarged models made by the late Ignaz Matusch from his original studies and now shown in a case devoted to Insect Carriers of Disease.

Another series of exhibits deals with the transmission of disease by insects, notably by the fly and flea and by the mosquito. The most striking features are greatly enlarged models of the fly, the flea, the louse and the yellow-fever mosquito. Each of these, the finest model of the kind ever made, required a year or more of constant, exacting labor.

The relation of the flea and the rat to the terrible disease bubonic plague is illustrated in considerable detail. Wall charts picture the spread of the great historic epidemics of this disease, and reproductions of sixteenth and seventeenth century drawings show with what terror the Black Death was regarded in prescientific days.

Specimens of some of the principal animals which harbor the plague-germ and serve as reservoirs from which it is carried by the flea to man (the black, brown and roof rats, the wood rat and the California ground squirrel) are shown, and the manner in which the disease is disseminated is illustrated by a copy of a corner of a rat-infested house in California. The original from which this was copied, as well as many of the rats and squirrels, were obtained through the courtesy of the U. S. Public Health Service of Washington. A habitat group shows a typical family of ground squirrels on a rocky hillside in central California,



THE YELLOW FEVER MOSQUITO

during the breeding season in May. Preventive measures used against the plague are illustrated by models of a farm with buildings rat-proofed, of a rat-killing squad, equipped for work in San Francisco, of a ship at dock with rat-guards to prevent the access of rats to the shore, and by specimens of various types of rat traps.

A wall case devoted to the natural history of the mosquito illustrates the world distribution and seasonal prevalence of malaria and yellow **Malaria and** fever in relation to the habits of their mosquito hosts, the **Yellow Fever** breeding-places of mosquitoes, the life history (shown by specimens) and the money cost of malaria to the United States. Here are also shown some of the practical methods of control by ditching, oiling, stocking with fish, and encouraging enemies such as the bat, bite cures, and repellents.

A second mosquito case contains a series of small-scale models, attractively worked out by Otto Block, illustrating some of the methods and results of tropical sanitation as applied particularly to yellow fever,

Control of Mosquito-borne Disease A hospital at Panama is shown as it was during the French régime, with mosquito-breeding pools all about and with the legs of the beds and the flower pots set in dishes of water to keep off the ants. In contrast there is illustrated a modern hospital with all stagnant water removed, and wards screened and ventilated. Other models show the sanitary squads on the Isthmus which fought the yellow-fever mosquito in the town by fumigation, and the malaria mosquito in the country by ditching and oiling. Photographs of the four American Army Officers, Reed, Carroll, Lazear and Agramonte, to whose researches this advance is due, are hung upon the wall near by.

A relief map of the State of Arkansas illustrates the coincidence between low swampy lands and the prevalence of malaria, and another **Mosquitoes and Malaria** shows the heavy incidence of malaria in the vicinity of marshlands near Boston. A small relief map indicates the type and arrangements of drains used for lowering the water level and eliminating mosquito-bearing pools, and diagrams illustrate the progress made in mosquito control in New Jersey and the financial return which has resulted.

An adjoining case is devoted to certain insect carriers of disease of special importance in tropical and semi-tropical countries. Scenes **Typhus and Sleeping Sickness** during the Serbian epidemic of typhus fever are illustrated by photographs and models of the disinfecting train used by the American Mission in the destruction of the lice which are responsible for the spread of this disease. Below are shown specimens of the Glossinas which transmit sleeping sickness and the nagana disease in Africa and of the ticks which spread Texas fever of cattle and relapsing fever, African tick fever and Rocky Mountain spotted fever of man. Photographs and models illustrate the ravages wrought by this disease and the methods used for the control of sleeping sickness in Africa by the cutting of the brush along the banks of swamps where the Glossinas breed, by the destruction of infected villages and the isolation of infected persons in concentration camps.

Models in the next case deal with the life history of the fly, showing its various stages in their natural size and actual habitat, and illustrate the large numbers of flies which may breed in a single pound of manure and the enormous progeny which may spring from a single pair and their descendants during the breeding season.



THE HOUSE OR TYPHOID FLY
Enlarged model by Ignaz Matusch.

The deadly work of the fly in carrying typhoid fever is illustrated by graphic presentations of typhoid statistics of the Spanish-American War and of the relation between flies and "summer disease" of children, as worked out by the Association for Improving the Condition of the Poor in New York City.

Near by (Floor Case) are two models showing unsanitary and sanitary conditions on a small farm. In one, pools of stagnant water and uncovered manure heaps and general uncleanness favor the breeding of mosquitoes and flies, while the open doors and windows give these insects free access to the house. In the other, the swampy land is drained and cultivated, the windows screened, the shallow-dug well replaced by a driven well; the conditions are sanitary, and health and prosperity replace sickness and poverty.

Various types of traps for larvæ and adult flies are shown with models illustrating how fly-breeding may be prevented, how human wastes may be protected from their access, and how manure may be cared for so as not to be a medium for breeding flies.

Wall case 10 shows a group of the natural enemies of the fly: the cock, phebe, swift, the bat, spiders and centipeds, in characteristic surroundings as they may be seen in the corner of a New York State farm on a late August afternoon. Adjoining this case is a series of remarkable colored drawings of fifteen of the principal species of flies found in eastern North America.

Wall case 11 is devoted to the subject of military hygiene, which has become of such immediate moment and was, on the whole, so **Military Hygiene** successfully solved during the Great War. Diagrams illustrate the relative deadliness of disease germs and bullets in earlier wars; and their lesson is reinforced by a representation of the relative importance of injuries received in action and of the results of typhoid fever during the Spanish War. One company, confronted by a cannon, suffers the loss of one man wounded, while the other, facing a tube of typhoid germs, has one dead and thirteen in the hospital. Other models show how camp wastes are disposed of, and how water supply is sterilized, and still others, how the soldier's tent is protected against mosquitoes and how a field hospital is equipped. The field ration of the soldier and the preparation of anti-typhoid vaccine are illustrated by specimens and models.

SOUTH CENTRAL WING

INDIANS OF THE NORTH
PACIFIC COAST

Totem pole at Wrangell, Alaska. At the bottom is a beaver with a frog under his chin; above is a raven; and above the raven a frog, which is surmounted by a human head.

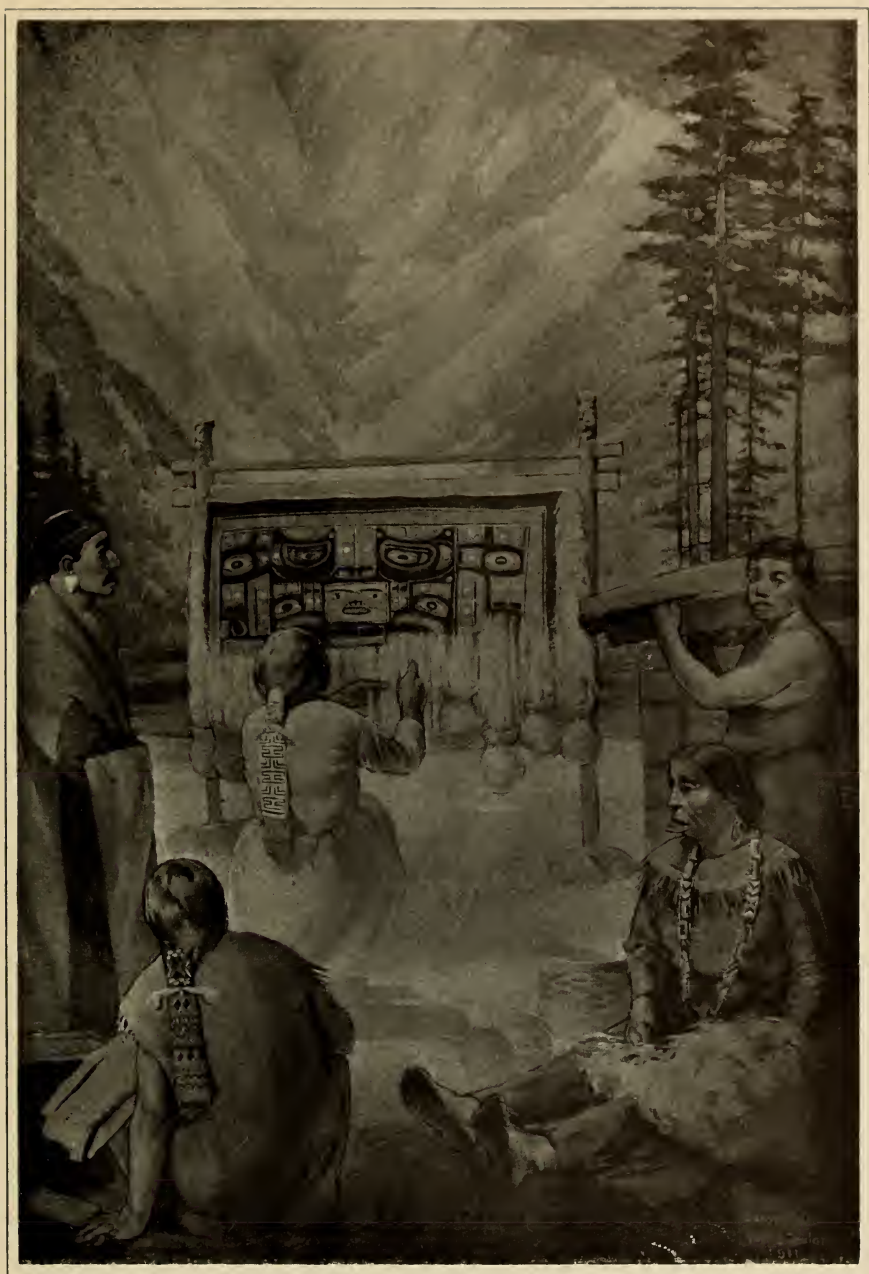
As the visitor passes through Memorial Hall he sees directly behind the Jesup statue a large canoe filled with a group of men. This stands in the entrance of a hall devoted to the Indians of the Northwest Coast. They are especially noted for their totem poles, grotesquely carved and painted. A double row of these lines either side of the central aisle and others are on the side walls. These carvings fall into three main classes: totem poles proper which in some cases were sixty feet high, towering over the villages; house posts, four of which were the main supports of the house roofs; and grave monuments taking various forms.

In the center aisle will be found a model of a Kwakiutl village showing the type of construction of the house and the arrangement of the houses in the village, and an industrial group illustrating the household activities of the men and women.

On the walls are murals done by Will S. Taylor which illustrate both the industrial and the social and religious life of the Indians of this region.

The exhibits are arranged in the same order in which the tribes are encountered in passing from the south toward the north along the coast of British Columbia and Alaska.

On the left are the collections from the Nootka living on the west coast of Vancouver Island. They are noted as hunters of whales, a hazardous occupation, especially when done without the aid of large boats. Next are the Kwakiutl, who live in the northern portion of Vancouver Island, subsisting mainly on fish and the smaller sea mammals. The devices for taking fish vary not only for each kind of fish, but in the case of salmon they are also especially adapted to the particular location in which the fish are taken. The Kwakiutl formerly devoted much of the winter



WEAVING A CHILKAT BLANKET
One of the Mural Paintings by Will S. Taylor.

to dramatic ceremonies in which grotesque masks were worn. Examples of these will be found near the middle of the west side of the hall.

At the further end the art of the Tlingit Indians of Alaska is shown in considerable detail. They are especially expert in carving in stone, bone, ivory and wood. One of the tribes of the Tlingit, the Chilkat, make blankets from the wool of the mountain goat. The end wall case is entirely devoted to the basketry of the Tlingit.



ESKIMO HOME SCENE

There are some instructive groups in the corridor near the entrance to the Auditorium. In one, a home scene within a snow house or "igloo," an Eskimo woman is cooking blubber over the flame from a seal-oil lamp; another represents an Eskimo woman fishing through the ice and a man about to strike a seal under the ice.

The wall case directly opposite contains carved and painted boxes and chests selected to illustrate this phase of Northwest Coast art. Following down the east side of the hall the following peoples are represented: Haida, Tsimshian, Bella Coola, Coast Salish, Shuswap and Thompson. The two last mentioned are not Northwest Coast in culture. They live in the interior of British Columbia. Their baskets are of especial interest.

NORTH CORRIDOR

The Eskimo collections will be found in the adjoining hallway and corridor. Near the entrance is an Eskimo woman fishing through the ice. She has formed a windbreak with blocks of ice. The fish rod and hook and the long ladle are made of bone and with this latter she keeps the water in the hole from freezing over while she is fishing. Just back of her stands a man about to strike a seal under the ice. In another case will be found an Eskimo woman cooking in the interior of a snow hut or igloo lined with sealskin. She is using a stone lamp filled with seal oil, which feeds the flame over which the meal is being prepared. In this section will be found collections obtained by the Stefansson-Anderson expedition from the Eskimo of Coronation Gulf, some of whom had never seen a white man. In other cases are shown the clothing of the Eskimo, the many ingeniously made implements, and many finely carved and engraved ivory objects from the collections made by Peary, Comer and MacMillan.

The *Auditorium*, opening from the corridor, has a seating capacity of 1400, and is equipped with two screens, 25 feet square, for stereopticons. Free public lectures are given here Tuesday and Saturday evenings from October to May under the auspices of the Board of Education. There are also special lectures for Members of the Museum as well as lectures for school children.

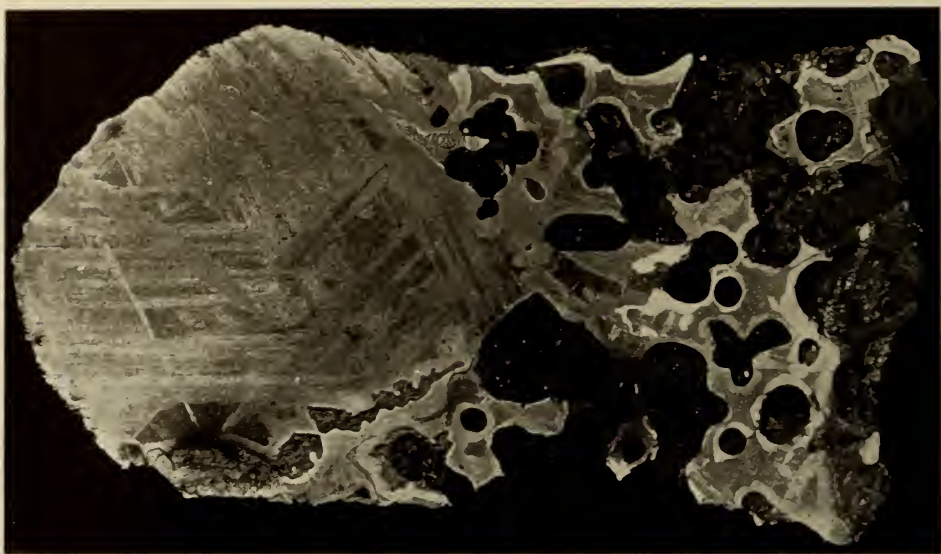
The further portion of the corridor is occupied by the collection of building stones, a series of rocks illustrating the geology of Manhattan Island and some large specimens of interest in general geology. The center of the corridor is occupied by the general collection of meteorites, one of the largest and most representative in this country, containing as it does specimens from about 500 of the 700 falls and finds that are known throughout the world. Some of the principal features of our collection are

2000 or more individual masses from the stone shower which occurred when a large meteorite exploded near Holbrook, Arizona, in 1912: these have been arranged in a case by themselves to illustrate a concentration of the shower.

The entire mass of "Ysleta," an iron meteorite weighing 310 pounds which was found near the ancient village of Ysleta, New Mexico, in 1914.

The largest mass, 20 pounds in weight, of the stone meteorite which exploded and fell near Richardton, North Dakota, on the 10th of June, 1918.

The largest mass, about 5 pounds in weight, of the stone meteorite, which burst and fell near Cumberland Falls, Kentucky, on the 9th of April, 1919.



THE STRUCTURE OF METEORITES

A section of Brenham, siderite (nickel iron) on the left passing into siderolite (iron and stone) on the right. Note the broad Widmanstätten lines

A series of polished and large etched slices of iron meteorites, including an entire section of the Mt. Edith, Australia, mass, showing the Widmanstätten lines in great perfection, and polished slabs from several large stone meteorites: these are in a case by themselves which likewise contains several comparatively large entire single masses of some famous falls.

Return to Jesup Statue.

SOUTHWEST WING

INDIANS OF THE WOODLANDS

Opening from the west corridor are three halls containing collections from the North American Indians which together with the hall in the **Indians of the** south central wing present the nine great culture areas **Woodlands** of North America.

(See map on the right of the entrance.)

The hall you now enter represents three of these culture areas. Filling the greater part of the hall are the tribes of the Eastern Woodlands who occupied the middle portion of the North American continent east of the Mississippi. In the first of two wall cases is a comparative exhibit in miniature of the houses, methods of cooking, transportation, and dress of the various tribes of North America. Midway of the hall on the right side are represented the peoples of the Southeast.

Near the entrance of the hall will be found the remains of our local Indians. On the left are some specimens of pottery vessels and many small objects of stone and bone recovered from the Island of Manhattan and the neighboring territory of Staten Island, Long Island and Westchester. Nearby on the same side of the hall are collections obtained from living Indians of the coast region north and south of New York. These are the Penobscot and Passamaquoddy of Maine, the Micmac and Malecite of the lower provinces of Canada, and a few but rare objects from the Delaware who once occupied the vicinity of New York City and the State of New Jersey. The age and historical relations of these cultures are shown in a large label at the left of the entrance.

A family group of Micmac Indians, in a birch bark wigwam, is shown half way down the hall.

On the opposite side, the north, are the Iroquois whose league comprised the Mohawk, Seneca, Oneida, Onondaga, Cayuga, and later the Tuscarora. They dominated New York and much adjoining territory. The exhibits represent particularly the agriculture of the East, which was carried on with rude tools by the women.

In a case in the aisle are exhibited wampum belts which were highly esteemed in this region. They served as credentials for messengers and as records of treaties and other important events. Later, wampum beads came to have a definite value as currency, especially in trade between the white men and the Indians.

In the farther end of the hall, on the left, are the collections from the Ojibway, Hiawatha's people, who lived mainly north of the Great Lakes. They had but little agriculture, living chiefly by hunting and



AN IROQUOIS WARRIOR

From the Group in the Woodland Indian Hall.

fishing. Beyond the Ojibway are the Cree, who live still farther north. Here is to be seen the rabbit skin clothing of our childhood rhymes.

Opposite the Ojibway are the great Central Algonkian tribes, the Menomini and Sauk and Fox, who lived south and west of the Great Lakes. They gathered wild rice and hunted and fished, practising also



A DANCER OF THE DOG SOCIETY

Arapaho Indian

some agriculture. In one of the Menomini cases are some skin bags beautifully worked in porcupine quills. These bags were used in the Midewin, the secret society of the shamans. Visitors interested in the designing art will find the cases of this hall full of bead, quill and textile designs of a high order. (See *Guide Leaflets*, "Indian Bead Work," Indian Costumes, and "Indians of Manhattan.")

The dwellings are of several forms, among which may be mentioned the long rectangular houses of the Iroquois covered with oak bark; the

dome-shaped huts of Long Island and vicinity which were covered with mats and bundles of grass, and the familiar conical wigwam of the Ojibway covered with birchbark. The utensils are of pottery, wood or birchbark. Pottery was not made by all the Eastern tribes and seems to be associated with the practice of agriculture. The designs are incised, never painted. Bowls, trays, and spoons are made of wood and often decorated with animal carvings. The use of birchbark in the construction of light, portable household vessels is a particular trait of our Eastern Indians.

In the southeastern portion of the United States agriculture was highly developed. These tribes are represented by the Cherokee and Yuchi who made pottery, and by the Choctaw and Chitimacha who have interesting baskets made of cane. The Seminoles of Florida have maintained an independent existence in the Everglades for nearly a century. Their picturesque costumes are shown. Their prehistoric arts are illustrated in the table case; they excelled in polishing stones and working shell.

SOUTHWEST PAVILION

INDIANS OF THE PLAINS

The collections from the Indians of the Plains will be found in the hall adjoining. These Indians comprised the tribes living west of the Mississippi and east of the Rocky Mountains as far south as the valley of the Rio Grande and as far north as the Saskatchewan. (See map on south wall.)

On the left side of the entrance, against the wall, is a special exhibit of life casts and photographs of typical Plains Indians, with tables and charts explaining their chief racial characteristics.

Occupying the greater part of the hall beginning on the left are the buffalo-hunting tribes: the Plains-Cree, Dakota, Crow, Blackfoot, **Indians of the Plains** Gros Ventre, Arapaho and Cheyenne. These tribes did not practise agriculture but depended almost entirely on the buffalo; buffalo flesh was their chief food, and of buffalo skin they made their garments. In some cases a buffalo paunch was used for cooking, and buffalo horns were made into various implements of industry and war. The spirit of the buffalo was considered a powerful ally and invoked to cure sickness, to ward off evil, and to give aid in the hunt. Whenever the buffalo herds led the way, the more nomadic Plains tribes moved their tents and followed. With the extermination of the buffalo the entire life of the Plains Indians was revolutionized.

On the right, near the entrance, are the village tribes of the Plains; the Mandan with whom Lewis and Clark passed the winter of 1804-1805, the Hidatsa who now live with them, and the Omaha, Kansa, Iowa and Pawnee. All these tribes raised corn and lived in earth-covered houses of considerable size. A small model of one of these houses stands near the exhibits.

In the center of this hall is a Blackfoot Indian tipi with paintings of otters on the sides, representing a vision of the owner. This tipi has **Blackfoot Tipi** been fitted up to show the home life of a typical buffalo-hunting Indian.



A DOG FEAST OF THE SIOUX

Given in honor of Mr. Sanford, Pierre Choteau and Catlin. From the Catlin Collection of paintings.

There were numerous soldier societies among the Plains Indians which included practically all the adult males. Each society had a special dance and special costumes. (See the Arapaho cases **Societies** for costume dances.) There were other dances connected with tribal religious ceremonies, the best known and most important of which is the sun dance, illustrated by a model at the left of the tipi. The sun dance was held annually in the early summer in fulfilment of a vow made during the preceding winter by some member of the tribe who wished a sick relative to recover. The dance involved self-torture, great physical endurance and a fast lasting three days, during which time the dancers neither ate nor drank **Sun Dance**

In the center of the hall is a genuine medicine pipe, held in awe by the Indians and dearly parted with; also the contents of a medicine, **Medicine** pipe bundle. The contents of another medicine bundle, **Pipe** belonging to a leading man of the Blackfoot tribe (medicine-man), together with the headdress which he wore in ceremonies, are in a case near the tower. Other remarkable bundles, particularly the skull bundle, are in the Pawnee case, on the north wall.

The Plains Indians are noted for their picture writing on skins and for their quillwork, which has now been superseded by beadwork. They have a highly developed decorative art in which simple geometric designs are the elements of composition, this being one of the most interesting features of their art. (See Dakota case and *Guide Leaflet* No. 50.) [See *Handbook* No. 1, North American Indians of the Plains.]

WEST WING

INDIANS OF THE SOUTHWEST

On the left are collections from the sedentary Indians who occupy the pueblos of the Rio Grande and of Hopi, Acoma and Zuñi; and also **Pueblo** the objects recovered from the prehistoric pueblos, caves **Indians** and cliff-dwellings. On the right are the nomadic Indians—the Eastern and Western Apache, the Navajo, the Pima and the Papago.

The sedentary Indians live in large community houses, often with several receding stories, built of stone or adobe. They depend chiefly upon agriculture for their food, make a great variety of pottery, and have many elaborate religious ceremonies. The nomadic peoples live in tipis or small brush and thatched houses which are moved or deserted when they are forced to seek the wild game and wild vegetable products which furnish much of their food. They make baskets for household purposes which are more easily transported than vessels of clay. There are models in the hall of the pueblos of Taos and Acoma, of prehistoric cliff-dwellings and of the houses used by the Navajo. In the first alcove on the left are shown the pottery of the villages along the Rio Grande, the principal art of the region, skin clothing, household utensils and ceremonial objects.

The upright cases of the next alcove are filled with wonderful prehistoric pottery. That in the wall case is from Pueblo Bonito. Similar black and white ware with very elaborate and splendidly executed designs, in an adjoining case, is from Rio Tularosa, one of the upper

tributaries of the Gila, where a vanished agricultural people once lived in pueblos and cliff-dwellings. A third case has material gathered by the Museum expedition which explored Galisteo Valley, New Mexico. In the table case and in a case standing in the aisle is shown the wonderful art work in turquoise, shell, stone and wood of the former inhabitants of Chaco Cañon. These objects, as well as the pottery from Pueblo Bonito mentioned above, were secured by the Hyde expedition.

In the next alcove, devoted to the Hopi, are the costumes, masks, images, and plaques used in their ceremonies. Besides the well-known snake dance, the various Hopi villages have many interesting ceremonies, a number of which are concerned with the rainfall and the crops.

In the large wall case and in the table case of the next alcove will be found pottery, objects of stone, shell and wood from the Aztec ruin. This collection was secured during the excavations of the ruin continuing from 1916 to 1921. A model to scale of the ruin itself will be found in the center of the main aisle. The northern upright case of this alcove contains objects from Utah illustrating the life of the earliest known people of the Southwest, the Basket Makers.

The inhabitants of Zuñi are believed to be the descendants of the first people seen by the Spanish in 1540. Their former villages, many of which now are in ruins, were probably the "Seven Cities of Cibola," for which Coronado was searching at that time. Although they had missionaries among them for about three centuries, they have retained many of their own religious ceremonies. Many objects pertaining to these ceremonies as well as to everyday life are shown in this alcove. In the last case on this side of the hall are examples of Zuñi and Acoma pottery.

At the north end of the hall opposite the Zuñi, space is given to an exhibit from the tribes of California. In the large end wall case the baskets of the region are arranged so as to show the various types.

The Pima, east side of the hall, practised irrigation, raising by its aid the corn and beans on which they relied for food and the cotton which they used for their scanty garments. The Papago, with whom **Pima** they are closely associated, occupied the more arid portions of southern Arizona and northern Sonora, securing their living from such desert products as the giant cactus, the century plant, the yucca and the mesquite, and small game. Examples of their food, basketry, pottery, and ceremonial articles are shown.

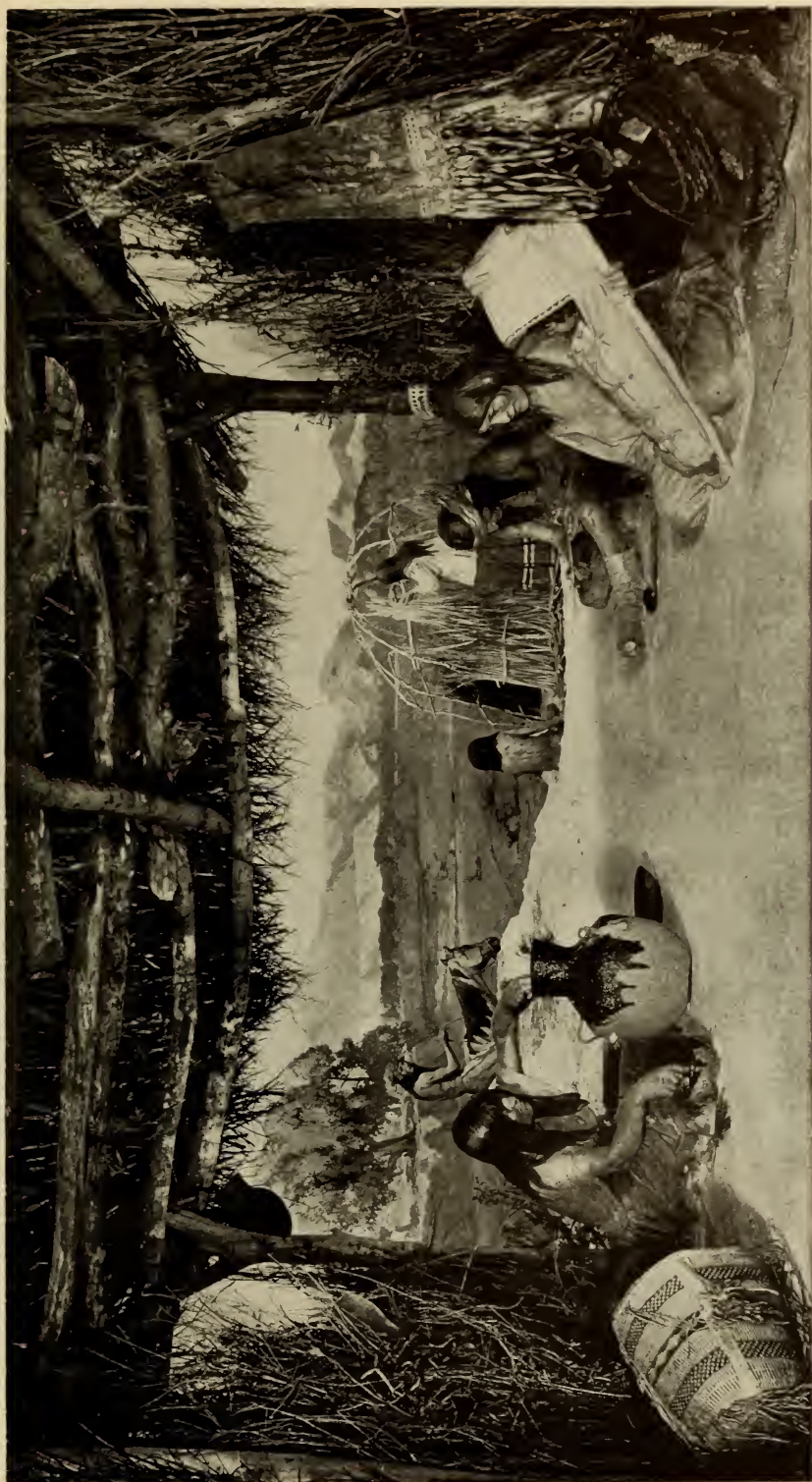
From the aisle near the Pima-Papago section one catches a glimpse of the home of the Hopi. This large group represents the First Mesa with the village of Walpi. The canvas was painted by Howard McCormick and the figures were modeled by Mahonri Young.

The Navajo, a large and widely scattered tribe, inhabit much of the country drained by the San Juan and Little Colorado rivers. During the winter they occupy log houses, but in milder weather **Navajo** camp with the slight shelter of a cliff or a windbreak and shade made of brush. They live by raising corn in the moist valleys, and on the flesh of their numerous flocks of sheep.



An attractive Navajo blanket from the Museum's valuable collection. The Navajo Indians of the Southwest are a wealthy, pastoral people, and the best Indian blanket makers of North America.

They are the present-day blanket makers of North America. They make use of the wool of the sheep they raise, carding, spinning and weaving it by means of the simplest implements and looms. This art is believed to have arisen since the coming of the Spanish and it is known to have passed through several stages in the last sixty years. The older types of blankets here shown contain yarn which was obtained by cutting or ravelling from imported flannels, called in Spanish "bayeta," from which the blankets of this sort receive their name. These are either bright red or old rose in color, resulting from cochineal dye. Several blankets are made of yarn bought ready dyed from the traders and are



THE APACHE GROUP

The scene is laid in the valley of the San Carlos River, Arizona; the time is summer, and the Indians are shown engaged in the ordinary pursuits of daily life.

called Germantowns. The greater number, however, contain yarn of native spinning, dyed with native vegetable and mineral dyes.

The Navajo are also expert silversmiths. Their tools and samples of workmanship are displayed in a case in the center of the hall.

The large group in the middle of this side of the hall represents the Navajo ceremony of the Night Chant. Men wearing masks and dressed as gods are seen in the center. In the foreground is a family waiting for the cooking of a meal. The background gives a view of Cañon de Chelly, Arizona, in a cave in the walls of which White House, a well known ruin, is seen.

The Western Apache live along the upper portion of the Gila and Salt rivers, where they practise agriculture, gather the wild products and hunt. People, related to these, under Geronimo, raided the settlements of southern Arizona and northern Mexico and evaded our troops for years. They live in grass-thatched houses or in the open under the shade of flat-topped, opensided shelters. In an adjoining alcove is an industrial group with painted background showing the well-watered San Carlos valley occupied by the Apache for many generations. *It is shown on page 31.*

The Eastern Apache lived in buffalo-skin tipis. They went far out on the plains in search of the buffalo herds, avoiding, if possible, the plains tribes, but fighting them with vigor when necessary. In dress and outward life they resemble the Plains Indians, but in their myths and ceremonies they are like their southwestern relatives and neighbors. The baskets of the Apache are shown in the large end case, which is in contrast with the corresponding case of pottery on the other side of the hall. Not the environment, but social habits, caused one people to develop pottery and the other to make the easily transported and not easily breakable baskets. [See *Handbook* No. 2, Indians of the Southwest.]

Return to the Jesup Statue.

EAST CORRIDOR

Leaving the statue on the left and "Willamette" meteorite on the right, and going east, the visitor enters the corridor where the elevators are located (*East Corridor*).

This corridor is used from time to time for small temporary exhibits of special interest, such for example, as photographs and objects illustrative of the Ellsworth-Amundsen trans-polar flight.



MAGNOLIA IN THE FORESTRY HALL

Each of the five hundred species of trees in North America is represented by a section of trunk five feet long, some of a diameter not found in the country's forests to-day. Many of the specimens are accompanied by reproductions of leaves, flowers and fruits accurately copied from life in the Museum laboratories. Most noteworthy among them is the magnolia shown here, but there are many beautiful examples of spring flowers and autumn foliage.

In a room at the north end of this corridor is the large Mainka seismograph for recording the occurrence of earth quakes. This was given to the New York Academy of Sciences by Emerson McMillan, and by the Academy deposited in the Museum.

The Elevators start at intervals from the East Corridor, at the entrance to the hall of Trees of North America. The visitor may either take an elevator to the fourth floor and visit the halls as he descends, or choose his hall from the Guide or from the *Directory* opposite the elevators.

SOUTHEAST WING

JESUP COLLECTION OF TREES OF NORTH AMERICA

To the east of the elevators is the *Hall of Trees of North America*, containing a nearly complete collection of the native trees north of Mexico, presented by Morris K. Jesup. On the right is a bronze tablet, by J. E. Fraser, the gift of J. J. Clancy, depicting Mr. Jesup as he walked in his favorite wood at Lenox, Mass., and in front a bust of Charles Sprague Sargent under whose direction the collection was brought together. At the farther end is a bust of John Muir, by Malvina Hoffman, presented by Mrs. E. H. Harriman.

In the center of the hall is the trunk of a fossil tree 45 feet long and several million years old.

To the left is a section of one of the Big Trees of California, sixteen feet in diameter and 1341 years old. [See *Guide Leaflet* No. 42]. It began its growth in the year 550, so that it was nearly a thousand years old before America was even discovered. The long label, illustrating the conclusions reached by Ellsworth Huntington as the result of long study, shows how the climate of the past is recorded by the trees, and how great historical events are related to great changes in climate.

The specimens show cross, longitudinal and oblique sections of the wood finished and unfinished, and the labels on the specimens give the distribution of the species, the characteristics of the wood and its economic uses. The trees are grouped by families and the location of each family will be found on the floor plan in the first case on either side of the hall. The reproductions of the flowers, leaves and fruits are instructive; this work is done in the Museum laboratories.

SOUTHEAST PAVILION

INVERTEBRATES

At the extreme east is *Darwin Hall of Evolution*, devoted chiefly to the invertebrate animals (those which do not possess a backbone) and to groups illustrating biological principles. Facing the entrance is a bronze bust of Darwin by William Couper, presented by the New York Academy of Sciences on the occasion of the Darwin centenary in 1909.

In the first upright case at the left is a Family Tree of the Animal Kingdom each class being at present represented by a color sketch, the branches showing the relationships of the various classes.

**Family Tree
of Animals**

The exhibits in the succeeding upright cases comprise examples of the various groups or orders included in the Classes shown on the **Synoptic Family Tree**. Passing around the hall from left to right progress is from the lowest forms, the Protozoa—to the highest, the Primates, which includes man. The distinctive characteristics of each group are fully described on the alcove and case labels. Many of the minute forms are represented by skilfully prepared models in glass and wax showing the animal many times enlarged.

This alcove contains the lowest forms of animal life. All are single-celled individuals. The simplest kinds are abundant in swamps and stagnant water, others are found in myriads in the sea, while the ocean bottom in many localities is covered with them. The exhibits in this alcove are mainly models, some of which represent Protozoa enlarged more than a thousand diameters.

Sponges are principally of two kinds—those with skeletons or supporting structures of silica (i.e., flint) and those with skeletons of horny

Alcove 1 fiber. The sponges of commerce belong to the latter class.

Sponges In the dry specimens exhibited the skeleton only can be seen, the living tissue having been removed. Sponges range in size from the tiny *Grantia* of the New England coast to the gigantic "Neptune's goblets" found in the eastern seas.

In Alcove 3 are shown coral animals and their relatives: among them plantlike hydroids which often are mistaken for sea moss, but which

Alcove 3 really are a series of polyps living in a colony; jellyfishes

Polyps with their umbrella-shaped bodies and long, streaming tentacles; brilliantly colored sea anemones, sea fans and sea plumes; the magenta colored organ-pipe coral, the stony corals, the the precious coral of commerce. Coral polyps, mistakenly called "coral insects," are the animals that build up the coral reefs. Especially noteworthy is a

reproduction in glass of a Portuguese Man-of-War, which is really a colony of many animals attached to one another and specialized for various functions.

The best known species in this group include the tapeworms, whose development and structure are shown by models in the left-hand alcove
Alcove 4 case. The less familiar free-living flatworms, which inhabit
Flatworms both salt and fresh water, are shown on an enlarged scale by models.

The Roundworms are parasitic, since they live in the digestive
Alcove 5 canal of mammals. The most familiar is the common
Roundworms roundworm or stomach worm, *Ascaris*, of which an enlarged scale model is exhibited, showing the internal structure.

[*Note for teachers and students.*—Some of the models in each alcove are *anatomical*, i.e., so constructed as to show the internal organs of typical members of each group. In such cases, arbitrary colors chosen to designate the various systems of organs are adhered to consistently throughout the series.

The minute wheel animalcules comprise many exquisite and grotesque forms, some of which construct tubes of gelatinous substance, sand-grains, etc. A few of the species are parasites,
Alcove 6 but most of them live a free, active life. They are aquatic
Rotifers and found mainly in fresh water. See window group

The sea-mats are minute, colonial animals of plant-like growth,
Alcove 7 often occurring as encrustations on shells and seaweed.
Sea-Mats and A few species also occur in fresh water. The lamp-
Lamp-shells shells shown in this alcove superficially resemble clams, but by structure are more closely related to the worms and starfishes.

Alcove 8 is occupied by the sea-stars, brittle stars, sea-urchins, sea-cucumbers and sea-lilies. The sea-star is the pest of the
Alcove 8 oyster beds, where it feeds on oysters and destroys them
Sea-Stars in large numbers. The brittle stars are so called because
and Their of their habit of dropping off one or more arms when handled
Relatives or attacked. These, however, are later renewed.

The Annulates, typified by the familiar earthworm, are worms whose bodies are made up of rings or segments. They are inhabitants of both
Alcove 9 fresh and salt water, many kinds living in the mud and
Annulates sand of the shore while others bore into wood and shells. The "houses" that these annulates build are often very beautiful and interesting.

Arthropods include the familiar crabs, lobsters, myriopods, insects, spiders and their relatives. The number of existing species in this **Alcove 10** group is greater than that of all the rest of the animal **Arthropods** kingdom. No other group comprises so many species useful or harmful to man. On the wall are the two largest specimens of lobster that have ever been taken. They weighed when alive thirty-one **Crustaceans** and thirty-four pounds, respectively. The largest of the **and Insects** arthropods is the giant crab of Japan, which, like that placed on the wall, may have a spread of about ten feet. The main exhibit of insects is on the third floor.

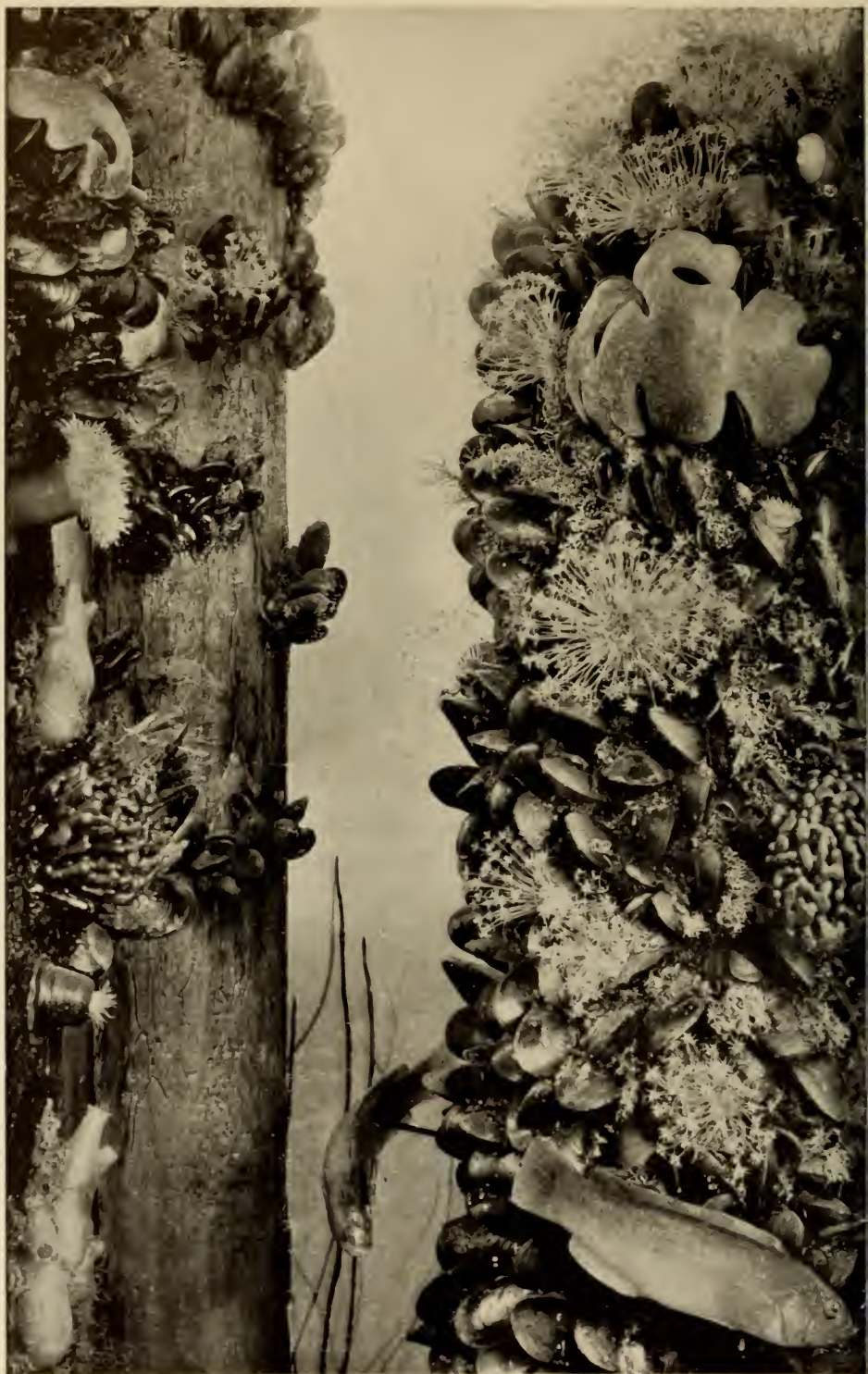
The Mollusks form a group second only to the arthropods in the vast number of diversity and forms which it embraces, including marine, **Alcove 11** fresh-water and land animals. All mollusks have soft **Mollusks** bodies, but nearly all of them secrete a shell which in many species is of pearly material (mother-of-pearl). Well-known examples **Models of** of this group are the common clam and oyster, and en- **Clam and** larged models in the center case show the anatomy of **Oyster** this species. A large collection of mollusks is shown in the Hall of Ocean Life.

Vertebrates include the largest, most powerful and most intelligent of animals, the group culminating in man. Among the ancestral **Alcove 12** forms are the Ascidians, or Sea-squirts, an enlarged model **Chordates** of which is shown in the central case, while others are seen **Including** among the animals on the wharf-piles in the window group. **Vertebrates** Other models in the central case show the development of the egg of typical vertebrates.

In the circular tower alcove in the southeast corner of the hall is a **Corals** comprehensive synoptic series of stony corals. The associations of marine life found in the Bahamas are represented by several small groups in the center of the hall.

Here also four large models show the mosquito, which is the active **Models of** agent in the spread of malaria and stages in its develop- **the Malaria** ment enlarged seventy-five diameters or in volume four **Mosquito** hundred thousand times the natural size.

In several of the alcove windows are habitat groups of invertebrates illustrating the natural history of the commoner and more **Window** typical, and showing how the kinds or species of animals **Groups** found in any locality vary with the character of the bottom or of the surroundings, known as "the relation of animals to their environment."



PART OF THE WHARF PILE GROUP

In the Annulate Alcove is shown the Marine Worm Group, reproducing these animals with their associates in their natural surroundings, as **Marine Worm Group** seen in the harbor of Woods Hole, Mass. In the foreground the shallow water of the harbor near the shore is represented in section to expose the animal life found on muddy bottoms among the eel-grass, as well as the chimneys of various worm-burrows. In the lower part of the group a section of the sea bottom exposes the worms within the burrows. Several species of these are represented.

In the Mollusk Alcove window is shown the natural history of a sand-pit at Cold Spring Harbor, Long Island, including some of the **Shore Mollusk Group** shore mollusks and their associates. In the foreground at the edge of the sand-spit a mussel-bed is exposed by the receding tide over which fiddler-crabs are swarming into their burrows. Beneath the water surface an oyster is being attacked by a starfish, while crabs and mollusks of various species are pursuing their usual activities.

The window group in the Vertebrate Alcove shows the submerged piles of an old wharf at Vineyard Haven, Mass., covered with flower-**Wharf Pile Group** like colonies of invertebrate animals. Among these are sea-anemones, tube-building worms, hydroids, mussels, sea-mats and several kinds of ascidians or sea-squirts. The latter are primitive members of the Chordate group which includes the vertebrates.

In the southeast corner of the hall, a window group shows the animals and plants of a rock tide-pool, the "Agassiz Cave," at Nahant, **Rock Tide-Pool Group** Mass. The falling tide has left a pool in a rocky basin, sheltered within which is a community of sea-anemones, sea-stars, corals, sponges, hydroids and other animals living in the midst of a gorgeous sea-garden of marine plants such as are common on the northern New England coast. Through the arch of the natural bridge may be seen a curious rock formation known as "Pulpit Rock."

At the end of the Arthropod Alcove, a group shows an incident in the struggle for existence among Crustacea in their natural surroundings on **Sound Bottom Group** the sandy bottom of Vineyard Sound, Massachusetts. Here is a den of lobsters in a crevice beneath the seaweed-covered granite boulders forming the reef known as the Devil's Bridge. In the sand near by the Lady Crabs are accustomed to burrow to escape their lobster enemies. An unwary crab has ventured out to hunt for shrimp and is immediately pounced upon by one of the vigilant and voracious lobsters.

Another group represents two square inches of sea bottom as though enlarged under a microscope to an area five feet square. The front of the **Bryozoa** case is built to represent a huge magnifying glass, through **Group** which the visitor sees marine plants magnified to tree-like proportions, encrusted with colonies of bryozoa or "sea-mats," composed of thousands of individuals, each of which builds a "house" or shell of graceful, vase-like form; hydroids, giving rise to tiny "medusæ" or jelly-fish; and even protozoa are brought within the range of vision. Associated animals, such as the flower-like, tube-building worms and sea spiders, are enlarged to grotesque proportions. This group illustrates well the prolific and varied jungle worlds, found even in the smallest areas of the sea-bottom, the existence of which, because of their microscopic size, is not suspected by casual observers.

A companion exhibit represents one half inch of a fresh water pond bottom enlarged to an area of 50 inches, thus made large enough to introduce the minute forms of life invisible to the unaided eye. **Rotifer** **Group** The group centers about a spray of bladder-wort which is provided with purse-like traps for the capture of insect larvæ, protozoans, water fleas, rotifers, and other minute forms of animal life.



A PART OF THE SEA WORM GROUP

Other exhibits illustrate certain facts made clear by Darwin and those who came after him. On the left facing the entrance, variation under domestication is illustrated by dogs, pigeons, and domesticated fowls, the wild species from which they have been derived being shown in company with some of the more striking breeds derived from them.

On the right, various exhibits will show variation in nature. An example of this is the variation among the finches of the genus *Geospiza* in the Galapagos Islands.

Other examples show by means of a series of mollusks the range of color variation within a single species of West Indian Sun Shell, variation of sculpture within a single genus of land snail, and variations about the normal type of the common scallop.

The struggle for existence is portrayed by the meadow mouse, surrounded by its many enemies and yet continuing to maintain an existence by virtue of its great birth rate.

The simpler features of the laws of Heredity as elucidated by Mendel and his followers are illustrated by the inheritance of seed-coat color in the common pea, the color of sweet peas, and the coat-color of rats.

EAST WING

HALL OF FISHES

On entering from the south one faces a group of large sharks, sweeping down upon a helpless loggerhead turtle. The large decorative panel on the right illustrates the principal grand divisions of fish life and their history in geologic time. The decorative panel on the left of the shark group suggests the appearance of the ocean depths: especially the fading out of the light below the surface and the different kinds of fish inhabiting the various levels.

The Systematic Exhibit includes a representative series of fishes from the lowly "cartilage fishes" including the sharks and rays, to the highest or most complexly constructed bony fishes. Noteworthy in this series are the "Fishes with Limbs and Lungs," the terrible hag fishes, the graceful skates and rays, the hammerhead shark, and the thresher shark. Then follow a series of mounted groups of "ganoids," including the sturgeons, spoonbills, bony gars, bowfins, all of exceptional scientific interest, since they are "living fossils," or descendants of the fossil fishes of earlier geologic times. In the alcoves and wall cases on the

right, or east side the visitor will find many curious forms, such as the giant catfishes, the handsome rooster fish, the brilliant parrot wrasses, and butterfly fishes.

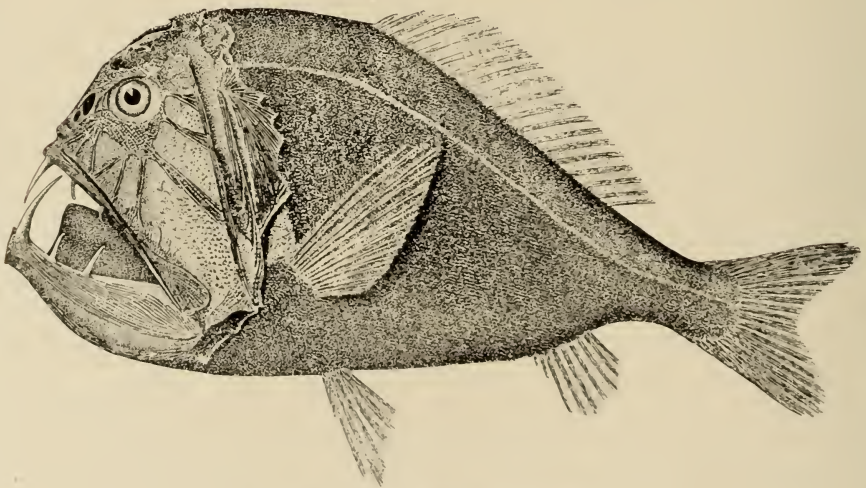
At the north end of the Fish Hall is the exhibit of Big Game Fishes, including many of great size taken with rod and line by Zane Grey.

Big Game Fishes The huge ocean sunfish, caught by him with harpoon and gaff, weighed nearly a ton. The centerpiece of the exhibit is the mounted sailfish, shown in the act of leaping from the water in a desperate effort to shake the hook from its jaws.

The giant Manta or devil fish is mounted in the central enclosure of the hall. It is 17 ft. 3 inches across the "wings."

The Deep Sea Fishes form a special exhibit in an inner room. Here in the semi darkness we view some of the hobgoblins of the ocean depths—many of them covered with jewels of phosphorescent light.

On either side of the entrance to the inner enclosure is the **Biological Exhibit**. One case considers the fish as a machine: its stream-line form; its main principles of construction; its locomotor machinery and the mechanism of its jaws. Another case considers the fish as a living organism, how it grows from a single fertilized egg; interesting cases of nest building; parental care of the young, and allied topics.



A DWELLER IN THE DEEP SEA

FIRST FLOOR

HALL OF OCEAN LIFE

Opening from the Hall of Fishes in the *Hall of Ocean Life* wherein are displayed whales, porpoises, seals and other marine animals, including shells.

SHELLS

The collection of shells containing about 150,000 specimens, representative of nearly 20,000 species, one of the finest on public exhibition. The specimens are selected for their unusual size and perfection and show an extraordinary range of color and ornamentation. The arrangement is as follows:

Immediately facing the entrance is a huge shell of the Giant Clam, *Tridacna*, measuring 43 by 27 inches, and weighing 579 pounds, one of the largest examples on record. Hanging from the ceiling is a life size model of the Giant Squid, a huge cephalopod mollusk found in the deeper waters of the oceans. This species is said to do battle with the sperm whale, and fragments of its jaws and tentacles have often been found in the stomach of that great sea mammal.

On the right hand side of the entrance, a wall case contains a series illustrative of commercial uses of shells. On the left hand side a similar case is filled with specimens selected for their unusual size and beauty. Otherwise the wall cases contain the bivalves, or mollusks which have two shells, like the common clam, while the A-shaped cases are devoted to the sea snails or univalves, so-called because they have but one valve or shell. The large table cases at the two ends of the hall, hold the land shells. In the north-east corner, a series of specimens and colored photographs illustrates the pearl button industry of the United States.

Short descriptive group labels will be found in the cases, together with picture labels of important families of shells. The cases which exhibit shells of especial beauty are those holding the genera *Murex*, *Fusus*, *Pecten*, *Spondylus*, *Voluta*, *Conus*, *Oliva*, *Strombus* and *Cypræa*.

WHALES AND PORPOISES

On the right and left are the fierce Killer and the stupid Blackfish. Farther to the right the skeleton of a big Sperm Whale, sixty-five feet long and above it the reproduction of a giant squid, which forms an important part of the food of this whale, also his nearest relative, the little Kogia which is not as long as a baby sperm whale.



STELLERS SEA LION

The most striking figure in the Sea Lion Group, Hall of Ocean Life

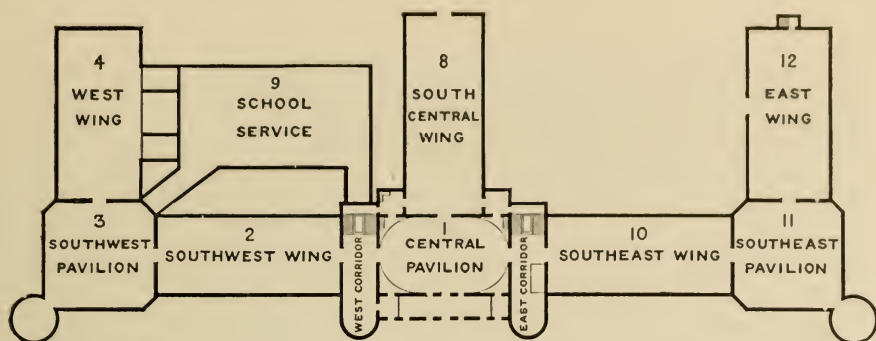
The large skeleton at the end is of a Right Whale, so called, because it was the right whale to get in distinction to the fin-back and others. This whale once common off the coast of Long Island, has been commercially, perhaps completely, exterminated in the North Atlantic.

At the very end is the Narwhal whose long tusk formerly did duty for the horn of the Unicorn. On the left are the skeletons of a sixty-five foot Finback Whale and of the California Gray Whale and nearer the railing a series of reproductions of the small Cetaceans, known as porpoises, among them the Bottle Nose Porpoise and common Dolphin, the species most often seen by travelers.

Under the gallery are the first of a series of groups of marine mammals, the Elephant Seal, Fur Seal, and Sea Lion, the last including some unusually large and fine examples of this animal.

At the end of the Hall is being assembled a reproduction of a section of a coral reef with its varied and colorful life.

Return to elevator and proceed to second floor.



1 Birds of the World—Groups. 2 Ancient Monuments of Mexico. 3 Prehistoric Man. 4 Africa.
8 Birds in Flight. 10 Mammals of North America.

SECOND FLOOR

SOUTH PAVILION

This hall, now in process of reconstruction, will later be devoted to a series of “habitat groups” of Birds of the World the first of which showing the bird life of Barro Colorado Island, in the Panama Canal, has recently been placed on exhibition.

WEST CORRIDOR

LOCAL BIRDS

Adjoining the *South Pavilion* is the *West Corridor*, which contains the collections of local birds.

In this room are specimens of all the species of birds which have been known to occur within fifty miles of New York City. As far as possible each species is shown in all its different plumages. In the wall-case next the windows on the visitor’s left is the *Seasonal Collection* containing the birds which may be expected to occur in this region during a part or the whole of the current month; in its left-hand two panels are the *permanent residents*, which are never changed, and in the right-hand two are the *migrants*, which are changed as necessary about the first of each month. In the next case on the left comes the *General Collection* of all birds found within this area, arranged according to the current American system of classification, beginning with the Grebes and continuing around the hall to end with the Thrushes by the southwest window.

Besides the table case containing the eggs (often with the nest) of species known to nest within fifty miles of the City, there are down the middle of the room a series of groups of local breeding birds with their



THE AMERICAN ROBIN—FIRST OF THE GROUPS OF LOCAL BIRDS

nests. These, the forerunners of our "Habitat Groups," were the first of their kind made for the Museum.

At the head of the stairs, on one side, is a map of the country within fifty miles; on the other, a case of *accidental visitors*—stragglers from other parts of the country and from other countries which have been taken within our limits.

At the other end of the room, between the windows, are exhibits which explain what is meant by a subspecies, and through what changes of plumage a bird passes from the time of hatching; and a bust of John Burroughs, by C. S. Pietro, the gift of Henry Ford.

SOUTHWEST WING

ANTIQUITIES OF MEXICO AND CENTRAL AMERICA

Continuing west past the collection of local birds we enter the southwest wing devoted to the ancient civilizations of Mexico and Central America. The visitor, in passing through this hall, will notice that the



THE AZTEC GODDESS OF THE EARTH

PREHISTORY OF SOUTH AMERICA

The famous statue of the Aztec Goddess of the Earth called Coatlicue, "The Serpent-skirted One," is a striking example of barbaric imagination. It was found in Mexico City near the Cathedral in the year 1791. It doubtless occupied an important place in the great ceremonial center of Tenochtitlan, the Aztec capital, and probably dates from the last quarter of the 15th century.

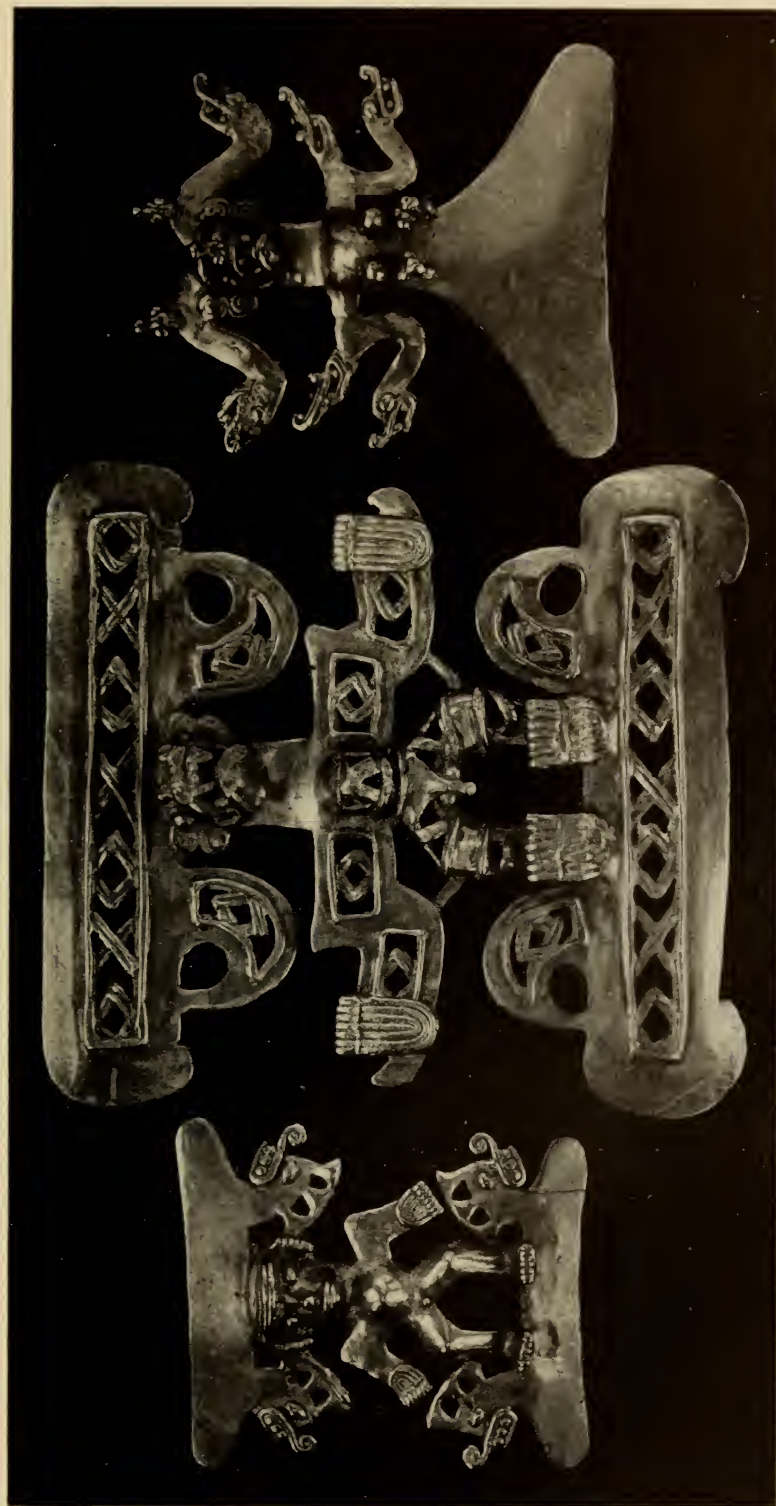
The head, which is the same on front and back, is formed by two repulsive serpent heads meeting face to face. The feet are furnished with claws, but the arms, which are doubled up with the elbows close to the sides, end each in a serpent's head. The skirt is a writhing mass of braided rattlesnakes. The creature wears about the neck and hanging down over the breast a necklace of human hands and hearts with a death's head pendant in the center. Coatlicue seems to have been regarded as a very old woman and as the mother of the Aztec gods.

civilizations represented here are more or less similar to one another and have perhaps a New World common origin, but they are quite different, however, from the civilizations of Egypt, Greece, or China.

Foremost of the peoples whose objects are exhibited in this hall were the Maya, of Honduras, Guatemala, and Yucatan. Examples of their sculpture will be found in the wall case at the right of the entrance. Casts of their monuments are ranged along the center of the hall. These are carved with inscriptions giving dates which can be read. In this way we learn that the Maya erected monuments as early as 98 B.C., and that they had two great periods, one in the south from 160 to 600 A.D., and one in the north between 950 and 1250 A.D. Examples of the architecture of the Maya are to be seen in the models at the right of the hall and in the cast of the great serpent column from Chichen Itza, Yucatan, at the left. Distinctive features are the absence of the true arch, the profuse use of decoration, the thick walls, and the high foundation platforms. Pottery and other objects are shown in the adjoining cases.

More ancient than any of the specimens in the hall are the little figurines in clay which were made by the "Archaic" people of Central Mexico and are exhibited in the first table case at the right of the hall. Farther along to the right beyond the temple models one finds objects representative of the highly civilized Toltecs whose remains lie above the "Archaic" stratum, when the two are found together. Their civilization reached its peak in the ninth or tenth century of our era and was in contact with the later Empire of the Maya. Succeeding the Toltecs in the control of Central Mexico were the Aztecs, who were the reigning power at the time of the Spanish conquest. Objects relating to their daily life are shown in the next cases. The casts of their statues indicate not only their artistic skill but also the complexity of their religion with its many gods. Attention is called to the great statue of the Goddess Coatlicue and the head of the Goddess Coyolauqui. The interest of the Aztecs in history and science is evident from the reproductions of their manuscripts in the table cases immediately opposite, and by the two huge circular stones, one of which, the sacrificial stone at the end of the hall, records the conquests of the Aztecs before 1487, and on it captives were slain as offerings to the gods. In the last table case in the center of the hall are examples of Mexican jewelry.

Other cultures only slightly less civilized are represented in this hall. Attention should be called to the remarkable pottery from Jalisco in the next to the last A case at the right of the hall. It is a plaster cloissone, examples of which were carried by or traded from Pueblo Bonito, New Mexico in the north to Chichen Itza, Yucatan in the south. At the right



ANCIENT GOLD OBJECTS FROM COSTA RICA
In the Minor C. Keith Collection

of the exit, into the northwest wing, are pottery figures from Western Mexico, presenting and sometimes even caricaturing the daily life of the people. Across the hall at the left of the exit are objects representatives of the Zapotec of southern Mexico. Noteworthy are the grotesque funeral urns made as offerings in tombs, perhaps like the model at the end of this hall.

Moving back up the hall, in the next A case, one sees specimens from Vera Cruz. Especially fine are the Totonac laughing faces from the southern part of the state. In the same row near the window are musical instruments, such as flutes from southern Mexico, and drums, one an original from near Mexico City. The Muir collection of vessels and figurines from near Tampico, in the next A case, shows certain resemblances to the "Archaic" specimens at the other end of the hall.

The adjoining cases contain a collection of pottery vessels from San Salvador, which includes many painted vessels with designs like those on Maya pottery, and examples of a unique ware, glazed by natural agencies, which were carried in trade the length and breadth of Central Mexico, so highly was it esteemed.

The table cases adjacent contain reproductions and originals of the Mexican and Maya manuscripts previously mentioned.

The remainder of the hall is devoted to the remarkable Minor C. Keith collection of Costa Rican antiquities. The stone work, comprising statues and implements for daily and ceremonial use, shows the artistic proficiency of this people even more strikingly than the variety and excellence of shape and design in their pottery. The ornaments in gold and jade in the table cases at the center of the hall display even further the technical skill and high artistic sense of these people.

While one is accustomed to think of the Aztecs, and by association, all Middle Americans, as war-like savages, the collections here exhibited show their main concerns of life to have been pacific, and devoted to the advancement of their industries, arts, and sciences.

(For further details see Handbook No. 3, *Ancient Civilizations of Mexico*, by H. J. Spinden.)

SOUTHWEST PAVILION
EVOLUTION OF PREHISTORIC CULTURES
 NATURAL HISTORY OF MAN

Continuing west we pass into the Southwest Pavilion, given over to a demonstration of the chronological development of the principal human arts and industries initiated before the days of written history, the era of the Cave Man and the Lake Dweller. The section of the hall to the left, or south of the center aisle, is devoted to the Old World, while the section to the right is given to the New World. There are four rows of table cases in the hall and each row or tier constitutes a unit, or part of a unit, and should be examined in order, beginning next the entrance and going towards the opposite west wall.

The first table case on the left gives a key exhibit for the Old World. Here is shown the order of development of several of the most common tools, weapons, utensils, and ornaments, ranging, as in the case of the ax, from crude "eoliths" many thousands of years old up the metallic forms more or less like those in use at the present time. The various stages of improvements are arranged in levels and new forms of tools, with correspondingly new arts and industries, will be seen to make their appearance in each of the successive levels, as the case is viewed from front to back, beginning at the left end. The succeeding cases in this row take up all the different levels here indicated, treating each one as fully as the available archaeological material permits.

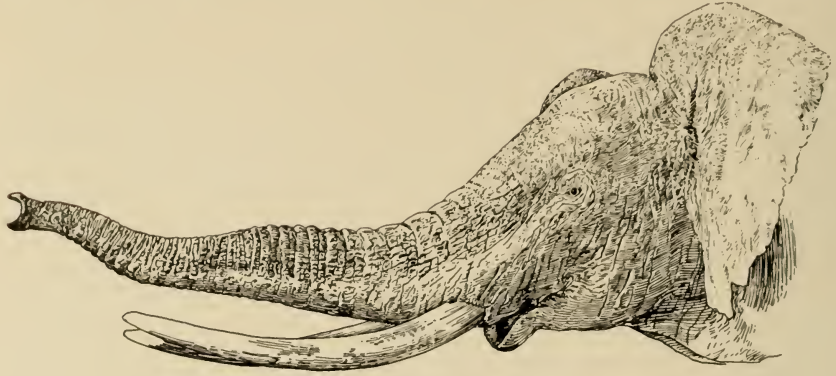
The adjoining row of cases on the left, next the windows, gives the stratigraphically determined order of cultural development for several separate localities in the Old World, such as France, the Baltic region, Switzerland and Egypt. Here are shown the fragmentary, but strictly scientific, details of the story told in simplified form in the first row of cases.

The northern half of the hall, and the wall cases devoted to America, will when completed be arranged on the same general plan.

The wall frescoes are copies of early European cave art; those in the northern half are copies of American Indian art, most of late prehistoric date.

In the circular, or tower room, in the southwest corner, an exhibit for the racial history of man is in course of preparation. In the left wall case near the entrance to this room is an exhibit showing the important face and head differences in modern man and also the instruments and methods for measuring faces and heads. On the opposite wall is a similar demonstration for body measure-

ments. The adjoining cases on either side of the entrance to the tower contain the skulls and bones (casts) of fossil men, the ancestors of modern man. A more extensive exhibit is shown in the Hall of the Age of Man, Fourth Floor.



WEST WING

COLLECTIONS FROM AFRICA

Opening to the north from this hall of North American Archæology is the *African Hall*. This differs from other halls in containing besides ethnographical specimens a number of characteristic African mammals. The Forest Hogs, the rare Okapi and the so-called white Rhinoceros are particularly noteworthy, and three cases are devoted to Antelopes, characteristic of Africa, while on the west wall is a series of fine heads of African game animals presented by the heirs of E. B. Bronson. The future extension of the Museum will provide room for groups of African mammals, including elephants. The installation is roughly geographical, i.e., as the visitor proceeds through the hall from south to north he meets the tribes that would be found in passing from south to north of Africa, and the west coast is represented along the west wall, the east coast along the east wall.

There are three aboriginal races in Africa: the Bushmen, the Hottentots, and the Negroes. In the north the Negroes have been greatly influenced by Hamitic and Semitic immigrants and become mixed with them.

At the south end of the hall the wall is decorated with reproductions of cave-paintings made by the Bushmen, the most ancient and primitive of African natives.

Nothing is more characteristic of the Negro culture, to which the rest of the hall is devoted, than the art of smelting iron and fashioning iron tools. The process used by the African blacksmith is illustrated in a group near the entrance, on the west side, and the finished products, such as knives, axes and spears, are amply shown throughout the hall. The knowledge of the iron technique distinguishes the Negro culturally from the American Indian, the Oceanian and the Australian.

All the Negroes cultivate the soil, the women doing the actual tilling, while the men are hunters and, among pastoral tribes, herders. Clothing is either of skin, bark cloth, or loom-woven plant fiber. The manufacture of a skin cloak is illustrated by one of the figures in the group to the left of the entrance; bark cloths from Uganda are shown in the northeastern section of the hall, while looms and the completed garments are shown in the large central rectangle devoted to Congo ethnology. The most beautiful of the last-mentioned products are the "pile cloths" of the Bakuba, woven by the men and supplied with decorative pattern by the women. Very fine wooden goblets and other carvings, especially a series of ivories from the Congo, bear witness to the high artistic sense of the African natives, who also excel other primitive races in their love for music, which is shown by the variety of their musical instruments.

A unique art is illustrated in the Benin case in the northern section of the hall, where the visitor will see bronze and brass castings made by a process similar to that used in Europe in the Renaissance period. It is doubtful to what extent the art may be considered native.

The religious beliefs of the natives are illustrated by numerous fetiches and charms, believed to give security in battle or to avert evils. Ceremonial masks are shown, which were worn by the native medicine-men.

Return to Central Pavilion.

SOUTH CENTRAL WING

BIRDS OF THE WORLD

Going north we enter the hall containing the general collection of birds whose most striking feature is the Birds in Flight, examples of such **Birds of the World** powerful fliers as the Condor, Eagle, Ducks, Geese, and others, seen as we would see them in nature flying overhead. In the first four main cases on the right the 13,000 known species are represented by typical examples of the principal groups arranged according to what is believed to be their natural relationship. The



THE DODO—BIRDS OF THE WORLD

Restored from Old Dutch paintings. This gigantic, monstrous pigeon, was abundant in Mauritius when the island was discovered, but was quickly exterminated by the early Dutch navigators.

series begins with the Ostriches, the "lowest" birds (that is, those which seem to have changed least from their reptilian ancestors), and goes up to those which show the highest type of development, the Singing Perching Birds such as our Thrushes and Finches. The remaining cases on the right wall and all of those on the left show the geographical distribution of the bird fauna of the world. The specimens are grouped according to the great faunal regions, the Antarctic, South American



THE PTARMIGAN IN WINTER

One of a series of four small groups showing the bird's seasonal changes of colors brought about by molting and feather growth.

Temperate, American Tropical, North American Temperate, Arctic, Eurasian, Indo-Malay, African and Australian realms. These cases in connection with the accompanying maps give opportunity for a comparative study of the birds of the different parts of the world. In each region, as in the Synoptic Collection, the birds are arranged in their natural groups to the best of our present knowledge.

In the alcoves near the entrance are several cases containing birds which have become extinct or nearly so. The Labrador Duck, once a common visitor to our Long Island shores, became extinct for no known reason. The Great Auk and the Dodo were flightless species which bred in great numbers on small islands and were easily and quickly killed off by men. The Passenger Pigeon of North America lived by the million in such dense flocks that vast numbers were slaughtered with ease, but the last individual died in captivity Sept. 1, 1914. The Heath Hen formerly had a wide range on our Atlantic seaboard, but as a game bird it was so continually persecuted, in and out

Extinct Birds



LABRADOR DUCKS, NOW EXTINCT

From the Group in the American Museum.

of the breeding season, that it is now extinct except for a colony under protection on the island of Martha's Vineyard. Specimens of all of these birds are shown here, the Dodo being represented by an incomplete skeleton and by a life-size reproduction copied from an old Dutch painting. Others of our splendid game birds, such as the Trumpeter Swan and Eskimo Curlew, are nearly, if not quite, gone, and more, like the Wood Duck and Wild Turkey, will soon follow them if a reasonably close season and limited bag be not rigidly enforced. Still others—the beautiful Egrets and the Grebes, for example—have already gone far on the same road owing to the great demand for the plumage for millinery purposes.

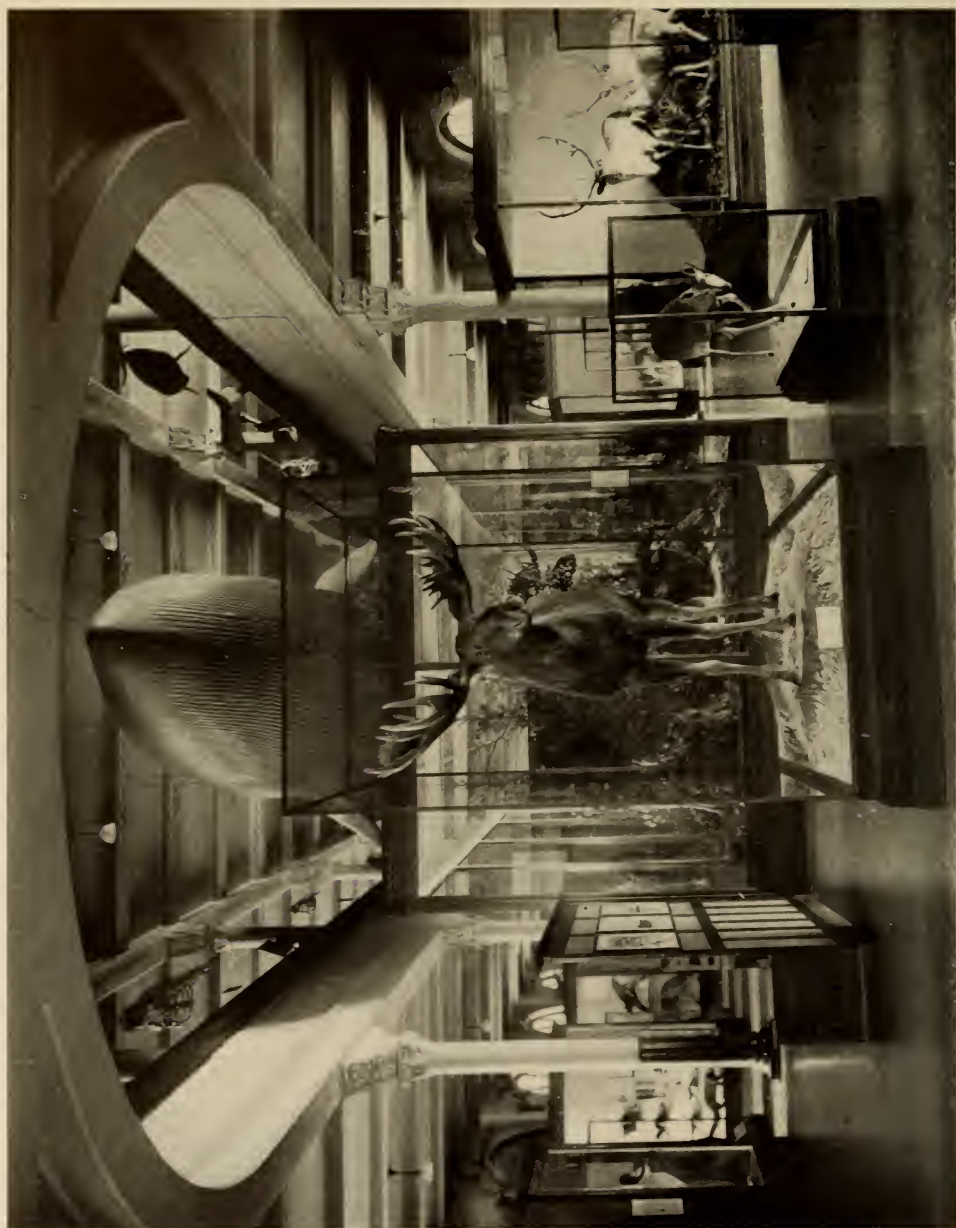
Also down the center of the hall, and in certain alcoves as well, are several cases designed to illustrate the general natural history of birds.

The widely different plumages (varying with age, sex, season, or all three) often worn by one species, will be found illustrated in the **General** Ptarmigan case and in the case containing Orchard Orioles, **Topics** Snow Buntings, Scarlet Tanagers and Bobolinks. The relationship between structure and habits, the many forms of bill, feet, wings, tail, etc., and the different ways of using them are illustrated in other cases, particularly by one showing the feeding habits of some birds. Other cases show instances of albinism, hybridism and other abnormalities; the excessive individual variation in a bird called the Ruff; birds of prey used by man in hunting; a few domesticated birds (an extensive collection of which will be found in Darwin Hall); the growth of the embryo and the structure of the adult bird; Archaeopteryx, the oldest fossil bird; and a map-exhibit of migration.

In the alcoves to the right the first egg case contains the Synoptic Collection of Eggs, which shows the variation in the number in a set. size, shell-texture, markings, shape, etc., and tells something of the laws governing these things.

Near the center of the hall is a collection of Birds of Paradise, presented by Mrs. Frank K. Sturgis. This family of birds confined to New Guinea, Australia and some neighboring islands, though related to the crows is noted for gorgeous plumes, wonderful as well in variety of form and position as in beauty. For these plumes the birds are still being killed in such large numbers that unless the demand for them soon ceases all the finer species will be exterminated, as the Great Bird of Paradise is already believed to be. More Birds of Paradise have been sold at a single London auction (23,000 in two sales) than are contained in all the museums of the world.

Many of these groups are, or are fast becoming, records of past conditions: as pointed out the lower part of Klamath Lake has been unwisely drained, since the land is useless for farming, and the birds shown in the group have gone; the Newark marshes are being filled in for factory sites. The growth of population and taking up of land for agricultural purposes unavoidably crowds out some birds, lawless shooting lessens their numbers while predatory cats are responsible for the destruction of many during the breeding season. Museums are sometimes charged with responsibility for the lessening number of birds since some of them have collections of 100,000 or more skins. But these have been taken over a wide extent of territory during many years and they are carefully preserved for study. But for museums future generations would know nothing about many of our birds and other animals, and save for the groups in this and other museums literally millions of people would have no opportunity to see them in their native haunts.



ALLEN HALL OF NORTH AMERICAN MAMMALS

SOUTHEAST WING

MAMMALS OF NORTH AMERICA

Continuing east beyond the elevator corridor, we enter Allen Hall devoted to North American mammals. At the right of the entrance is a bronze tablet in memory of Dr. J. A. Allen who, for thirty-six years, was Curator of the Department of Mammals. Something like 2,000 kinds or



BISON COW AND CALF A CHARACTERISTIC NORTH
AMERICAN MAMMAL

species and subspecies of mammals have been described from North America, and the purpose of the exhibits is to show those that are peculiar to that region or characteristic of it, the more important, or more striking, being displayed in groups that tell something of their home life or of the region in which they live. The individual specimens give some idea of the variety of species found in North America; the smaller groups are largely devoted to the mammals that are, or were until recently, found within fifty miles of New York City.

The first mammal to catch the eye is the Giant Moose of Alaska. Back of this is a group of Moose from New Brunswick, and beyond **Moose** this the American Bison; these groups, mounted years ago, **Bison** are still among the finest as well as the largest examples of their kind. See *Leaflet* "The Story of Museum Groups."



THE WEASEL IN WINTER

One of the groups representing the small mammals found within fifty miles of New York City. The others of the series show opossum, red and gray foxes, skunk, mink, muskrat, woodchuck, rabbits and squirrels. The list includes some "fur-bearing" species; weasel fur is often used instead of ermine and the muskrat has become one of the most important species.

Immediately at the left of the entrance are the Grizzly and Alaska Brown Bears, the latter the largest members of the family. The larger groups in their order are the Virginia Deer, Timber Wolf, Beaver, Rocky Mountain Goat, Roosevelt Elk, Mountain Sheep, Puma and Pronghorn Antelope. The habitat groups proper show the animals in some characteristic occupation and, whenever possible, in a family

group. The smaller groups, mostly shown in floor cases, include a number of species "found within fifty miles of New York." Among them are the Skunk and Opossum, Gray Fox and Brown Bat, Weasels, summer and winter pelage; Otter and Mink, Coney and Say's Chipmunk, Pack Rat and Jack Rabbit, Red Fox, Woodchuck, Chipmunk and Flying Squirrel, Rabbit, Hare and Red Squirrel, Coyote and Wild Cat.



PART OF PRONGHORN ANTELOPE GROUP

This animal is peculiar to North America and is the only hollow-horned ruminant in which the horn sheaths are shed yearly.

The Opossum, noted for its cunning and tenacity of life, is the sole representative in the United States of the Marsupials, or pouched **Opossum** mammals. The skunk is a useful, though much abused **and Skunk** animal, now valuable for fur which is sold under the euphonistic name of Alaska Sable. While it occasionally destroys poultry and other birds, its principal food consists of injurious insects and field mice. Its defensive weapon is an excessively fetid fluid secreted by a pair of glands situated near the base of the tail. It has the ability to eject this fluid to a considerable distance.



ON THE TRAIL, TIMBER WOLVES IN COLORADO
Group designed by Hobart Nichols and executed under his direction

The Virginia, or white-tailed deer, found over a large part of North America, is shown in its summer coat; other species of our deer are displayed in the adjoining cases and some beautiful albinos may be found in the hall above.

Weasel, The weasel, in summer and winter dress, the otter and
Otter the mink are three important fur-bearing animals still
and Mink found near the towns and cities. Weasel fur is often used in place of ermine.

One of the most beautiful and at the same time simplest groups in the Museum is that showing part of a pack of timber wolves following the tracks of deer. *See page 62.*

Opposite this is a group of Muskrats. Owing to its wide distribution, the rapidity with which it breeds, and the growing scarcity and increasing demand for furs, the muskrat has become one of the most important of fur-bearing animals and its skins are sold literally by the millions.

The cats, wolves and foxes, and the host of small creatures like bats, moles, squirrels, rats and mice, are represented by numerous characteristic examples. Here are the jaguar, the largest of the American cats, the puma, the well-known coyote or prairie wolf and the little-known white Arctic wolf from the extreme north of Greenland. Here too is the Arctic fox in its two-color phases, the valuable blue and the more common white, the one bringing as much as \$140 for fur, the other worth only \$12 to \$60.

The beaver, formerly the most important from a commercial standpoint of North American mammals, and one intimately connected with the early history and exploration of the continent, is represented actively at work.

At the end of this hall is a group of Roosevelt elk found in the Coast Range from British Columbia to Northern California. Once abundant, they have become much reduced in numbers, though an effort is now being made to preserve them. On the opposite side of the hall are the mountain sheep or bighorns.

Roosevelt Range from British Columbia to Northern California.
Elk and Once abundant, they have become much reduced in numbers,
Mountain though an effort is now being made to preserve them. On
Sheep the opposite side of the hall are the mountain sheep or bighorns.

Pronghorn The handsome pronghorn antelope, peculiar to North
Antelope America, once found in vast numbers on the western plains, is now verging on extinction.

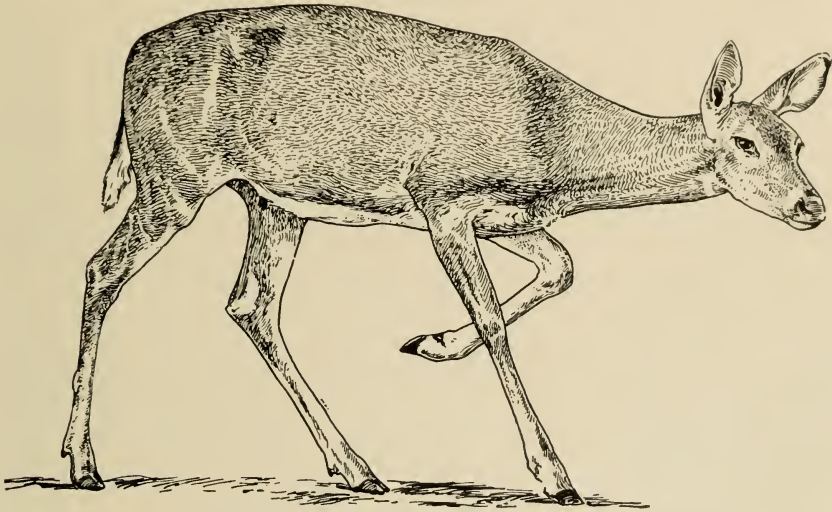
Peccary The peccary, one of two species of the pig family peculiar to America, is really an intruder from South America. Though naturally vicious, it is readily tamed.



THE AMERICAN BEAVER

This shows the work and home life of the beaver. The old beavers are cutting trees for food and for building dams and houses. In the foreground is a house with part torn away to show the little beavers within. Beavers generally build their houses in the water, but where they are not molested they often construct them on land as shown here.

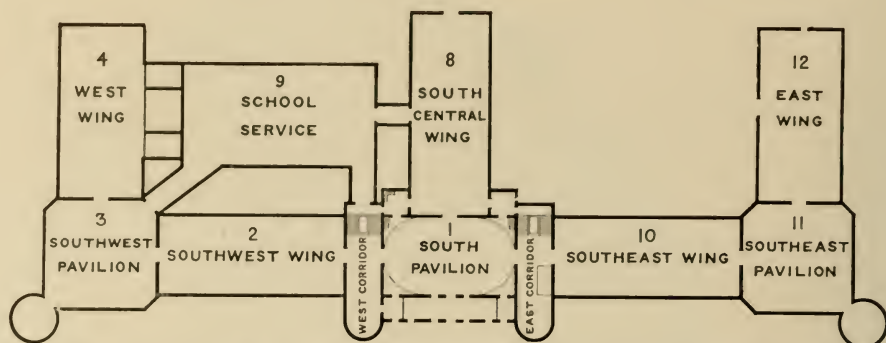
Several species of caribou or reindeer are shown: Grant's caribou from western Alaska, the fine woodland caribou which inhabits Newfoundland, and Peary's caribou, the smallest and northernmost of the group. Although fourteen species of caribou occur in North America, none has been domesticated, though the species brought from Siberia by our Government to furnish food and transportation has increased rapidly.



THE VIRGINIA DEER—A CHARACTERISTIC NORTH AMERICAN MAMMAL

Line drawing from the mounted specimen. This Virginia doe stands as the first example in the Museum of the new methods of animal sculpture as opposed to the old taxidermy. It was mounted and presented by Carl E. Akeley in 1902.

Return to the Elevators and ascend to the Third Floor.



1 Hall of Primates. Man and Apes. 2 Antiquities of Peru. 3 Arts and Industries of China.
 8 Groups of North American Birds. 10 Mammals. 11 Insect Life. 12 Reptiles.

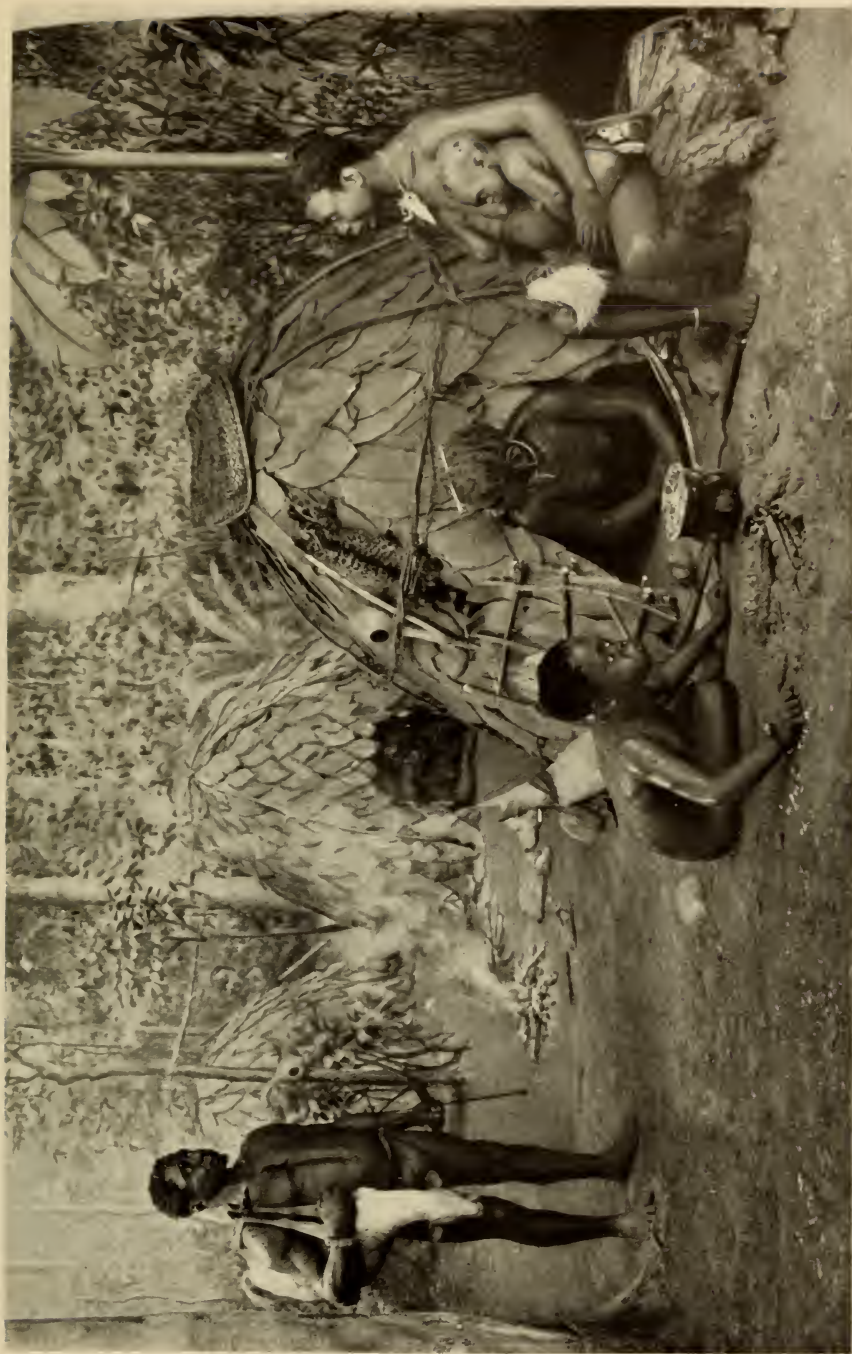
THIRD FLOOR EAST CORRIDOR

To the left of the elevators is a room set apart for the use of honorary or subscribing members of the Museum where they may leave their **Members' Room** wraps, rest, write letters, or meet their friends. It contains the portraits of the Presidents of the Museum and of Mr. Choate and Professor Bickmore who played a most important part in the founding of the Museum. Here too may be found books by members of the Museum staff, in many cases based on or describing the expeditions in which they have taken part.

SOUTH PAVILION. APES, MONKEYS AND LEMURS

The Systematic Series of Primates, intended to give some idea of the number of species in this order, and their range in size, form and color, begins on the left with examples of man and is continued in the wall cases around the room, ending with the lemurs. Noteworthy among these is the Gorilla, largest and most powerful of apes, "Mr. Crowley," a chimpanzee for many years a resident of the Central Park Zoo, the curious "Proboscis" monkey from Borneo and, most interesting of all, the little gorilla known here as John Daniel, famed for his intelligence and docility.

Facing the entrance is being installed a series of typical examples of the principal groups of Primates illustrating also their mode of progression and emphasizing the point that man is the only member that stands upright, whose forelimbs take no part in locomotion, and who has perfectly developed hands.



AFRICAN PYGMIES

Group in the Hall of Primates

Figures by Frederick Blaschke, Back ground by Charles Corwin

On one side of this case is a group of the beautiful horse-tailed monkeys, which are threatened with extermination owing to the demand for their fur, and on the other a troop of South American Spider Monkeys.

The closed corridor contains a few groups of Primates characteristic of various parts of the world, Africa, Asia, South America and Madagascar, and a group of African Pigmies, a "low" race to be contrasted with the "high" apes.

The African Red Monkeys are rolling up the moss, hunting for insects, and the Red Howling Monkeys are in their favorite home among the tree tops.

Outside the corridor, on the south side of the hall, is a group of Orang Utans from Borneo; this was one of the first groups of large animals to be mounted in this country and it was looked upon as a daring innovation.

On the south side of this hall is being installed a notable series of photographs of wild animals taken by members of the museum staff or presented by friends of the museum by whom they were taken in the field.

At the west, or farther end of the hall, a series of skeletons enables the student to study the comparative structure of the Primates and note the changes that take place in passing from Lemurs to Man.

The fruit bats, often known as flying foxes, the largest members of the order, and found only in the warmer parts of the Old World, are presented by a small portion of a colony from Calapan, Philippine Islands. Such a colony may number several thousands, and be very destructive to bananas and other fruits.

Temporarily placed in this hall is a small exhibit of domesticated dogs which though small includes some noteworthy examples of various breeds. These are of interest both as showing the effects of breeding, selection by man, and as noting the changes brought about by fashion. Some breeds have almost disappeared. There is no example of the once popular Pug, which as well as the Black and Tan is now rare, and the Newfoundland is practically extinct in the United States. On the other hand the Police or Shepherd dog is now common and the Toy Pomeranian has been "created" comparatively recently.

Occupying the stairway and adjoining walls is the Audubon Gallery, a noteworthy collection of objects illustrating the life and work of John James Audubon. This includes paintings by J. J. Audubon and his son John Woodhouse Audubon, mainly for the *Quadrupeds of North America*, some of the copper plates from which



JOHN GORILLA OR JOHN DANIEL

The well-known little Gorilla for several years a member of Miss Cunningham's household.



THE ORIZABA GROUP

The observer is looking across the valley of the Rio Blanca, over the tropical forest, to Mount Orizaba.

the *Birds of America* were printed, and a portrait of Robert Havell who engraved them. Of special interest are the portraits of Audubon, including that by John W. and Victor Audubon, so extensively copied. Of more personal interest are the guns carried by Audubon on many of his expeditions and the buckskin suit he wore. These objects were mainly presented by his granddaughters, Maria R. and Florence Audubon, but the largest piece, a covey of pheasants, was given by Miss M. Eliza Audubon, and other gifts have been received from Doctor Edward H. Rogers, Miss Anna E. Roelker, and Robert Havell Lockwood.



DUCK HAWK ON PALISADES OF THE HUDSON

Realism and artistic effect have been achieved in the "Habitat Bird Groups," and they present vividly many stories of adaptation to environment.

SOUTH CENTRAL WING BIRD GROUPS

Here are the "Habitat Groups" of North American birds. This unique series of groups shows the habits of some typical American birds in their natural haunts. The groups have been prepared under the immediate direction of Frank M. Chapman, curator of ornithology, who collected most of the specimens and made practically all of the field

studies necessary for their reproduction. In the course of this collecting, he traveled more than 60,000 miles. The backgrounds are reproductions of specific localities, painted from sketches made by the artist who usually accompanied the naturalists when the field studies for the groups were made. Practically all sections of the country are represented; thus the series not only depicts characteristic bird-life of North America, but characteristic American scenery as well. The backgrounds of the groups were painted by Bruce Horsfall, Charles J. Hittell, Hobart Nichols, Carl Rungius, W. B. Cox and Louis A. Fuertes. The foliage and flowers were reproduced in the Museum laboratories from material collected in the localities represented. Each group is fully described in the label attached to the case. [See *Guide Leaflet* No. 28.] Beginning with the case at the right of the entrance and passing on to the right around the hall, we find the groups arranged in the following sequence:

The distribution of birds, notwithstanding their powers of flight, is limited in great measure by climate. Thus in traveling from Panama **Orizaba** north to Greenland there are zones of bird-life corresponding **Group** to the zones of temperature. This condition is illustrated on the mountain of Orizaba in Mexico, where in traveling from the tropical jungle at its base to its snow-clad peak the naturalist finds zones of life comparable with those to be found in traveling north on the continent. Thus the Orizaba group, so far as the distribution of life is concerned, is an epitome of all the groups in the hall.

Among our most beautiful and graceful shore-birds are the terns and gulls, which (because of their plumage) have been so ceaselessly hunted **Cobb's Island** and slaughtered for millinery purposes that now in their **Group** breeding-places there are only hundreds where formerly there were thousands. The group represents a section of an island off the Virginia coast one of the places where the birds are now protected by law.

The duck hawk may be found nesting on the Palisades of the Hudson almost within the limits of New York City. It builds nests on the ledges **Duck Hawk** of the towering cliffs. This hawk is a near relative of the **Group** falcon which was so much used for hunting in the Middle Ages. It often comes into the city for pigeons.

In August and September the meadows and marshlands in the vicinity of Hackensack, New Jersey, formerly teemed with bird-life, but **Hackensack** this is rapidly disappearing before the march of "improve-
Meadow ments." In the group showing these Hackensack meadows
Group are swallows preparing to migrate southward, bobolinks or "rice birds" in autumn plumage, red-winged blackbirds, rails, wood ducks and long-billed marsh wrens.

The wild turkey is a native of America and was once abundant in the wooded regions of the eastern portion of the United States, but is **Wild Turkey** now very rare. It differs slightly in color from the Mexican **Group** bird, the ancestor of our common barnyard turkey, which was introduced from Mexico into Europe about 1530 and was brought by the colonists to America. (Reproduced from studies near Slaty Forks, West Virginia.)

The great blue heron usually nests in trees. The bird flies with its neck curved back on its body and because of this habit can readily **Florida** be distinguished from the crane, with which it is frequently **Great Blue** confounded. (Reproduced from studies near **Heron Group** St. Lucie, Florida.)

In the "bonnets" or yellow pond-lily swamps with cypresses and cabbage palmettoes, the shy water-turkey builds its nest. It receives **Water Turkey** the name "turkey" from its turkey-like tail, and the **or** title "snake-bird" from its habit of swimming with **"Snake-bird"** only the long slender neck above water. (Reproduced **Group** from studies near St. Lucie, Florida.)

The sandhill crane builds its nest of reed in the water. Unlike the **Sand-hill** herons in this respect, it differs also in its manner of **Crane Group** flight, always stretching its neck well when on the wing. (Reproduced from studies on the Kissimmee Prairies of Florida.)

Pelican Island, on the Indian River of Florida, has been made a reservation by the United States Government and these grotesque birds **Brown Pelican Group** now breed there in comparative safety, though at times disturbed by thoughtless tourists and twice suffering loss from storms and other natural causes. The view shows a section of the island at the height of the nesting season. Notwithstanding the hundreds of young birds that are clamoring for food, observation has shown that the parent bird can pick out its own offspring with unfailing accuracy. (Reproduced from studies at Pelican Island, Florida.)

This beautiful bird has been brought to the verge of extinction in this country through the use of its "aigrette plumes" for millinery **American** purposes, and is now confined to a few protected rookeries **Egret Group** of the South. The birds have these plumes only during the nesting season, at which time the death of the parent means the starvation of the young. (Reproduced from studies in a rookery of South Carolina.)

The turkey vulture, or "buzzard," is one of the best-known birds of the South, where it performs a valuable service in acting as the scavenger **Turkey** of the streets. On this account it is protected by law and **Vulture** by public sentiment and has become both abundant and **Group** tame. (Reproduced from studies at Plummer Island in the Potomac River, near Washington.)



BROWN PELICAN GROUP

One of the Habitat Groups of North American birds and by many considered the most effective. Although protected by law the existence of the colony has been threatened by high tides and hot weather, as well as by fishermen who have destroyed the nests or caused the birds to leave.

The California condor is the largest and one of the rarest of North American birds. It is not so heavy as the condor of the Andes, but has a slightly greater spread of wing, eight and one-half to eleven feet. In the group the visitor is supposed to be standing in the interior of the cave, where the bird has its nest, and is looking down on the river of the cañon, which is more than five thousand feet below. (Reproduced from studies in Piru Cañon, California.)

The foreground of the group shows a detail of the island that is painted in the background. The young birds are feeding, and it will be noticed that one fledgling is reaching well down the mother's throat after the predigested food. (Reproduced from studies at Monterey, California.)

Formerly this area was an arid place with a characteristic desert bird fauna. Now the ranchmen have irrigated the land and aquatic bird-life abounds. This group is a good illustration of the influence of man on the bird-life of a region.

There were estimated formerly to be two thousands nests in this colony but of late years its numbers have been greatly reduced by taking the young for food. The flamingoes construct their nests by scoping up mud with their bills and packing it down by means of bills and feet. The nests are raised to a height of twelve or fourteen inches; this protects eggs and young from disasters due to high water. Only one egg is laid in the nest, and the young is born covered with down like a young duck and is fed by the mother on predigested food. The brilliant plumage of the adult is not acquired until the fifth or sixth molt. (Reproduced from studies in the Bahama Islands.)

In this group is shown a portion of a coral islet on which three thousand boobies and four hundred man-of-war birds were nesting, the former on the ground, the latter in the sea grape bushes. (Reproduced from studies in the Bahama Islands.)

The abundance of bird-life in one of these rookeries is quite astounding. In this group are roseate spoonbills, snowy egrets, American egrets, little blue herons, Louisiana herons, ibises, cormorants and water-turkeys. Because of the great inaccessibility of this island it has been one of the last places to feel the depredations of the plume-hunter. (Reproduced from studies in the Everglades of Florida.)

The golden eagle is one of the most widely distributed of birds. In North America it is now most common in the region from the Rockies **Golden Eagle** to the Pacific Coast, although it is found as far east as **Group** Maine. Stories to the contrary notwithstanding, the eagle never attacks man, even though the nest is approached.

Its food consists of rabbits, squirrels, woodchucks and occasionally sheep. (Reproduced from studies near Bates Hole, Wyoming.)



THE WHOOPING CRANE

A bird almost extinct. Shown in the "Habitat Groups."

The whooping crane is so nearly exterminated that not only was **Whooping Crane** it impossible to obtain a nest and young, but it was necessary to use old birds taken many years ago.

The abundance of bird-life in this western lake beneath Mt. Shasta, which is seen in the center of the background, is astonishing. Here is **Klamath Lake Group** an example of how the normal nesting habits of a bird may be changed by its being driven into a different locality. It is sad to record that the breeding ground shown here, with its wonderful bird-life, has been destroyed by ill-advised drainage. In the group are white pelicans which usually make a nest of pebbles, Caspian terns, which commonly build their nests on sand, and cormorants that nest on rocks, all nesting together here on the tule or rush islets of the lake. (Reproduced from studies at Klamath Lake, Oregon.)

The scene represented in this group is above timber-line on the crest of the Canadian Rockies, 8,000 feet above the sea. Although these **Arctic-Alpine Bird-Life Group** mountains are in the temperate region, the altitude gives climatic conditions that would be found in the Far North, and the bird-life is arctic in character. Here are nesting the white-tailed ptarmigan, rosy snow finches and pipits. (Reproduced from studies in the Canadian Rockies.)

This group shows a stretch of western plateau covered with sage **Sage Grouse Group** brush. In this brush is seen the male sage grouse strutting and wooing a mate. (Reproduced from studies at Medicine Bow, Wyoming.)

The prairie chickens are akin to the common grouse. The group represents a typical scene during the mating season. The male birds go **Prairie Chicken Group** through most suprising antics in their efforts to attract the females. They inflate the orange-colored sacs on the sides of their necks, dancing and strutting about and uttering a loud, resonant, booming note. (Reproduced from studies near Halsey, Nebraska.)

The wild goose is one of the first birds to migrate north in the spring. It nests among the lakes of Canada even before the ice is **Wild Goose Group** melted. To secure the young birds for this group it was necessary to hatch the eggs of the wild goose under a hen, so difficult is it to find the young in nature. (Reproduced from studies made at Crane Lake, Saskatchewan, Canada.)

The grebes are aquatic birds which build their nests in the water. During the incubation period the parent bird usually covers the eggs **Grebe Group** with grass and reeds when leaving the nest. Nesting at the same lake with the grebes was the redhead, a duck which lays from fifteen to twenty eggs. (Reproduced from studies made at Crane Lake, Saskatchewan, Canada.)

The loon is justly famed for its skill as a diver, and can swim with great speed under water. Its weird call is a familiar sound on the northern New England lakes. Many loons pass the winter
Loon Group at sea fifty miles or more from land. (Reproduced from studies at Lake Umbagog, New Hampshire.)

This rocky island thirty miles from shore in the Gulf of St. Lawrence affords some protection to the sea birds which still nest in considerable
Bird Rock numbers on and in its cliffs, although the colony is a mere
Group shadow of what it was even fifty years ago. Seven species are shown nesting in the group—the razor-billed auk, Leach's petrel gannet, puffin, kittiwake gull, common murre and Brunnich's murre. (Reproduced from studies at Bird Rock, Gulf of St. Lawrence.) This was the Museum's first large group, though not completed as originally planned.

Return to the South Pavilion containing the apes and monkeys.

A noteworthy collection of objects relating to the life and work of John J. Audubon occupies the stairway hall. It includes original
Audubon sketches and paintings by Audubon and his sons, some of
Gallery the copper plates of "Birds of North America," illustrations in various stages from "The Quadrupeds of North America," and a portrait of Robert Havell, the engraver and publisher of the first edition of the "Birds." Of more personal interest is the gun carried by Audubon on many of his expeditions and the buckskin suit he wore. These objects were mainly presented by his granddaughters, Maria R. and Florence Audubon, but the largest piece, a covey of pheasants, was given by Miss M. Eliza Audubon, and gifts have been received from Doctor Edward H. Rogers, Miss Anna E. Roelker, Robert Havell Lockwood, and others.

SOUTHWEST WING

INDIANS OF SOUTH AMERICA

Passing through the west corridor, where some of the East Indian Mammals obtained by the Vernay-Faunthrope Expedition are temporarily placed into the adjoining hall to the west, we find the collections from South America. Just in front of the entrance is a case of striking ornaments of gold, fabled to have formed part of the treasure being assembled for the ransom of Atahualpa, but really made by a more northern race, the Chimus, and buried—we know not why. Other



PIECES OF CLOTH FOUND WITH PERUVIAN MUMMIES

The prehistoric Peruvians were familiar with modern weaves, including the finest gobelins, and produced highly decorative effects by harmonized colors and a repetition of woven-in designs. The Museum's collection of mummy cloths is one of the largest in the world, and is much used by teachers and students of art.

objects of gold or silver illustrate the skill of the ancient Peruvians in working these metals. The greater part of the hall is filled with archæological material illustrating the various forms of culture existing in Colombia, Ecuador, Peru, Bolivia and Chile, in prehistoric times. The remains found in Peru, in parts of Central America and in Mexico, show a degree of culture far in advance of that attained in any other part of this continent in prehistoric times. Unlike the ancient peoples of Mexico and Central America the Peruvians had no written language. They were



TREPHINED SKULLS FROM PREHISTORIC PERUVIAN GRAVES



PERUVIAN MUMMY BUNDLES AND MUMMY

The ancient Peruvians wrapped their dead in fabrics of fine cotton and wool, then covering with a sack of strong cloth. The mummy "bundle" thus produced was often given a "false head" of cloth filled with cotton or vegetable fibre. No attempt was made to preserve the bodies but climatic conditions in Peru have preserved these mummies and their wrappings during many centuries.

tillers of the soil and raised maize, potatoes, oca, quinoa, beans, coca and cotton. They had domesticated the llama, which was used as beast of burden. They excelled in the manufacture and decoration of pottery vessels, in metal work, and in textile fabrics. In the cases directly in front of the entrance the gold and silver objects such as beads, cups, pins and ear ornaments, show the high degree of skill attained in the beating, soldering and casting of metals. In weaving they were perhaps preëminent among prehistoric peoples, many of their specimens exhibited here being unsurpassed at the present day. The materials used were cotton and the wool of the llama, alpaca and vicuña. In the first cases on the right are examples of these textiles with looms and shuttles. [*Guide Leaflet* No. 46, Peruvian Art, deals with the meaning of the figures shown in textiles and pottery.]

The alcove cases are geographically arranged, showing exhibits from the north toward the south of South America, then up into the interior of the continent. In the wall cases extending across the entire western end of the hall will be found a remarkable collection from Nazca, Peru. The prehistoric people of Nazca excelled as colorists, particularly in the decoration of their pottery vessels, which are certainly the most beautiful so far discovered in South America.

On the south side of the hall is shown a collection from Ica, Peru. In this exhibit are some are and beautiful shawl-like garments of these prehistoric peoples, in a good state of preservation.

The special exhibits in the gallery rail cases include quipus used to keep accounts, charms and medicines, coca which was chewed with lime, and shells that were found in mummy bundles and in the graves. A number of the chicha jars are on exhibition on top of the cases.

In the first case to the left (south side) is a collection of skulls showing many examples of trephining, artificial deformation, and pathological conditions, together with a number of normal Peruvian skulls for comparison.

The wall case at the left of the entrance contains mummy bundles and various objects showing the burial customs of the Peruvians. In no part of America are found so many and so extensive burial places as in the coast region of Peru. Here were interred countless thousands of the ancient dead. In the *huacas* or graves, with the bodies, were placed such articles as had been most useful and highly prized during life, and such as it was considered would be most serviceable in a future life.

To this custom we are indebted for no small part of our knowledge of the daily life of the ancient Peruvians. From the mummy bundles and

graves all the objects in the extensive collections in this hall, illustrating their civilization, have been obtained. The wonderful state of preservation shown in the textile fabrics and other perishable materials from the coast regions is due to the extreme dryness of the climate and the nitrous character of the soil.

The mummy in the case at the west end of the room was found in a copper mine at Chuquicamata, Chile. The body is that of an Indian **Chilean Mummy** miner who was killed by the falling in of rocks and earth while engaged in getting out the copper ore (atacamite) used by the Indians in making implements and ornaments in prehistoric times. The tissues of the body have been preserved by copper salts with which it is impregnated. The implements he was using at the time of his death are shown beside him in the case.

On the south side of the hall are the ethnological collections from Brazil, British Guiana, Paraguay and Colombia. War implements, basketry, featherwork, musical instruments, etc., are arranged in these cases.

The archæological collections from the West India Islands have been temporarily placed in this hall, and will be found on the south side.

West Indies The largest and most interesting of these collections is from Porto Rico. It contains many of the "stone collars" concerning the use of which so many ingenious theories have been published and nothing actually known.

SOUTHWEST PAVILION

CHINESE AND SIBERIAN COLLECTIONS

If we pass on into the hall at the extreme west end of the building, we find collections from eastern and northern Asia. Specimens illustrating **Collections from Asia** the culture, industries, religion and manufactures of China are on the left; others showing the mode of living, the costumes, and the war implements of Siberia, are on the right, while in the tower will be found exhibits from Japan.

The furwork, costumes and rugs of the people of eastern Siberia reveal remarkable skill in workmanship. Two models show respectively summer and winter scenes in Siberia. In the rear are collections from the Ainu and the Amoor River tribes noted for decorated fabrics and picturesque costumes. Swinging frames contain a large series of fabric designs.

The collections on the left side of the hall deal mainly with the everyday life of the modern Chinese and have a special value, as they were made just before the sweeping changes of the last few years took place. These abolished many of the customs in which these objects were used; for example, the series of weapons and objects showing the tests to which a soldier was submitted on entering the army have been rendered obsolete by the introduction of modern weapons and tactics. Bamboo,



ANCIENT CHINESE BRONZES

porcelain, basketry, inlaid work, cloisonné enamel, agricultural implements, carvings in wood, ivory and stone, and embroidery, are shown to advantage.

A special collection of great value is found in the ancient bronzes shown in the wall cases near the entrance, and in one of the alcoves on the west side is a series of objects from Tibet, illustrative of the costumes and religious rites of that little-known region.

An exhibit of Japanese objects is being installed in the adjoining tower room.

Return to the elevators.

SOUTHEAST WING

MAMMALS OF THE WORLD

Proceeding east from the hall where the apes and monkeys are, we pass the elevators to enter the hall of the *Southeast Wing*, devoted mainly to a series of exhibits illustrating the characters of mammals, their principal groups, or orders, the main subdivisions of these, known as families, and various interesting peculiarities of habits and structure. Each family is, so far as possible, represented by a mounted specimen and a skeleton. Walking around the room from left to right one passes from the egg-laying Platypus to man, represented by the figure of an Australian native, armed with the characteristic boomerang. Incidentally one sees among other things the modifications of form and structure for various modes of locomotion, notices the superiority in brain of mammals over other vertebrates, learns that animals that outwardly look alike may be very distantly related, sees illustrations of albinism and melanism, is shown how the coat of the hare changes from brown to white, and adaptations of plants and animals to a desert habitat.

Of special note are the skeleton of Jumbo, the largest elephant ever brought to this country, and the skull of the largest elephant shot by a woman. The latter was killed near Mt. Kenia by Mrs. Akeley and has tusks weighing respectively 112 and 115 pounds.

Above the cases is a frieze representing marine scenes, which serves as a background for groups of porpoises and dolphins. The most striking object in the hall is the life-size model of a sulphur-bottom whale, seventy-nine feet in length. The original of this specimen was captured in Newfoundland, and the model is accurately reproduced from careful measurements. This huge creature is not only the largest of living animals, but, so far as we know, the largest animal that has ever lived; a specimen of this size weighs from sixty to seventy tons, twice as much as *Brontosaurus*. Although whales and porpoises live in the water, they are not fishes, but are warm-blooded and breathe by means of lungs, not gills. The whale must come to the surface to breathe and the so-called "spouting" is merely the result of the warm air being expelled from the lungs when he breathes. A whale does not spout *water*, as is commonly supposed.

Recent additions to the Museum building include a large hall to contain whales and other marine animals in which are shown reproductions of porpoises and skeletons of whales. [See *Hall of Ocean Life*.] In the rail cases are exhibits which aim to give the visitor a general idea of the enormous class of insects; when finished it will include representa-

tives of the principal families, exotic as well as native. Special exhibits of the common butterflies found near New York City, another of the Moths of the Limberlost, and another of spider webs have been installed and several sections are devoted to silk, looking at it from both the entomological and human view points.

Species from the eastern United States are arranged with extracts from Dr. Lutz's "Field Book of Insects" as labels, and a collection of insects from a suburban yard shows how many species may be literally taken at our doors. Exotic insects will be added later. There are nearly half a million species of insects in the world so that, even when finished, this series can contain only a small part of the total. Furthermore, many of the species would fade rapidly if exposed to the light. The general study collection of insects is on the fifth floor, and while it is not on exhibition, the curators will be glad to show it to visitors who can make use of it. See the Southeast Pavilion for the study collection of local insects.

SOUTHEAST PAVILION

HALL OF INSECT LIFE

Proceeding east, we enter the *Insect Hall*. The installations in this hall point out the relationships, through origin and mode of life, of insects to each other and to the other members of the Animal Kingdom, especially to man. The exhibits are arranged in a continuous series, and are numbered so that we can easily follow the plan beginning at the pillar farthest to the left and making two complete circuits of the hall.

First is an introductory section illustrating by diagrams the importance of insects as shown (a) by the large number of species compared with other animals [there are more species of insects than of all other animals put together] and (b) by their great influence on human interests. In the United States the economic loss by insects is more than five times as great as by fire, and there are more than twelve times as many deaths from insect-borne diseases as from railroad accidents. On the other hand, many of our crops and all beautiful flowers are largely dependent upon pollination by insects.

Following this are a number of sections illustrating the anatomy of insects, explaining the terms used in the classification of insects, and exhibiting typical examples of the principal families.



THE BUTTERFLY GROUP

The Monarch Butterfly — migrating; the group contains over 1200 Specimens.

After a number of sections devoted to general phases of entomology, such as the relationships of insects to each other and to other invertebrates, the color of insects, the four stages of an insect's life history, and the seasonal activity of insects, a series of exhibits is given which shows the principal insects of special situations and plants.

The exhibits concerned with insects associated with special plants lay emphasis upon those of economic importance and are followed by a study of household insects, insects and disease, and insecticides. It is shown that man's efforts to combat noxious insects are supplemented by the activities of lower mammals, birds, fish, reptiles, and of insects themselves.

Although certain insects destroy plants, some plants destroy insects. These and other ecological interrelations of insects and plants, including pollination, are shown on the east side of the hall.

Among insects are found carpenters, masons, weavers, paper-makers, and other sorts of laborers. The making of silk is one of the principal insect activities, is shown in the adjoining hall.

Following this, such subjects as art, the Bible and other literature, medicine and superstition in their relation to entomology are treated. Photographs and short biographies of prominent entomologists of the past are given.

Evolution is a large subject, but the principal points involved in the present-day theories are illustrated in a series of sections treating such problems as mimicry, protective coloration, adaptation, variation, mutation, geographic distribution, selection, and inheritance (Mendelism.)

The north side of the hall is devoted to social insects and their relatives. Here are found several groups showing the activities of these interesting creatures.

The final series includes a variety of things, being answers to the questions most frequently asked the curator by the general public.

Visitors desirous of studying the local insects more in detail are cordially invited to do so by consulting the nearly complete collection to be found in this hall under the custody of the New York Entomological Society. It is primarily intended to be an aid in identification of specimens and is not a part of the general exhibition series.



DRAGON LIZARDS OF KOMODO

The largest of existing lizards, reaching a length of nine feet and a weight of over 200 pounds
Obtained by Douglas Burden

EAST WING

HALL OF REPTILE LIFE

Dragon Lizards At the right of the entrance is a group of the great Dragon Lizards, or Giant Monitors from Komodo Island.

On the east side is the Systematic Series which includes characteristic examples of the various groups of Amphibians and Reptiles, such as Frogs, Salamanders, Lizards, Snakes, and Turtles.

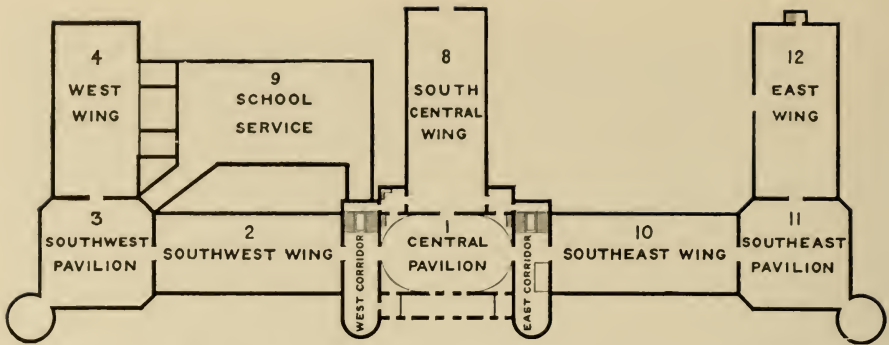
Alligators and Crocodiles Down the center are noteworthy specimens of Turtles, Alligators, and Crocodiles.

Other exhibits illustrate the anatomy of reptiles, show how they are believed to be acted upon, or changed by their surroundings, the "influence of environment," how reptiles feed, and various points in their life history.

More attractive to most visitors are the Habitat Groups, comprising reptiles of special interest shown as they would appear in nature, usually in some favorite or noteworthy locality. Here are **Habitat Groups** Marine Iguanas from the Galapagos that feed upon seaweed, and Rhinoceros Iguanas from the dry uplands of Haiti. The Gila Monster, Giant Tree Frog of Haiti, the Great Salamander, or Mud Puppy are the subjects of other groups.

There are a few "synthetic" groups which include several species that inhabit similar localities or have similar habits, but it should be understood that they are shown together for comparison and economy of room and not because they are found together in nature. This is particularly true of the great "Florida" group which shows many inhabitants of the streams, swamps, and uplands of the Gulf Coast. The New England Spring includes a number of species that might be found in a given locality at some time, but never all at one time. Finally, a special exhibit is devoted to the Amphibians and Reptiles found within fifty miles of New York City.

Return to the elevators and ascend to the Fourth Floor.



- 1 Age of Man. West Corridor—Modern Horses. 2 Gems and Minerals. 3 Pacific Islands,
 New Zealand. 4 Philippine Collections. 8 Geology. 10 Fossil Mammals.
 11 Under rearrangement. 12 Dinosaurs.

FOURTH FLOOR

FOREWORD ON FOSSIL VERTEBRATES

In a general way, fossils are the petrified remains of plants or animals that lived at some past period of the earth's history. Sometimes, as with the bones of the great Irish elk, the objects have been buried in swamps or bogs, and in a few rare instances, as with the mammoth and woolly rhinoceros, entire animals have been preserved for thousands of years in ice or frozen mud. Fossils are found in localities where the dead animals or plants have gradually been buried under layers of sediment to such a depth and for so long a time that they finally became petrified. Later, through upheaval and erosion, they are again brought to or near the surface of the earth. Petrification is the slow replacement of animal or vegetable material by such minerals as carbonate of lime or silica, which are carried in solution by the underground waters. The process is very slow and for this reason flesh is never petrified. Fossil beds are found in every continent. In our own country, Texas, Montana, Wyoming and the Bad Lands of South Dakota are famous for their large fossil beds, and many of the finest and rarest fossils in the Museum were obtained in these localities.

As it takes thousands of years for the various layers of earth to accumulate over the bones, and for the latter to become petrified, the study of fossils and the strata in which they are found is an important aid in determining the age of the earth and the succession of life thereon. The skeletons exhibited in these halls are of animals which lived from 30,000 to 20,000,000 years ago. To prepare a specimen for exhibition the matrix in which the bones are imbedded is carefully chipped away and the missing parts restored in cement and plaster. The bones are

then assembled as in life. In the specimens on exhibition the restored parts differ in color from the original parts of the skeleton and can readily be distinguished.

As a whole, the Museum collections of fossil vertebrates are believed to be the finest in the world, if we take into consideration not merely numbers, but also variety, quality and perfected methods of preparation and exhibition.

SOUTH PAVILION

HALL OF THE AGE OF MAN

The *South Pavilion* is devoted to early man and his contemporaries, the mammoths and mastodons and the giant ground sloths of South America. Down the center of the hall is the collection illustrating what is known of the early history of our own race as shown by the remains of early man and the implements used by him. As fossil remains of man are rare and usually very fragmentary, these are represented mainly by casts, but they include examples of all the more perfect and more noteworthy specimens that have been found, from the Neanderthal and Gibraltar, to the Piltdown and Talgai. [See *Leaflet* No. 52, *The Hall of the Age of Man*.]

On the left is a group illustrating the famous asphalt trap of Rancho la Brea and fossils from South America, the most striking of which is the group of giant ground sloths. There are also good examples of the Glyptodon, a gigantic relative of the armadillo, of the camel-like *Macrauchenia*, the rhinoceros-like *Toxodon*, and other strange extinct animals which evolved in South America during the Age of Mammals, when it was an island continent as Australia is to-day. Here, too, is the great sabre-tooth tiger, one of the host of northern animals that invaded the southern continent upon its union with the northern world, and swept before them to extinction most of its ancient inhabitants.

The principal exhibits on the north side of the hall are the mammoths and mastodons and the series of skulls showing the evolution of the elephant. The first skeleton is the Long Jawed Mastodon of the Pliocene, a predecessor of the true Mastodon in North America. The "Warren Mastodon" is a classic specimen. It was found near Newburgh, N. Y., in 1846, and is the finest specimen of its kind that has ever been discovered. Next to it is a fine skeleton of the mammoth; portions of skin, hair and other fragments of a mammoth



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CRO-MAGNON ARTISTS OF SOUTHERN FRANCE

Painting the procession of Mammoths in the Cavern of Font-du-Gaume. One of the Murals in the Hall of the Age of Man

carcass discovered in Alaska are also shown. While modern elephants are confined to portions of Asia and Africa, fossil remains of elephants and mastodons show that, at one time or another in the past, they were found over the greater part of the northern hemisphere.

[See *Handbook* No. 4, *Animals of the Past*, and *Guide Leaflet* No. 62, *Mammoths and Mastodons*.]

Around the walls is a series of paintings by Charles R. Knight, portraying some of the more striking animals that were contemporary with early man in Europe and America, and whose skeletons are shown below. Here are the Great Ground Sloths, the Woolly Rhinoceros, the Mammoth and Mastodon and the strange moose-like Cervalces.

SOUTHEAST WING

HALL OF THE AGE OF MAMMALS

FOSSIL MAMMALS OF THE TERTIARY PERIOD

The particular feature of this hall is the wonderful series in the first alcove on the right showing the evolution of the horse in nature. The **Evolution of the Horse** Museum is justly proud of this collection. Not only is it the largest and finest series of fossil horse skeletons in the world, but it is larger than the combined collections of all other institutions, and it contains the earliest known ancestors of the horse, the little four-toed *Eohippus*, which was no bigger than a fox and on four toes scampered over Tertiary rocks. As may be seen by an examination of the skeletons of the horse and man in another hall the modern horse walks on the tip of his middle finger and toe. The front hoof bone corresponds to the last joint of the third finger in the human hand, and the other bones of the leg correspond bone for bone with the structure of the finger, wrist and arm of man. In the Hall of Mammals is a series showing the corresponding bones in a variety of mammals. In the modern horse the remaining fingers or toes of the fore and hind foot have entirely disappeared, or remain only as vestiges, the so-called "splint bones." The structure of the modern horse shows that it developed from a five-toed ancestor. This ancestry has been traced back to the four-toed stage. [See *Guide Leaflet* No. 36, *The Evolution of the Horse*.]

In the wall case at the right of the entrance is given a synopsis of the evolution of the foot and skull of the horse and the geological age in which each stage is found. Across the alcove the visitor will find skeletons of *Eohippus*, the four-toed stage of the horse and the earliest form that



EVOLUTION OF THE HORSE
One of the panels showing the evolution of feet and skull.

has been discovered. These are specimens from the Wasatch and Wind River beds of Wyoming and may have lived 3,000,000 years ago. It is interesting to note that while there were no horses found in this country by the white settlers, America is the original home of the horse.

Passing from skeleton to skeleton the changes that have taken place in the development of the horse are easily distinguished. The exhibit is made more lifelike by plaster reconstructions of the animals and by water-color sketches showing primitive horses in their environment. These paintings and models are by Charles R. Knight. In the later types of the three-toed stage the two lateral toes have lost their original function of support and are gradually becoming vestiges. The three-toed horse in the center of the alcove is one of the most complete and finest examples ever unearthed.

Opposite the horse exhibit on the other side of the hall are series of specimens illustrating the evolution of the camel, deer and other cloven-hoofed animals. These animals, like the cow of to-day, walked on the tips of the third and fourth fingers, and the gradual disappearance or reduction to useless vestiges of the other fingers and toes can be traced, as in the horse series.

The large blocks, showing groups of skeletons of early camels, skulls and bones of primitive ruminants in their natural position in the rock, show how these specimens are sometimes found

Camels

Giant Pigs and raise questions as to how they got there, more easily asked than answered. The giant pigs, or

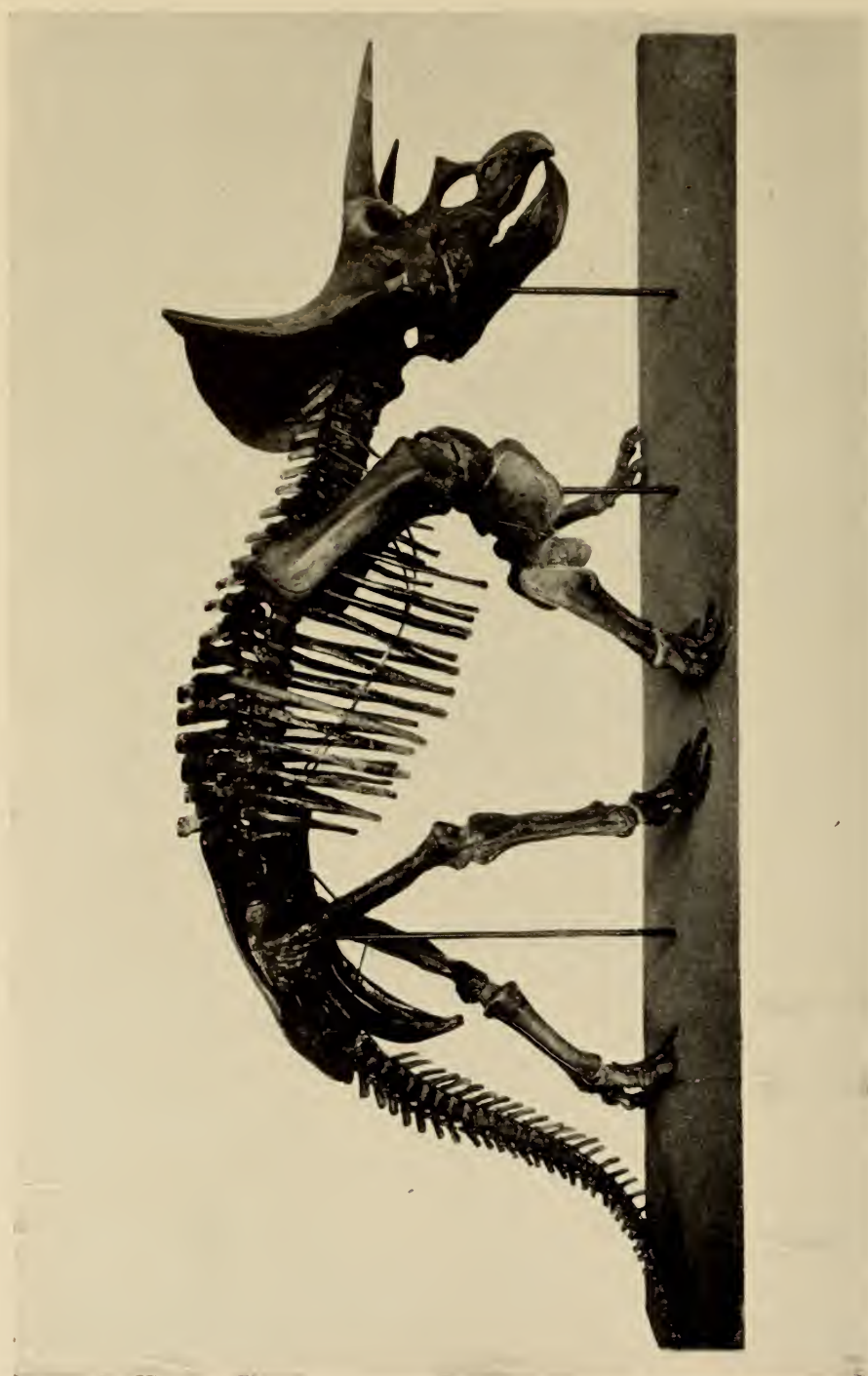
and Pigmy

Hippopotamus elotheres, and the pigmy hippopotamus will repay examination.

The primitive rhinoceroses are shown near the center of the hall on the right. As here indicated great herds roamed over the fields in the Tertiary Period and their fossil remains are found imbedded in the sandstones and clays of the badland formations. A block from Agate, Nebraska, containing remains of rhinoceroses, besides those of a few other animals, shows their wonderful abundance in bygone days. Opposite these are shown the ancestors of the dogs, cats and other carnivores and the Creodonts or Primitive Carnivores of the early Tertiary. Next to these are the small mammals—the insectivores rodents and marsupials; and the fossil lemurs and monkeys, fragmentary but interesting because of their bearing on the ancestry of man.

Rhinoceros

On the south side on the right are skeletons of titanotheres, on the left of uintatheres, huge, extinct, horned animals peculiar to North America.



HORNED DINOSAUR TRICERATOPS

SOUTHEAST PAVILION

This hall, later to be assigned to Cretaceous reptiles at present contains some of fossils obtained by the Third Asiatic Expedition; here are the famous dinosaur eggs and the skulls of some of the creatures that laid them; here also is the skull of *Andrewsarchus* the largest of carnivorous mammals and the skull and feet of *Baluchitherium* a distant and ancient relative of the rhinoceros, larger than an elephant.

EAST WING

HALL OF DINOSAURS

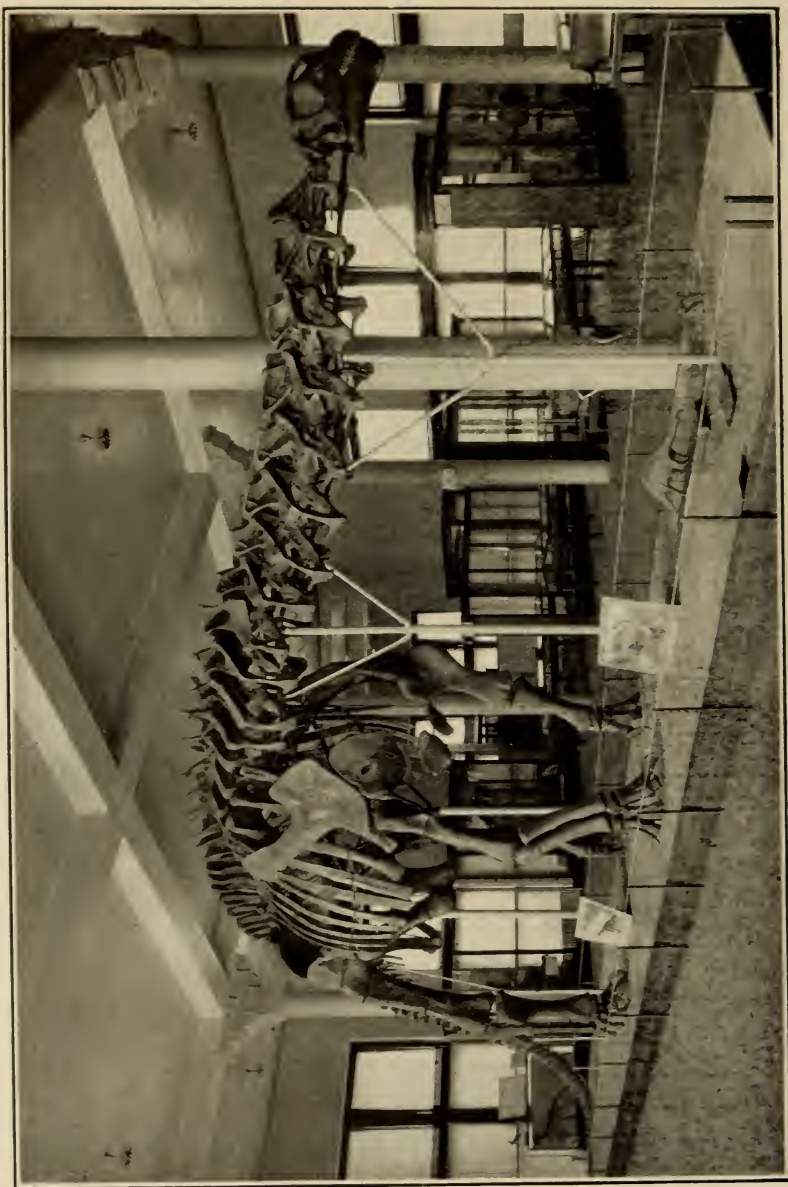
On the right and left of the entrance are two good-sized, lightly but powerfully built, flesh-eating dinosaurs known as *Gorgosaurus*. As shown by their build and hollow bones, they were doubtless swift and fierce and preyed upon their smaller, feebler fellows as Lions and Tigers to-day prey upon, Zebra, Antelope, and Deer.

Near these are examples of a rather small dinosaur whose legs and general build suggest an Ostrich with a long tail, and called on account of this resemblance *Struthiomimus*.

Triceratops, big lumbering, huge-headed, stupid creature was a plant eater, probably of coarse vegetation. His jaws ended, or began, in a great horny beak for clipping off branches and rushes, and his back teeth were adapted for champing them. These back teeth were arranged in many rows and were all the time pushed upward by new teeth forming below, so that as fast as teeth wore out they were replaced, a point in which *Triceratops* might well be envied. The fore legs, bowed outward at the elbows, enabled the animal to reach the ground with ease and the big "frill," suggesting a foreman's helmet, was not alone for protection, but served as a counterweight to the head and jaws, so the skull almost balanced on the condyle, or ball joint by which it joined the neck.

Across the way from *Triceratops* is a group of Dinosaurs which seems to have been very abundant in their day, *Trachodon* and his relatives, *Corythosaurus*, *Saurolophus*, and others. Among these is one of the rare prizes that sometimes fall to the lot of the collector, a specimen in which a large part of the skin has been preserved, so that we are certain as to the covering of the animal.

Towering above the others, his head eighteen feet from the ground, is *Tyrannosaurus* the well-named King of Reptiles, whose terrible jaws and tremendous claws placed all contemporaries at his mercy, though a too careless attack on *Triceratops* might result disastrously.



BRONTOSAURUS, THE THUNDER REPTILE

From the Jurassic of Wyoming. Sixty-six feet long, 15 feet high, weighed in life from 30 to 35 tons; a big Asiatic Elephant weighs 5 tons. This was the first large dinosaur to be placed on exhibition; the preparation and mounting of the skeleton occupied the better part of six years.



SOME OF THE FAMOUS DINOSAUR EGGS FROM MONGOLIA
Collected by the Third Asiatic Expedition

Looming up in the distance is Brontosaurus, the Thunder Reptile, big-bodied, small-headed, with massive limbs whose joints, in life covered with gristle, indicated that he was largely a water dweller, where the great weight of his body, 25 to 30 tons, would be supported.

Near-by Brontosaurus is Allosaurus, apparently turned into a fossil while munching on the tail of a defunct relative of that big beast; looking closely one sees that the tops of the vertebræ are scored with grooves where some millions of years ago it was feasted upon by some flesh-eating contemporary.

Two very extraordinary armoured dinosaurs are represented by only parts of their skeletons, Ankylosaurus which Dr. Lull has called "the most ponderous animated citadel the world has ever seen" had its head and body protected by thick plates of bone, while the tail instead of tapering to a point ends in a great ball of bone.

Beside Ankylosaurus is the fore part of Palaeoscincus whose sides bristled with huge, bony spines and back was protected by bony plates so that he too was well able to defend himself.

Return to Central Pavilion.

SOUTH CENTRAL WING

GEOLOGY AND INVERTEBRATE PALÆONTOLOGY

Turning northward at the center of the Quaternary Hall containing the mastodons and mammoths, the visitor enters the *South Central Wing* of the building and is in the Hall of Geology and Invertebrate Palæontology. Palæontology is the science of the ancient life of the earth; its field is the study of the fossilized shells and other hard parts and the various kinds of imprints left by the animals formerly inhabiting the seas and lands, and preserved in deposits which now form our stratified rocks. As normally the upper layers of a series of strata are more recent than the lower, the fossils reveal the succession of life forms in the earth's crust and thus are of the highest value and interest to the student of historical geology. Since, however, the remains of only a small proportion of the animals living at a given period are permanently preserved in the marine, river, lake and subaërial deposits of that period, the geological record of animal and plant forms is far from complete. Inasmuch as invertebrate animals are far less free in their movements than the vertebrate forms, they are accepted as the best determinants of the geological age of a bed or rock, even when remains of both kinds are found together. Invertebrate life, too, appeared on the globe far earlier than vertebrate, and remains of certain species are abundant in the lowest, "oldest," of our stratified rocks.

At the left near the entrance to the hall there has been installed a topographical or relief map model of the Bright Angel section of the **Grand Canyon Model** Grand Canyon of the Colorado. The scale is large enough to give the visitor a vivid idea of the extensive erosion that has taken place in a famous region where the geology lies spread out so plainly that he who runs may read.

Opposite the Grand Canyon model is one of Porto Rico and the Virgin Islands with the neighboring vast ocean "deeps." Farther on in the hall are the relief map models of Mt. Washington and vicinity, New Hampshire, showing typical glacial cirques and other glacial phenomena in an area of crystalline rocks; the Watkins Glen—Seneca Lake district of central New York State, showing moraine deposits and other features due to the advance and retreat of the continental ice sheet over a region of horizontal beds of limestone, sandstone and shale; and the Mt. Tom—Mt. Holyoke district in western Massachusetts, showing a great trough traversing the ancient crystalline rocks and later filled with the sands and muds deposited in Triassic time and their associated old lava flows. At the north end of the hall on the west side is the relief map model of the Standing Stone district near Monterey, Tennessee, showing normal subaërial erosion and the production of sink holes in a region of nearly horizontal conglomerate, sandstone, limestone and shale. These are part of a series of models which occupy the ends of the upright cases throughout the hall, illustrating the most evident and striking results of the action of geological forces.

In the desk cases down the center of the hall are about 8350 type **Types** and figured specimens used by James Hall, R. P. Whitfield and others in the original description and naming of species, or in their further elucidation.

The specimens in the cases on the left or west side of the hall are arranged to illustrate stratigraphic geology, beginning at the south **Stratigraphic or Historical Geology** (entrance) with the Archean rocks, which are the lowest and oldest of all and contain no fossils, and advancing regularly through the Cambrian, Ordovician, Silurian, Devonian, Carboniferous, Jurassic, Triassic, Cretaceous and Tertiary. Most of the specimens on exhibition are from American localities and the species are arranged according to their position in the scale of life, the lower, or simpler forms being placed first. The specimens shown are those particularly characteristic of the various horizons, the object being to give an idea of the general character of the life of different periods of the world's history.

At the entrance of the second alcove is placed the first of a series of eight models illustrating critical stages in paleogeographical develop-

ment of North America. This represents the supposed distribution of land and water in Ordovician time.

The specimens on the east, or right, side are being arranged to illustrate biologic geology, the classification and relationship of the plants **Biologic** and animals of past geologic times. The series starts with **Geology** the plants and is followed by the various subdivisions of the animal kingdom, again beginning with the lower, or simpler forms and continuing to the highest.

In the first alcove on the right is the stump and part of the roots of a large tree from an anthracite coal mine under Scranton, Pa. Millions **Fossilized** of years ago, in the geological period known as the Carbon-**Tree Stumps** iferous, this tree grew upon the top of a thick swamp deposit of decaying vegetation which ultimately became a most valuable bed of coal. The stump was left in the roof of the mine when the coal was extracted for commercial and domestic uses. It fell to the floor years after the gallery had been abandoned and was discovered only through the chance visit of a miner.

In the end of the fourth upright case on the left side of the hall is the stump of a large fossil tree-fern of Hamilton or Middle Devonian age from a new quarry opened in connection with the great engineering work of the New York City Board of Water Supply. These are the oldest trees known.

The northeastern corner of the hall is devoted to the Copper Queen Mine Model and a series of ores and other specimens from the famous **Copper Queen** Bisbee-Warren copper district in southern Arizona. Two **Mine Model** models have been prepared as a result of several years of **and Exhibit** extremely painstaking and skillful work. A large model, some 18 by 12 feet in dimensions, shows on a scale of twenty-four feet to the inch all the surface features and mine and other buildings over four of the principal mines (Holbrook, Spray, Gardiner and Lowell) belonging to the Copper Queen Consolidated Mining Company, while a painted background represents the surrounding mountains and the town of Bisbee. The sides of the model give vertical sections to the depth of about 1,200 feet illustrating the geology of the area and showing the general manner of getting out the ore and hunting for new deposits. There were produced in about 30 years (1880-1912) from the mines at Bisbee belonging to this company 7, 729,922 tons of copper ore of an average copper content of 7.16%. The metal production in this period was

Copper—1,106,605,775 pounds (553,303 tons)
 Gold —104,775 ounces Troy (8,731 pounds)
 Silver —6,107,421 ounces Troy (508,952 pounds)



A BIT OF WEYER'S CAVE

Part of the section reproduced in the Hall of Geology.

Near the large general model there has been installed a small model on a scale of six feet to the inch showing the usual methods of extracting the ore by "stoping." Drilling, picking, timbering, filling old cavities, transporting, raising ore to the surface, and other operations are illustrated as well as is practicable on the scale adopted. The shaft is equipped with its cages, which are arranged so that they go up and down by means of automatic machinery.

Specimens of ore, minerals and rocks from the mine and the adjacent country illustrate the geology of the region. Chief of these specimens are velvet malachites that were taken from the original "Queen" mine, the Open Cut, in the early eighties and a great block of malachite and azurite weighing about four tons taken from the mine in 1892 and included in the Arizona mining exhibit at the Columbian Exposition in 1893.


The northwest corner of the hall contains a display of caves and cave material including a reproduction of part of a beautiful cave that was discovered early in 1910 in mining operations at the Copper Queen mine. The cave was formed by the dissolving action of water traversing joints in limestone, and its walls, roof and bottom were afterward coated with calcite (calc spar) incrustations, stalactites and stalagmites, some of which are dazzling white while others are colored green with copper salts or pink with manganese compounds.

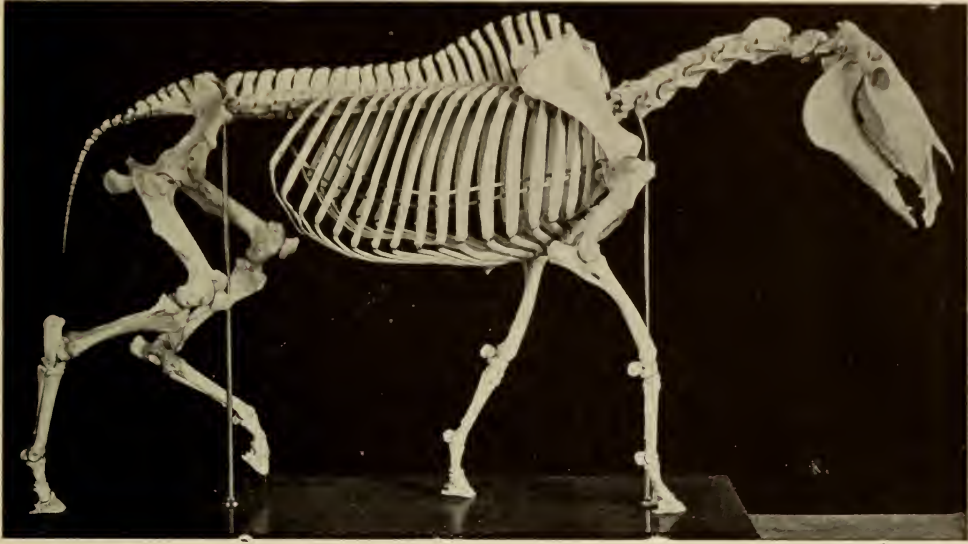
Alongside the Copper Queen cave is a reproduction of a chamber in Weyer's Cave, Virginia. Weyer's Cave is in a region of much heavier rainfall than Bisbee, which is probably the principal factor in producing a greater wealth of regular stalactite and stalagmite growth than adorns the Copper Queen cave, and this exhibit illustrates not only the great variety in form but the reasons for this extraordinary diversity.

WEST CORRIDOR

THE HORSE UNDER DOMESTICATION

This hall, which formerly held the Gem Collection, is now devoted to exhibits illustrating the great modifications that man has brought about by selection in adapting the horse to his various needs.

 Under his management speed has been increased in the race horse, weight and strength in the draft horse, while for purposes of pleasure the Shetland Pony has been reduced to a diminutive size. The great modifications in the skeleton that have accompanied these changes are well shown in the series of beautiful skeletons, while other exhibits



DRAFT HORSE, PULLING A HEAVY LOAD

illustrate the structure of the skull and teeth and the changes that take place with age.

The similarity in structure (homology) of the skeletons of horse and man is brought out in the exhibit of a rearing horse, controlled by man. A comparison will show that although very different in proportions the bones of the one correspond with those of the other.

The collection includes some noteworthy horses such as Sysonby, Lee Axworthy and the Arab stallion Nimr.

SOUTHWEST WING

MINERALS AND GEMS

The southwest wing comprises the Morgan Memorial Hall of Minerals and Gems. This hall, through the gift of Mr. George F. Baker, has been remodeled to contain the General Collection of Minerals and the Morgan Gem Collection, thus constituting a memorial to the great services of Mr. Morgan as a founder and benefactor of the Museum.

Of these, the General Collection of Minerals is without question one of the finest mineral collections to be found in the world, ranking with



GENERAL VIEW OF THE MORGAN HALL OF MINERALS AND GEMS

that of the British Museum and the Jardin des Plantes. It is chiefly composed of the well-known Bement Collection, presented to the Museum in 1900 by the late Mr. J. Pierpont Morgan. Although remarkably complete in its representation of most of the mineral species known to science, this collection is especially noteworthy for its assemblage of splendid examples of the commoner and more widely distributed minerals.

The visitor should begin with the first of the table cases, to the left of the entrance, and proceed from left to right along each side of every case advancing through the south row of cases and returning through the north row. The different species are divided within the case by narrow strips between the mounts and each case is furnished with a descriptive label referring to its contents and indicating the wall case which contains large and handsome specimens of the same species. To the right of the entrance will be found cases in which the subject of Crystallization is presented by a series of models. This series as well as other explanatory exhibits in adjoining cases, constitutes an important key to the understanding and appreciation of the general mineral collection.

The cases occupying the middle of the hall contain the Morgan Gem Collection comprising the valuable series of gems and precious stones also presented by J. Pierpont Morgan, to which have been added from time to time noteworthy specimens given by other friends of the Museum.

The Morgan collection includes the series of American gems assembled by Tiffany & Company for the Paris Exposition of 1889 and the series of foreign gems and gem stones exhibited at the Paris Exposition of 1900.

The installation comprises examples of those minerals which are used for gems and for ornamental objects and consists of rough, uncut material and of fashioned gem stones and carved objects. All of the specimens exhibited have been chosen with great care and are not only thoroughly representative but include many examples which are unique in size, beauty of coloring and perfection of execution, reflecting the very highest standards of the art of the lapidary. Here again explanatory labels are used to give meaning and weight to the exhibit not merely as a display of jewelry material but as a complete visual exposition of the knowledge of gem stones.

The visitor should proceed from the entrance along the north row of cases returning along the south row. The case containing the Sapphires and Rubies, near the beginning of the series, presents a particularly fine display of these gems. Close by will be found a large and varied assemblage of Aquamarines embracing many gems of exceptional size and color. The cases devoted to Rock Crystal contain a number of carved



QUARTZ CRYSTAL FROM AUBURN, MAINE

A single crystal of quartz measuring $26 \times 19 \times 13$ inches and weighing 253 pounds

MINERALS AND GEMS (MORGAN HALL)

and engraved objects of rare beauty and value. The handsome semi-precious stone Kunzite is represented by especially large and fine examples to be found toward the middle of the series. An interesting exhibit illustrating the primitive and antique use of gems is displayed in cases in the south row near the entrance. This includes many engraved cylinders of great age and the famous Babylonian ax-head of banded agate. An exquisitely carved statuette of blue Chalcidony, the gift of Mr. Charles Lanier, will be found in the center of the installation.



HAWAIIAN FEATHER CLOAK

SOUTHWEST PAVILION

COLLECTIONS FROM THE PACIFIC ISLANDS

On entering the *Southwest Pavilion* beyond the Hall of Minerals the visitor faces groups representing the natives of the Pacific Islands. Directly in the center is a Tahitian priest taking part in the fire-walking ceremony, in which the participants walk over heated boulders of lava. On each side is a group showing natives engaged in typical activities,—grating coconut, preparing kava, or weaving mats.

Attached to a pillar near the entrance there is a fine Hawaiian feather cape, such as was formerly worn by the highest ranks of Hawaiian society. Red and yellow honeysucker feathers completely hide the

netted twine foundation. The value of these garments was proportionate to the enormous labor expended on their manufacture.

The hall is roughly divided into two main sections. In the eastern half are exhibited the collections from Polynesia and Micronesia, while the western half is devoted to New Guinea, Melanesia and Australia. However, it proved impossible to separate Melanesian Fiji from Samoa and Tonga, and for practical reasons the New Zealand specimens are displayed on either side of the tower.

In the Polynesian section the examples of decorated native bark cloth (*tapa*) are especially noteworthy, and a number of canoe models remind us that these people are daring seafarers. A series of ceremonial adzes from the Cook Islands in the northeastern quarter of the hall shows aboriginal carving at its highest level.

In the western section the elaborately carved sacred masks about 14 feet back of the Tahitian priest illustrate the æsthetic tendencies of Melanesia, which are also apparent in a totem pole set on top of a vertical case. Very different from these artistic manifestations are the carvings of the New Zealanders (Maori) characterized by the dominant spiral motive. A series of dried and tattooed Maori heads forms one of the most remarkable exhibits in the Museum. (See *Leaflet 71, The Maoris and their Arts.*)

Near the boundary between the two main sections are the Australia cases with numerous boomerangs and very crude stone tools, which should be compared with those in the archæological hall (p. 47). In the northwest corner of the hall are shields, clubs, carvings and household utensils from New Guinea.



WEST WING

COLLECTIONS FROM THE PHILIPPINE ISLANDS

The hall due north of the Pacific Islands hall is devoted mainly to the Philippine Islands, but some of the cases in the northwest corner house collections from other parts of Malaysia, such as the interesting series of marionettes from Java.

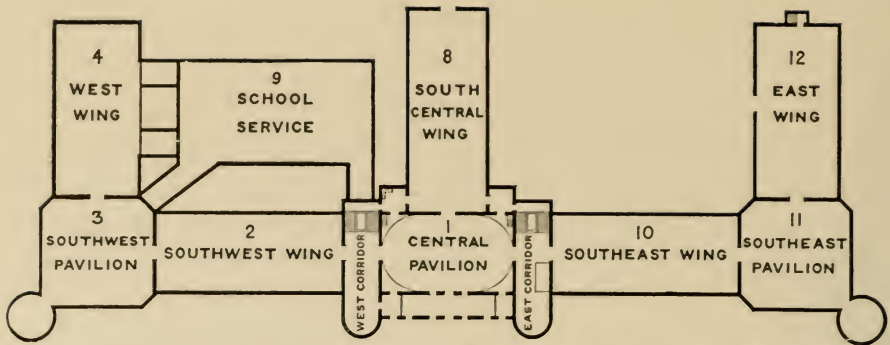
At the right of the entrance is a case containing life casts of faces, nose and hair from the different races represented in this hall. Also charts of stature and head form, with distribution maps. (See *Handbook* No. 8, *The Peoples of the Philippines*.)

Near the entrance and in the center aisle may be seen the model of a woman weaving a garment on a native loom; at the far end of the hall a native tree house dominates the scene; and east of it there is the model of a bamboo-walled and thatch-roofed house.

The visitor should note that like the African Negroes, but unlike all other primitive stocks, the Malayan tribes represented in this hall used iron tools. The numerous iron weapons—spears, battle-axes, and krises (daggers with serpentine blades)—are especially remarkable.

On the west side of the hall will be found a number of synoptic exhibits of native krises, shields, fabrics, basketry and ceramics. Pottery is not highly developed in this area, but the textile arts flourish to a remarkable degree. The industrial life of the Bagobo of Mindanao is particularly well illustrated in the collections.

Much more primitive in their culture than the other Malaysians are the Negritos, a dark-skinned and frizzly-haired pigmy stock forming with similar groups in other parts of the world a distinct division of the Negro race. They are everywhere hunters using the bow and arrow and ignorant of agriculture. Their simple implements are shown in a table case in the northeastern section of the hall.



Osborn Library, Hall 10, Southeast Wing. Reading Room and Office of Librarian, West Corridor.

FIFTH FLOOR

OFFICES AND LABORATORIES

The fifth floor is given over to the administrative offices, the offices and laboratories of the scientific departments and the library which contains over 120,000 volumes on natural history, anthropology and travel.

The library now contains over 15,000 volumes on zoölogy, comprising many of the extremely rare and interesting monographs in ornithology; an excellent collection of 3,500 volumes in entomology, including many of the rare classics, and a 2,000 volume collection in conchology containing the standard works of Kuster, Reeve and Binney. There is also a well selected collection of 2,500 volumes in anthropology, including many of the older works relating to the North American Indian; an excellent collection of 2,500 volumes in geology enriched by the library of the late Professor Jules Marcou; a collection of 5,000 volumes in palæontology, to a large extent included in the Osborn Library of Vertebrate Palæontology located in the southeast wing; also an unusually complete collection of more than 25,000 volumes of natural science periodicals.

The reading room of the library is located in the west corridor and, with the exception of Sundays and holidays, is open free daily, from 9 A.M. to 5 P.M., to all who may wish to consult the books. Besides the current issues of the more important periodicals, it contains the more general works of reference, while other volumes will, upon application to the librarian, be furnished to those who wish to consult them.

On this floor, too, are the workrooms of the Department of Vertebrate Palæontology, where the skeletons of fossil animals are prepared and mounted, and the laboratory where are made the beautiful models of invertebrates.

These, like the other laboratories, are of necessity not open to the public.

THE HISTORY AND WORK OF THE MUSEUM

The American Museum of Natural History was founded and incorporated in 1869 for the purpose of establishing a Museum and

History Library of Natural History; of encouraging and developing the study of Natural Science; of advancing the general knowledge of kindred subjects, and to that end of furnishing popular instruction. For eight years its temporary home was in the Arsenal in Central Park during which time many important collections were secured.

The cornerstone of the present building in Manhattan Square was laid in 1874 by President U. S. Grant; in 1877 the first section (South Central Wing) was completed, and on December 22, 1877, the Museum was formally opened by President R. B. Hayes.

The Museum building is one of the largest municipal structures in the City, and has cost to date approximately \$10,786,306. The South Façade is 710 feet in length; the total floor area including the School Service Wing and Hall of Ocean Life is more than fourteen acres. The building when completed is designed to occupy all of Manhattan Square.

The building is erected and largely maintained by the City, through the Department of Parks. Building funds are provided for by issues of Corporate Stock, which have been made at intervals since 1871. The annual appropriation, known as the **Administration and Support** Maintenance Fund, is devoted to the heating, lighting, repair and supervision of the building and care of the collections.

The Museum is under the control of a self-perpetuating Board of Trustees, which has the entire direction of all its activities as well as the guardianship of all the collections and exhibits. The Trustees give their services without remuneration.

The funds which enable the Trustees to purchase specimens, to carry on explorations and various forms of scientific work, to prepare and publish scientific papers and to enlarge the library, are raised by contributions from the Trustees and other friends. These contributions come from three sources—namely, (1) the Endowment Fund, (2) Membership Fund, (3) voluntary subscriptions.

The interest of the Endowment Fund, which includes the magnificent bequest of Mrs. Jesup, may be used for additions to the collections, research, and for publication. It cannot be used for the care or repair of the building, construction of cases or other maintenance work that is properly the province of the City to provide for.

The Membership Fund, derived from the subscriptions of Members, may be devoted to any purpose and is of particular importance in the educational work of the Museum.

Voluntary contributions may be used for general purposes or for such special object as the donor may designate; some of the most valuable and important collections have been obtained by such gifts, as for example the Morgan collection of gems and the Juilliard collection of ancient Peruvian pottery and textiles.

There are at present about 10,021 members. Annual Members contribute \$10 a year for the support of the Museum; Life **Membership** Members make a single contribution of \$200. Membership fees are of great service in promoting the growth of the institution.

In the last edition of the Century Dictionary a museum is defined as: "A collection of natural objects, or of those made or used by man, placed where they may be seen, preserved, and studied. **Definition of a Museum** Neither the objects themselves, nor the place where they are shown, constitute a museum; this results from the combination of objects, place, and purpose, display being an essential feature. The objects, or specimens, may be shown for general purposes only, or for the illustration of some subject or idea, the tendency of modern museums being, by the display of objects and the manner in which they are arranged and labeled, to illustrate some fact in nature or in the history of mankind."

And E. Ray Lankester as Director of the British Museum of Natural History stated that:

"The purposes of a great national museum of natural history are: (1) To procure by its own explorers or by the voluntary assistance **Purposes of Museums** of independent naturalists the actual specimens upon which accurate knowledge of the animals, plants, and minerals of the earth's surface, and more especially of the national territory, is based; to preserve and arrange these collections for study by expert naturalists, and to facilitate, directly or indirectly, the publication (in the form of catalogues or monographs) of the knowledge so obtained—with a view to its utilization, not only in the progress of science, but in the service of the State. (2) To exhibit in the best possible way for the edification of the public, at whose charges these collections are made and maintained, such specimens as are fitted for exposure in public galleries, with a view to the intelligent and willing participation of the people in the maintenance of the Museum."

As the Museum is emphatically "for the people," special attention is given to making the exhibits attractive and interesting as well as instructive.

While the American Museum of Natural History cannot claim to have originated the idea of displaying animals amid their natural surroundings, it was the first large museum in this country to adopt this



MEMBERS' ROOM

method, which it has since carried out on a large scale in (see *Leaflet* "The Story of Museum Group") the well-known habitat groups. How it has been developed the visitor may judge by comparing the group of Robins with the Orizaba, Wolf or Hopi Groups.

In the Museum were also developed the methods of preparing and mounting the skeletons of extinct animals that have resulted in such mounts as *Brontosaurus* and *Tyrannosaurus*, and the series showing the development of the horse, so that they might be something more than an assemblage of uninteresting bones.

The Museum not only maintains exhibits "for the edification of the public," but supplements the educational work performed by these

How These and their accompanying labels by lectures and publications
Purposes are of a popular nature. A course of evening lectures is given
Carried out every Spring and Fall for the Members, to which admission is to be had by ticket; also courses of Science Stories are given on Satur-

Lectures day mornings for the children of members. Another series of lectures, free to the public, is given in conjunction with the Board of Education on Tuesday and Saturday evenings. Still another series, under the direction of the Museum's Department of Public Education, is given for the children of the Public Schools, and there are special lectures for the blind provided for by the Jonathan Thorne Memorial Fund.

EDUCATION AND PUBLIC HEALTH

The department of Education and Public Health is concerned directly with work with the public schools of New York City through its loan collections of lantern slides and objects of Natural History and through lectures given at the Museum and certain of the public schools.

The department occupies the School Service Section a five story structure completed in 1926.

The first floor or Education Hall containing the exhibits of the Department of Public Health, is for important temporary exhibits and special gatherings.

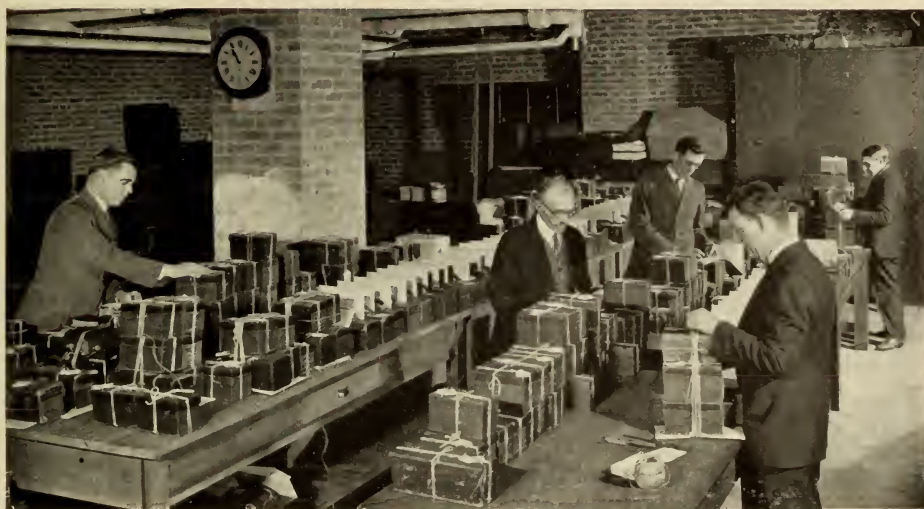
The second floor contains a main lecture hall seating Five-hundred, which can be divided into smaller halls, and there are class rooms and a special room for the blind.

On the third floor are offices for the staff, the slide-circulating department, a display of the collections available for loans, the teachers reference library and a model school nature room.

The extent of the work of the department is shown by the summary of that for 1927.



LANTERN SLIDE ROOM
in the School Service Wing



SHIPPING ROOM

School Service Wing, where lantern slides and loan collections are packed to be sent to Public Schools

STATISTICS OF NUMBERS REACHED BY THE MUSEUM AND ITS
EXTENSIVE EDUCATIONAL SYSTEM

	1923	1924	1925	1926	1927
Board of Education Lectures.....	18,917	26,484	26,968	10,460	10,914
Lectures to School Children and classes visiting the Museum for Study.....	134,669	139,433	132,386	138,514	145,304
Meetings of Scientific Societies and Other Meetings and Lectures....	31,734	22,637	37,389	34,976	47,680
Total.....	185,320	188,554	197,743	183,950	203,898
Attendance in Exhibition Halls...	1,246,402	1,445,289	1,578,147	1,886,315	2,088,978
Total attendance for all purposes.....	1,431,722	1,633,843	1,775,890	2,070,265	2,292,876
Lectures to Pupils in Local Centers.	22,598	24,792	27,055	33,255	20,421
Number reached by Motion Picture Service.....	85,302	115,849	333,097	530,955	1,123,704
Number reached by Lantern Slide Service.....	3,839,283	5,407,525	3,941,494	4,358,423	6,866,112
Numbers reached by Circulating Collections.....	1,491,021	1,247,914	977,384	798,382	1,722,433
Grand Total.....	6,869,926	8,429,923	7,054,920	7,791,280	12,025,546

STUDY COLLECTIONS

The scientific side of the work of the Museum is based upon its explorations and study collections.

The Study Collections, as the name implies, are not only for the benefit of students but preserve a record of our vanishing animal life and of the life and customs of our own and other primitive peoples.

In the case of Natural History the vast majority of the specimens are in the study series, not only because they would ultimately be ruined by exposure to light but because the display of all material would only confuse the visitor. Moreover, no museum has room to show everything, and a careful selection is made of objects of the greatest educational value and these are so displayed as to enhance their interest and attractiveness.

The Study Collections are, briefly, as follows:

Most of the mineral specimens are on exhibition, but the overflow from the public cases forms a study series of no mean proportions.

The study collections comprise, among other things, the Hitchcock series of rocks illustrating thirteen geological sections across the States of Vermont and New Hampshire; a complete set of duplicate specimens from the United States geological survey of the Fortieth Parallel; a series illustrating the early geological survey of Pennsylvania; a complete typical series of rocks and microscopic thin sections illustrating Rosenbusch's manual of petrography; large series of American rocks; a complete series typifying the rocks encountered in driving the Simplon tunnel, Switzerland; many ores and economic specimens.



HOW SPECIMENS ARE CARED FOR
How skins of Mammals are stored

The study collections comprise over 20,000 catalogued specimens of fossil mammals, 6,000 fossil reptiles and amphibians and a few hundred **Vertebrate** fossil birds. Most of these are from the western United **Palæontology** States. The collections of fossil horses, Eocene mammals and Cretaceous dinosaurs are unrivaled. The fossil rhinoceroses, camels, oreodonts, carnivora, Fayum, Pampean, Asiatic and Patagonian mammals, Jurassic dinosaurs, Permian reptiles, turtles, etc., are likewise of the first rank. They include more than one thousand type specimens of fossil mammals and several hundred type specimens of fossil reptiles and amphibians. The fossil fishes are at present in the Department of Ichthyology.

Great numbers of fossil invertebrates representing many important **Invertebrate** groups and including a large number of types: foremost **Palæontology** among these is the James Hall collection of New York State fossils which alone contains about 7000 types.

About 65,000 specimens of protozoans, sponges, polyps, star-fishes, **Lower** sea urchins, worms, crustaceans, myriapods and chor- **Invertebrates** dates.

The collection of recent mollusks, comprises about 20,000 species, including especially the Jay and Haines collections and large series from Africa.

The insects and spiders are divided into the local collection comprising those found within fifty miles of New York City and the general **Entomology** collection of about 1,000,000 specimens; among them the types of many species.

The fishes comprise about 10,000 specimens, mainly preserved in alcohol; among them many fresh water fishes from Africa, **Ichthyology** including about 100 types, and good series from China.

The fossil fish collection is one of the largest, if not the largest, in America, comprising about 10,000 catalogued specimens; it includes the collection of Palæozoic fishes, especially Arthrodires, made by Professor J. S. Newberry and a series of fossil fishes from Europe and North America.

Herpetology The collection of frogs, salamanders and reptiles numbers about 15,000 specimens.

Ornithology About nine-tenths of the study collections which include skins, nests and eggs are from the Western Hemisphere.

From North America are important series from the Middle Atlantic States, California, Texas and Arizona, and from Mexico, Nicaragua and Panama. South America is represented by Collections from Colombia, Ecuador, Peru, Venezuela and Matto Grosso, Brazil. There are fine collections from the Congo region, and Polynesia and unusually large collections of sea birds.

The Lawrence and Maximilian collections are particularly important from the large number of types they contain.

Aside from the mammals of North America, great and small the collection includes extensive series from South America, **Mammalogy** Mongolia, Africa, especially the Congo region, and Australia.

The study collection comprises a large number of preserved specimens of many kinds of animals suitable for comparative **Comparative Anatomy** anatomical investigations and a general osteological collection for research workers and postgraduate students.

The human skeleton material includes the large Felix von Luschan **Anthropology** collection representing the racial types of existing man and, in addition a number of special collections from the American Indians.

The ethnological study collections comprise extensive series from the Philippine Islands, Siberia, China, Central and South Africa and the various culture areas in North America.

In archæology there are large series of characteristic stone objects from the various states of the union. There are full collections from excavated sites in California, New York, Georgia, Kentucky, Tennessee, Arizona, and New Mexico, and a special series from the Trenton Valley. There is also much material from Mexico, Bolivia, Peru, Europe and China.

The Museum Library, located on the fifth floor, contains about 120,000 volumes on various branches of natural history (save botany), **Library** anthropology and travel. It is particularly strong in vertebrate palæontology and scientific periodicals. Like other museum libraries, it is of necessity a reference library, but, except on Sundays and holidays, may be freely used by the public during the hours when the Museum is open from 9 A.M. to 5 P.M.

The Osborn Library, founded by President Osborn, is also on the fifth floor and contains works on vertebrate palæontology and related subjects.

The publications of the Museum, aside from the *Annual Report*, fall naturally into two groups: scientific and popular. The former, comprising the *Memoirs*, *Anthropological Papers* and *Bulletin*, **Publications** contain information gathered by the various expeditions, or derived from the study of material collected; they are from the nature of their subjects mainly of a technical character. The *Memoirs* consist of the larger, more important papers, or those that call for unusually large illustrations. These are issued from time to time as occasion may demand. The *Bulletin* comprises the shorter papers, those that contain



DEPARTMENT OF PREPARATION

The new Asiatic Hall temporarily used for the department of preparation. In the foreground a group of Nilgai obtained by the Vernay-Faunthorpe Expedition

information that it is desirable to issue promptly, and for some years past at least two volumes of from 500 to 700 pages have been published annually. The scientific papers are distributed, largely in exchange, to museums and libraries throughout the world.

The popular publications include the *Journal*, *Leaflets*, *Guides* and *Handbooks*, and are intended for the information of the general public. The *Journal*, now *Natural History*, begun in 1900, is the means of promptly informing the Museum members of the work of the institution, giving the results of the many expeditions, telling of the collections made, or more important information gathered. It also describes at length interesting or noteworthy installations, and notes the accessions to the various departments, changes in the personnel of the Museum, and elections to Membership. The illustrated *Guide Leaflets* seventy of which have been published deal with exhibits of particular interest or importance, such as the Habitat Groups of Birds, the Evolution of the Horse, Meteorites, the Indians of Manhattan, calling attention to important objects on exhibition and giving information in regard to them. The *Handbooks*, twelve of which have been issued, deal with subjects or topics rather than objects. Thus the Plains Indians Handbook, by Dr. Wissler, is not merely a guide to the exhibition hall, but tells of the life and customs of these Indians, their language, political organizations, religious beliefs and ceremonies.

The distribution of these popular publications is a part of the educational work of the Museum, as are exhibits and lectures, and so far they have been necessarily sometimes sold below the cost of publication, as is done by other museums.

An important part of the Museum, not seen by the public, is the workshops, located in the basement and provided with machinery of the most improved pattern. Here, among other things, are constructed the various types of cases used in the Museum, including the light, metal-frame case, devised in the institution.

Another most important part is the fully equipped printing establishment where all the printing of the Museum is now done.

Still other rooms, which, of necessity, are not open to the public, are the laboratories, wherein is carried on the varied work of preparing exhibits, work which calls for the services of a very considerable number of artists and artisans.

Here are cast, modelled or mounted, the figures for the many groups from Man to Myxine; here leaves are made to grow and flowers to bloom as accessories for beasts,¹ birds and fishes, to say nothing of reptiles and

¹See *Guide Leaflet* No. 54.

amphibians, and here, with painstaking care, are slowly created in glass and wax the magnified copies of invertebrates.

From all this may be gathered that a museum is a very busy place, much more so than the casual visitor is apt to imagine. In fact, a very good museum man has said that a museum is much like an iceberg, seven-eighths of it under water and invisible.

MEMBERSHIP

For the purchase or collection of specimens and their preparation, for research, publication, and additions to the library, the Museum is dependent on its endowment fund and its friends. The latter contribute either by direct subscriptions or through the fund derived from the dues of Members, and this Membership Fund is of particular importance from the fact that it may be devoted to such purpose as the Trustees may deem most important. There are now more than ten thousand Members of the Museum who are contributing to this work. *If you believe that the Museum is doing a useful service to science and to education, the Trustees invite you to lend your support by becoming a Member.*

The various Classes of Resident Membership are as follows:

Annual Members	(annually)	\$10
Sustaining Members	(annually)	25
Life Members		200
Fellows		500
Patrons		1,000
Associate Benefactors		10,000
Associate Founders		25,000
Benefactors		50,000
Endowment Class		100,000

They have the following privileges:

An Annual Pass admitting to the Members' Room.

Complimentary tickets to the Members' Room for their friends.

Services of an Instructor for guidance through the Museum.

Two course tickets to Spring and Autumn Lectures.

Current numbers of all Guide Leaflets on request.

Current numbers of the American Museum Journal, NATURAL HISTORY.

The President's Annual Report, giving a full list of Members.

ASSOCIATE MEMBERSHIP

In order that those residing more than 50 miles from New York City, who can not conveniently attend the lectures for members may be associated with the Museum and its work, the class of Associate Members, whose annual dues are \$3, was established. These Members have the following privileges:

Current issues of *NATURAL HISTORY*.

The President's Annual Report, giving a full list of Members.

An Annual Pass admitting to the Members' Room. This large room on the third floor is given over exclusively to Members, and is equipped with every comfort for rest, reading and correspondence.

Two complimentary tickets admitting to the Members' Room for distribution by Members to their friends.

The services of an Instructor for guidance when visiting the Museum.

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