

Field Museum News

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No. 1

ROOSEVELTS' GIANT PANDA GROUP INSTALLED IN WILLIAM V. KELLEY HALL

BY WILFRED H. OSGOOD

Curator, Department of Zoology

The outstanding feature of the William V. Kelley-Roosevelts Expedition to Eastern Asia for Field Museum was the obtaining of a complete and perfect specimen of the peculiar animal known as the giant panda or great panda. In popular accounts this rare beast has been described as an animal with a face like a raccoon, a body like a bear, and feet like a cat. Although these characterizations are not scientifically accurate, all of them have some basis in fact, and it might even be added that its teeth have certain slight resemblances to those of a pig. It is small wonder then that the animal is of unusual interest, quite aside from its rarity and its striking coloration.

It was discovered some sixty years ago by Père Armand David, a French missionary stationed in the Mouping district of western China. A skin and skull were sent at that time to the Paris Museum of Natural History where they were figured and described under the name *Ailuropus melanoleucus* by the famous zoologist Alphonse Milne-Edwards. In later years, reports of the animal were received occasionally. Natives collected some imperfect skins, mostly without skulls or other bones, and at rare intervals these were shipped out and acquired by a few of the larger museums of the world.

So far as known, up to 1928 the animal had never been successfully hunted by white men. It inhabited a remote region difficult of access, and even in its home grounds it was evidently rare and difficult to find. It was therefore exactly the sort of animal to excite the interest of Colonel Theodore Roosevelt and Kermit Roosevelt when planning their recent expedition through Central Asia. At one of the last

conferences with them at Field Museum while the expedition was being organized, although it was agreed that a giant panda would furnish a most satisfactory climax for their efforts, the chance of getting one was considered so small it was thought best to make no announcement concerning it when they started. There were other less spectacular animals to be hunted, the obtaining of which would be a sufficient measure of success, so the placing of advance emphasis

be superficial, and it was then transferred to the group which includes the raccoons and allies, one of which was the little panda, or common panda, which is also Asiatic in distribution. Still later, an independent position was advocated for it, in which it became the sole living representative of a distinct family of mammals. Preliminary examination of the complete skeleton obtained by the Roosevelts seems to indicate that more careful study will substantiate this last view.

The giant panda is a giant only by comparison with its supposed relative, the little panda, which is long-tailed and about the size of a small fox. The so-called giant is in reality smaller than most bears and probably does not exceed 150 pounds in weight. Skins obtained from natives often are stretched so as to give a false impression of size. The specimen taken by the Roosevelts is a full grown male, and the measurements taken before it was skinned as well as those provided by the skeleton indicate that the animal had a length of about four feet and a shoulder height of twenty-eight inches.

In the group which has just been opened to view in William V.



The Giant Panda (Hall 17)—William V. Kelley-Roosevelts Expedition

on the giant panda would have been to invite an unwarranted public interpretation of failure in case the one great rarity was not secured. The Roosevelts' habit of success, however, did not fail them, and they have brought to Field Museum not the only giant panda specimen in the world, as some accounts have stated, but the only complete and perfect one and the only one killed by white men.

Owing to the lack of complete skeletal material in the past, the exact systematic position of the panda has been somewhat doubtful. It was at first classified with the bears and called the parti-colored bear, but its external resemblance to bears proved to

Kelley Hall (Hall 17) two pandas are shown, one being the specimen killed by the Roosevelts. The other specimen was prepared from a skin obtained by them from natives. The animals are shown in their favorite habitat of bamboo thickets which in western China are found growing at altitudes up to 10,000 feet or more. One of them is seen feeding on the twigs and stalks of bamboo which seem to furnish their principal diet, and for crushing and chewing which their extraordinarily heavy teeth have doubtless been developed. The animals have been skillfully prepared by Taxidermist Julius Friesser, and a background of unusual beauty has been painted by Staff Artist Charles A. Corwin.

Work Resumed at Kish

Excavations on the site of the ancient city of Kish, near Babylon, have been resumed by the Field Museum-Oxford University Joint Expedition to Mesopotamia, it is reported by Professor Stephen Langdon, director of the expedition. This is the eighth season of the expedition's operations. L. C. Watelin is again in charge of field work. About 300 men will be employed in the excavating work this season.

At the end of the last period of work the diggers had penetrated into strata bearing marks of ancient floods, and had traced the

history of Kish back beyond 4000 B.C. The expedition is financed by Marshall Field on behalf of Field Museum, and by Herbert Weld and others on behalf of Oxford.

Trustee Markham Is Dead

With deep regret Field Museum records the death of one of its Trustees, Charles H. Markham. Mr. Markham died on November 24, 1930, at his winter home at Altadena, California. He was 69 years old, and had been a member of the Board of Trustees since 1924.

Komodo Lizard Exhibited

An exhibit of the giant dragon-lizard of Komodo, Dutch East Indies, is now on view in Albert W. Harris Hall (Hall 18). It was prepared from one of the specimens obtained by the Chancellor-Stuart-Field Museum Expedition to the South Pacific, 1929. This is the largest extant species of lizard, and one of the rarest, being found nowhere in the world except in the islands of Komodo and Flores of the Lesser Sunda group, east of Java. A picture of the exhibit, and a more detailed article on it, will appear in a subsequent issue of FIELD MUSEUM NEWS.

Field Museum of Natural History

Founded by Marshall Field, 1893

Roosevelt Road and Lake Michigan, Chicago

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FIELD MUSEUM NEWS

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Field Museum is open every day of the year during the hours indicated below:

November, December, January	9 A.M. to 4:30 P.M.
February, March, April, October	9 A.M. to 5:00 P.M.
May, June, July, August, September	9 A.M. to 6:00 P.M.

Admission is free to Members on all days. Other adults are admitted free on Thursdays, Saturdays and Sundays; non-members pay 25 cents on other days. Children are admitted free on all days. Students and faculty members of educational institutions are admitted free any day upon presentation of credentials.

The Library of the Museum, containing some 92,000 volumes on natural history subjects, is open for reference daily except Sunday.

Traveling exhibits are circulated in the schools of Chicago by the Museum's Department of the N. W. Harris Public School Extension.

Lecturers for school classrooms and assemblies, and special entertainments and lecture tours for children at the Museum, are provided by the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures.

Announcements of courses of free illustrated lectures on science and travel for the public, and special lectures for Members of the Museum, will appear in FIELD MUSEUM NEWS.

There is a cafeteria in the Museum where luncheon is served for visitors. Other rooms are provided for those bringing their lunches.

Members are requested to inform the Museum promptly of changes of address.

DUE RECOGNITION

For some time past there has been displayed in Stanley Field Hall a bronze plaque bearing a list of the names of the Benefactors of the Museum—designated by the by-laws of the institution as those persons who have given the Museum \$100,000 or more in cash, securities or property. This stands as a permanent memorial to these Benefactors, living and dead. Several names have been added in recent years, and the number now appearing is eighteen.

It was recently decided that some similar permanent recognition should be given many others who have generously contributed to the funds and possessions of Field Museum. For this reason a new bronze frame has just been installed in Stanley Field Hall, near the north entrance to the building, in which has been posted a list of all persons who have made contributions ranging in value from \$1,000 to \$100,000. Ninety-six names now appear on the list in this frame, and provisions have been made for the addition of others as occasion demands.

The Museum has previously taken pains to make these generous contributors of

money and materials aware of the institution's appreciation of their efforts to assist it in carrying on its work. It is hoped that the presence of these two lists conspicuously displayed in the building will result in a greater realization on the part of the general public of the great civic indebtedness owed to these donors for their support of the advancement of science and education. The extension of the benefits to be derived from the Museum is made possible by the many friends thus directly supporting it, and it is desired that the visitors enjoying the advantages offered here shall become conscious of this fact.

It is only just to mention that there are also thousands of other donors of money and materials in lesser amounts, whose gifts are as fully appreciated. Obviously, it would be impracticable to display a list of all these, because of space limitations, and so a somewhat arbitrary line cannot be avoided for the purposes of the displayed lists. However, acknowledgments of all these other gifts appear each year in the published Annual Reports of the Director of the Museum, and it is desired that their donors shall feel that they are enrolled in the same company of public spirited citizens as those whose resources have permitted contributions on a larger scale.

UNIVERSITY OF CHICAGO HONORS STANLEY FIELD

An honorary degree of Doctor of Laws was conferred upon Stanley Field, President of Field Museum of Natural History, by the University of Chicago at its convocation, held December 22-24. President Robert Maynard Hutchins of the university presided at the ceremony. Presentation of the degree was made by Dean Richard E. Scammon.

This honor to Mr. Field is largely in recognition of great public service he has rendered through his work and his benefactions as a Trustee, and as President, of the Museum.

Mr. Field first became a Trustee and a Vice-president of the Museum in 1906, and in 1909 he was elected President, which office he has filled continuously until the present time. His tenure of the Presidency coincides with the period of the greatest expansion and progress attained in the history of the Museum, and this development may in large measure be traced directly to the influence he has exerted, and to the great amount of time, labor and money which he has devoted unceasingly and without stint to make this museum one of the greatest in the world. He has filled the office of President with the utmost ability, and it may be truly said that every branch of the Museum's activities has had his direct personal attention and has benefited thereby throughout the period in which he has been at the helm.

Mr. Field was instrumental in obtaining the centrally located and otherwise advantageous site of the present Museum building, and in successfully pushing through to completion the construction program. In every Department and Division of the institution he has manifested a direct personal interest, and his ideas, advice, suggestions and gifts

have been of great benefit throughout the Museum. His support of the Stanley Field Plant Reproduction Laboratories has given the Museum the leading place among institutions of its kind in the field of botany. Year after year Mr. Field has supplied funds to cover the Museum's annual operating deficits, in addition to making many other generous contributions for various purposes. Above everything he has done for the Museum, shines his personal interest and devotion to the institution and its mission, as manifested by the large part of his waking hours devoted to serving it. He not only spends much of his time at work in the Museum, but devotes many of his hours at home and elsewhere to careful thought and planning for the advancement of its interests.

—S. C. S.

Rare Acquisitions

The Department of Anthropology has received several valuable gifts recently. L. M. Willis of Chicago presented a beautifully shaped Roman glass amphora found in Pompeii. This vase has been added to a case of antique glass in Edward E. and Emma B. Ayer Hall (Hall 2).

A fine old Chinese jade carving of the T'ang period (A.D. 618-906) has been donated by Mrs. George T. Smith of Chicago, a Patron and Corporate Member of the Museum. The carving represents a recumbent lion-like flamed monster devouring two snakes.

David Weber of Chicago presented two very interesting mortuary clay figures of horsewomen engaged in a polo match. Six fine old Navaho blankets were received as a gift from Burrigge D. Butler, publisher of *The Prairie Farmer*.

Gifts to the Museum

Following is a list of some of the principal gifts received during the last month:

From L. M. Willis—glass amphora set in bronze tripod stand, Pompeii; from David Weber—2 mortuary clay figures of horsewomen playing polo, T'ang period, China; from Mrs. George T. Smith—jade carving of a recumbent lion-like monster devouring two snakes, T'ang period, China; from Rev. H. A. Cotton—40 specimens from the Ovimbundu, Angola, Africa; from Miss Magda Heuermann—pottery cup from prehistoric tumulus, bronze period, Prussia; from Dr. Ralph M. Whitehead—6 specimens from the Aguaruna Indians, Amazon region, Brazil; from Mrs. Ernest N. Braucher—8 specimens of arrowheads and spearheads; from William J. Chalmers—beryl crystal specimen weighing 950 pounds, Albany, Maine; from Arthur S. Vernay—28 Bushman ethnological objects, South Africa; from S. C. Simms—2 photographs of Meteor Crater, Arizona, and specimen of sand concretion, Arizona; from Miss Alice Lorey—2 cabochon cut agates and specimen of copper, Michigan; from Karl Piath—Mexican black-headed oriole; from Charles E. Burt—5 frogs and a lizard; from John G. Shedd Aquarium—27 fishes; from B. H. Grave—5 salamanders; from E. L. Bruce Company—2 boards of red gum; from Messrs. Paul C. Lett, Bryan Patterson, Frank Lett, Theodore Wallschlager and Misses Fern Coffman and Vera Foster—33 fossil worms, 37 fossil plants and 12 graptolites.

BEQUESTS AND ENDOWMENTS

Bequests to Field Museum of Natural History may be made in securities, money, books or collections. They may, if desired, take the form of a memorial to a person or cause named by the giver. For those desiring to make bequests, the following form is suggested:

FORM OF BEQUEST

I do hereby give and bequeath to Field Museum of Natural History of the City of Chicago, State of Illinois,

.....

Cash contributions made within the taxable year to Field Museum not exceeding 15 per cent of the taxpayer's net income are allowable as deductions in computing net income under Article 251 of Regulation 69 relating to income tax under the Revenue Act of 1926.

Endowments may be made to the Museum with the provision that an annuity be paid to the patron for life. These annuities are tax-free and are guaranteed against fluctuation in amount.



Stanley Field

COW TREES

BY PAUL C. STANDLEY

Associate Curator of the Herbarium

Field Museum received recently, through Professor Samuel J. Record, its Research Associate in Wood Technology, herbarium specimens of another Central American tree that yields milk. It was identified as *Naucléopsis naga*, a member of the mulberry family that ranges from Costa Rica to Honduras. E. H. Taylor, of the United Fruit Company, who obtained the specimens in the

Atlantic lowlands of Costa Rica, reports that no use is made of the *palo de vaca*, as it is called in Spanish, except as firewood, but that when the trunk is tapped, there oozes from it a liquid resembling skimmed milk. This was found to taste like cow's milk.

Various other American trees of the same family yield a similar product. *Brosimum utile*, a so-called cow tree that ranges from Venezuela to Costa Rica, greatly interested the famous explorer Humboldt, who observed its use among the native people of Venezuela. He published a classic but perhaps somewhat exaggerated account of the tree and of the manner in which its milk-like latex was collected for use as human food.

During the past three years much publicity has been given to a Central American tree of another group but with the same properties. It is *Couma guatemalensis* Standley, a member of the Apocynaceae, the family of plants to which belong the common dogbanes, periwinkles, and other familiar plants. The Guatemalan cow tree is known from only a few localities on the north coast. The present writer found it eight years ago in swamps at Puerto Barrios, but since the specimens obtainable were incomplete, they were not determined until five years later, when Professor Record procured flowers.

A fine trunk of the Guatemalan cow tree, presented by the United Fruit Company, is now on exhibition in Hall 27 of the Museum. The trunk shows the diagonal cuts made when the bark is slashed to obtain the milk.

Several kinds of cow trees grow in Central America, especially in Panama and Costa Rica, but little use is made of them. *Naucléopsis naga*, the one most recently reported, furnishes a product that is useful to the native people. In Honduras this tree is called *concha de indio*, "Indian bark," and it is claimed that the uncivilized Indians beat the fibrous inner bark into a sort of coarse cloth that they use for clothing. Such cloth still is made by some of the wilder Indians in eastern Panama from the bark of trees of the mulberry family.

rare goat-antelope known as the takin, for use in a proposed habitat group to be added to the series of Asiatic mammals in William V. Kelley Hall (Hall 17).

This heavy-bodied animal, which has curiously shaped horns, inhabits the same mountainous region in which the giant panda is found. When the specimens are obtained it is planned to install them in a case adjacent to that containing the panda group recently completed with specimens obtained by the William V. Kelley-Roosevelts Expedition.

The present expedition is led by Floyd T. Smith of Long Island, N. Y., who is the only white man in the party. For some time past Mr. Smith has been in China making preparations, and organizing a personnel of native hunters, trappers, photographers, taxidermists and other assistants.

In addition to hunting the takin, the expedition will make a systematic survey of several years' duration in a number of provinces of southern China, some of which have never before been thoroughly covered by scientific collectors, and others of which have been barely touched by zoologists. A comprehensive collection of the mammals, birds, reptiles and fishes of the region will be sought, probably running into thousands of specimens. Additional specimens of the giant panda will be hunted.

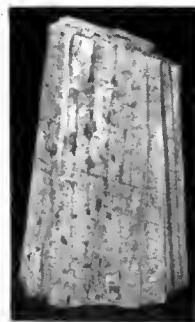
A MAMMOTH BERYL CRYSTAL

Through the generosity of Trustee William J. Chalmers, a mammoth crystal of beryl has been added to the crystal collection in Field Museum, to which Mr. Chalmers has so liberally contributed for many years. This crystal has the form of a somewhat flattened, tapering, hexagonal prism, three feet two inches long, and of a diameter narrowing from two feet at the base to nineteen inches at the top. Its weight is approximately 1,000 pounds. It was discovered in a quarry at Albany, Maine.

Associated with the beryl in the quarry are nests or scales of white or dark mica and beautiful masses of rose quartz. In general the beryl is light apple green in color, and more or less milky to opaque. Both beryl and rose quartz deepen somewhat in color with increasing humidity in the atmosphere, and by observing these changes quarry workmen say they can foretell weather changes.

As an illustration of the size to which crystals may grow, the specimen is a striking one. The prismatic angles are a true 60°, the typical prismatic angle of crystals formed in the hexagonal system. This shows that the shaping is by no means accidental.

Beryl is a comparatively rare mineral, chiefly known in its gem forms of emerald and aquamarine. It is becoming of economic importance as the chief source of metallic beryllium. Beryllium is one of the lightest of metals, much lighter than aluminum, and is therefore useful in airplane construction and in other ways. Also it is as hard as steel and does not corrode on exposure to the air. The development of a commercial demand for the metal may bring to light adequate supplies of raw material, so that within a short time instead of commercial beryl being a by-product of gem mining, as in the past, the gems, emerald and aquamarine, may become by-products of metal-mining. —O. C. F.



Huge Beryl Crystal

SPECIAL SUNDAY LECTURES FOR MUSEUM MEMBERS

The final three illustrated lectures of the current series for Members of Field Museum will be given on Sunday afternoons in January. Following are the dates, subjects and speakers:

January 11—The Nile and Beyond

Major A. Radcliffe Dugmore, F.R.G.S., F.R.P.S., London

January 18—A Naturalist in the South Seas (The Story of the Cornelius Crane Pacific Expedition as told in *Jungle Islands*, which was reviewed in *The Chicago Tribune*, December 6, 1930, and which is on sale at Field Museum.)

Karl P. Schmidt, Assistant Curator of Reptiles, Field Museum; leader of the scientific section of the Cornelius Crane Pacific Expedition for Field Museum, 1928-29

January 25—Explorations in Plant and Animal Life

Dr. Arthur C. Pillsbury, of Berkeley, California

The lectures will be given in the James Simpson Theatre of the Museum, and will begin promptly at 3 p.m. Each Member of the Museum is entitled to two seats for each lecture, to obtain which he should show his membership card to an attendant at the theatre on the afternoon of the lecture. Upon presentation of the card Members will be given two tickets of admission to the reserved section of the theatre. Seats in the reserved section which have not been claimed by 3 P.M. will be offered to the public.

RAYMOND FOUNDATION PROGRAMS

Three special entertainments for children, provided by the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures, will be given at Field Museum in January and February. Each of the programs will be presented twice—at 10 A.M. and 11 A.M.—in the James Simpson Theatre of the Museum. Following are the dates and subjects:

Saturday, January 24—"The Black Journey"—motion pictures of a trip across Central Africa.

Saturday, January 31—"A Dog-sled Trip in Canada," "The Ojibwa Build a Birch-bark Canoe," and "Gathering the Wild Rice"—motion pictures and story-hour.

Thursday, February 12 (*Lincoln's Birthday*)—"My Father," "Abe's First Law Case," and "The Call to Arms"—motion pictures of episodes in the life of Abraham Lincoln.

Children from all parts of Chicago are invited to attend these entertainments. Admission is free.

CHANCELLOR-STUART EXPEDITION RETURNS FROM AITUTAKI

Bringing some 400 specimens of beautiful fishes of the Pacific, the Chancellor-Stuart-Field Museum Expedition to Aitutaki has returned to this country. In addition to the ichthyological collections, the expedition made some 14,000 feet of motion picture film illustrating various phases of the life of the natives in Aitutaki, as well as undersea scenes taken with a diving bell and a special camera.

The expedition was sponsored and led by Philip M. Chancellor of Santa Barbara, California.

Aitutaki is one of the most remote and least known islands of the Pacific Ocean. Few white men have ever visited it, and the natives are a people whose life is entirely unmodified by civilization. The island is surrounded by coral reefs, and the fish collected by the expedition were obtained chiefly from the waters over these reefs.



Cow Tree (Hall 27)

Expeditio

to seek specimens of takin

Operations have been begun in southern China by a Field Museum expedition, sponsored by Marshall Field, the immediate object of which is to obtain specimens of the

HISTORY OF FIELD MUSEUM

By OLIVER C. FARRINGTON
Curator, Department of Geology
(Continued from last month)

Funds provided by Marshall Field enabled a two years' sojourn (1926-27) to be made in Madagascar by Assistant Curator Ralph Linton, of the Department of Anthropology. Through the work of this expedition large collections illustrative of the cultures of the various races on the island were made.

Another important archaeological and ethnological expedition, for which funds were contributed by Marshall Field, was carried on by Assistant Curator J. Eric Thompson in British Honduras and Guatemala during successive seasons, beginning in 1927. Ancient Maya ruins were studied and mapped, and dated stelae and altars were discovered.

The joint expedition carried on by the Museum in conjunction with Oxford University during 1923 was continued each year during the period under consideration. This expedition devoted itself chiefly to studies and excavations of ancient Kish, the first capital city of the earliest known civilization of western Asia. Extensive excavations carried on there revealed many important facts regarding Sumerian and successive cultures. A temple of Nebuchadnezzar was brought to light, as well as many structures of earlier periods. A great amount of pottery, sculptures, seals, jewelry and human skeletons was obtained from the excavations at levels noted in such a way that the cultures of different periods could be determined and compared. One of the most interesting discoveries was that of the remains of two wooden chariots which indicated this means of transport was in use as early as 3200 B.C. Funds for the Museum's share in this work were contributed by Marshall Field.

Two expeditions during the period were led by Assistant Curator Henry Field. One was an archaeological expedition to western Europe by which important sites occupied by prehistoric man were visited and collections obtained. The other expedition led by Assistant Curator Field explored the North Arabian Desert and found flint implements at various points which indicated the existence in the region of earlier man in a paleolithic phase of culture.

An expedition which circumnavigated the Pacific Ocean and collected land and marine animals for the Museum was sponsored and led by Cornelius Crane on his yacht, *Ilyria*. Karl P. Schmidt, Assistant Curator of Reptiles at the Museum, was leader of the scientific staff of the expedition. Other members were Dr. Albert W. Herre, Dr. W. I. Moss, Walter A. Weber, Frank C. Wonder, Sidney N. Shurcliff, Murry Fairbank and Charles R. Peavy. About 18,000 zoological specimens were collected.

During the spring and summer of 1929, the Field Museum-Williamson Undersea Expedition carried on operations in the Bahamas. This expedition was provided with special equipment both for collecting and observing undersea life, and secured a remarkable and extensive collection of marine fauna. One palmate coral obtained weighed about two tons and measured nearly eleven by six feet. J. E. Williamson led this expedition. Taxidermist Leon L. Pray accompanied it.

Turning to activities more locally connected with the Museum during the period under consideration, the year 1925 was signalized by the gift from Mrs. Anna Louise Raymond of an endowment of \$500,000 in memory of her husband, the late James Nelson Raymond. This endowment, the James Nelson and Anna Louise Raymond Foundation for Public School and Children's

Lectures, enables free motion picture and other educational entertainments to be given to children of the public schools and others, and provides for extension lectures on natural history subjects in the public schools. Subsequent contributions made by Mrs. Raymond have added to the benefits yielded.

In 1925 a contribution of \$100,000 was made to the Museum by Miss Kate Buckingham in memory of her brother, the late Clarence Buckingham. In recognition of this contribution, the hall of physical geology was named Clarence Buckingham Hall.

(To be concluded next month)

CARVED RHINOCEROS HORN FROM CHINA

By BERTHOLD LAUFER
Curator, Department of Anthropology

A unique carved rhinoceros horn was recently acquired by Field Museum from a fund donated annually by the American Friends of China, Chicago. It is intact in its natural shape, and is carved all around with a group of animals along its base.



Unique Carving

Rhinoceros horn with figures of seventeen animals in high relief. Note portrayal of giraffe near center. A relic of the Ming dynasty in China (fifteenth century).

The horn belongs to the large Indian species and stands eight inches high. From mediaeval times until recently a lively trade in rhinoceros horns was carried on from India, Sumatra, Java, Siam, and Annam to China, where they were welcome material to carvers. In carving a row of seventeen animals in high relief upon the horn in question, the artist skillfully adapted his subject to the natural formations of the material, and portrayed exotic animals like the rhino itself and a giraffe, many live specimens of which were imported from East Africa to China in the fifteenth century. This carving is a production of the same period (Ming dynasty).

Rhinoceros horn is not a bony substance, but an epidermal formation composed of a solid mass of agglutinated hairs or bristles.

It was an ancient Chinese belief that the rhinoceros devoured with its food all sorts of vegetable poisons and that its horn was capable of neutralizing poison.

JANUARY GUIDE-LECTURE TOURS

Following is the schedule of conducted tours of the exhibits during January:

Thursday, January 1: New Year's Holiday—no tours
Friday: 11 A.M., Egypt, 3 P.M., North American Mammals.

Week beginning January 5—Monday: 11 A.M., South America, 3 P.M., Sea Animals; Tuesday: 11 A.M., The Giant Komodo and Other Lizards, 3 P.M., Eskimo Life; Wednesday: 11 A.M., Game Animals, 3 P.M., Pewter, Bronze and Cloisonné; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Birds of Streams and Shores, 3 P.M., Primitive Musical Instruments.

Week beginning January 12—Monday: 11 A.M., Skeletons, 3 P.M., Illinois Industries; Tuesday: 11 A.M., Homes in Various Lands, 3 P.M., Plants of Economic Value; Wednesday: 11 A.M., Baskets and Mats, 3 P.M., The Panda and Its Relatives; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Chicago Animal Life, 3 P.M., Primitive Costume Decorations.

Week beginning January 19—Monday: 11 A.M., Amber, Copal and Lacquer, 3 P.M., China; Tuesday: 11 A.M., Asiatic Animals, 3 P.M., Mummies; Wednesday: 11 A.M., Metal Workers, 3 P.M., Implements of Warfare; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Man Through the Ages, 3 P.M., Dinosaurs and Other Reptiles.

Week beginning January 26—Monday: 11 A.M., Rodents, 3 P.M., Roman Life; Tuesday: 11 A.M., Prehistoric Animals, 3 P.M., Laces and Embroideries; Wednesday: 11 A.M., Fire-making and Cooking Utensils, 3 P.M., Chinese Art; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., North American Indiana, 3 P.M., African Animals.

Persons wishing to participate should apply at North Entrance. Tours are free and no gratuities are to be proffered. A new schedule will appear each month in FIELD MUSEUM NEWS. Guide-lecturers' services for special tours by parties of ten or more are available free of charge by arrangement with the Director a week in advance.

NEW MEMBERS

The following persons were elected to membership in Field Museum during the period from November 17 to December 15:

Associate Members

Mrs. John Crerar, J. F. Dammann, Clyde H. DeAcrea, Miss Elizabeth Dimick, William H. Ferguson, Miss Elizabeth Fowler, J. B. Green, Mrs. Phelps B. Hoyt, Edward T. Kelly, W. J. Lawrence, Mrs. W. S. McCrea, Henry G. Naber, R. E. Park, W. Otis Sage, James M. Sheldon, Charles E. Thompson, Walter F. Wallace, Dr. Lucius H. Zeuch.

Sustaining Members

Mrs. Robert Slade

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MEMBERSHIP IN FIELD MUSEUM

Field Museum has several classes of Members. Benefactors give or devise \$100,000 or more. Contributors give or devise \$5,000 to \$100,000. Life Members give \$500; Non-Resident (Life) and Associate Members pay \$100; Non-Resident Associate Members pay \$50. All the above classes are exempt from dues. Sustaining Members contribute \$25 annually. After six years they become Associate Members. Annual Members contribute \$10 annually. Other memberships are Corporate, Honorary, Patron, and Corresponding, additions under these classifications being made by special action of the Board of Trustees.

Each Member, in all classes, is entitled to free admission to the Museum for himself, his family and house guests, and to two reserved seats for Museum lectures provided for Members. Subscription to FIELD MUSEUM NEWS is included with all memberships. It is a courtesy of every museum of note in the United States and Canada are extended to all Members of Field Museum. A Member may give his personal card to non-residents of Chicago, upon presentation of which they will be admitted to the Museum without charge. Further information about memberships will be sent on request.

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PACIFIC WALRUS GROUP, FROM THORNE-GRAVES EXPEDITION, IS INSTALLED

BY WILFRED H. OSGOOD
Curator, Department of Zoology

As the principal result of the Thorne-Graves Arctic Expedition of Field Museum (1929), a large imposing group of Pacific walrus has been added to the Hall of Marine Mammals (Hall N). The animals for this group were personally collected and presented by Bruce Thorne of Chicago and George Coe Graves II of New York, whose

have it completed and opened to the public in record time.

The Pacific walrus is much larger than the Atlantic species and is especially distinguished by having very long tusks. Like the polar bear, it spends its life among Arctic ice floes and, although it has been much hunted for its ivory, it is still to be found in considerable numbers by hardy voyagers who cruise to the northernmost limits of navigation.

enjoying a resting place on the hard, rough, Arctic ice. A bleak icy sea stretches behind them over which gleams the cold glare of a midnight sun cleverly devised to connect with the painted background of ice and snow. The whole effect is one of striking interest and the group stands as one of exceptional individuality.

The taxidermy of the animals in the group was done by Jonas Brothers of Yonkers, New York, one of whom, John Jonas,



Group of Pacific Walrus (Hall N)—Thorne-Graves-Field Museum Arctic Expedition

expedition was especially organized for this purpose. Field Museum is also indebted to them and to Henry Graves, Jr., for a substantial contribution toward the cost of preparing the group which made it possible to

Seven animals are included in the group, one large bull, two younger males, two adult females, and two partly grown young. The ponderous beasts are shown huddled together in characteristic manner, lazily

accompanied the expedition and prepared the skins. Installation was carried out by Staff Taxidermist C. J. Albrecht, and the background and light effects are by Charles A. Corwin.

EXPEDITION WILL EXPLORE LANDS OF THE MAYAS

The Third Marshall Field Archaeological Expedition to British Honduras and Guatemala to conduct excavations on ancient Maya sites and ethnological research among the modern Mayas, will sail from New Orleans on February 20. J. Eric Thompson, Assistant Curator of Central and South American Archaeology, is leader. He led the two previous expeditions in 1928-29 and 1929-30.

The present expedition has a wider scope of operations than the previous two, and will remain in the field probably for a period of six or seven months.

After landing at Belize the expedition will proceed by boat up the coast to the mouth of the New River, and thence inland on the river to the head of navigation. Thence by mule pack train and on foot the journey will continue to the site of the ancient city of Kax Unic (Maya name meaning "Man of the Woods"), which is situated on the frontier between British Honduras and Guatemala. There, with a party of Maya diggers, certain ruins will be excavated which promise to yield a rich collection of Maya antiquities for the Museum.

When this work has been completed, the expedition will transfer its activities to the southeast Peten district of Guatemala, where reconnaissance work will be carried on through an uninhabited and almost impenetrable forest region in search of the sites of ancient Maya cities known to exist but hitherto never definitely located. Work here will be entirely on foot, as the trails are too poor to take mules. The assistance of natives living on the edge of the forest, who are believed to have knowledge of the ruins, will be solicited. It is hoped that a number of old monuments bearing dates in Maya hieroglyphics will be found on the surface in the locality of the buried ruins.

Finally the expedition will pitch camp in the highlands of Guatemala to conduct ethnological work among modern Maya tribes.

New Exhibit of Birds

Exhibits of North American birds at Field Museum have been augmented by a new case containing 145 specimens of a great variety of species. They were collected chiefly by Taxidermist Ashley Hine, some during a recent expedition to Arizona, and some in Illinois.

RARE GEMS ARE PRESENTED BY R. T. CRANE, JR.

Two magnificent and highly valuable gem specimens, one of them pronounced by experts the largest and finest of its kind in the world, have been presented to the Museum by R. T. Crane, Jr.

The stone which has no equal of its kind is of the rare variety of topaz known variously as "rose topaz," "royal topaz," and "Brazilian ruby." It is of deep table cut, one and one-quarter inches long and seven-eighths of an inch wide, and weighs 97.55 carats.

The other is a superb specimen of black opal in the form of a plaque about two and one-half inches long and two inches wide, and weighs 148.43 carats.

These gems have been added to the exhibits in H. N. Higinbotham Hall.

The topaz is a rich red in color, and is perfectly transparent. Topaz of this color is found chiefly in Brazil, and its occurrence in any large and transparent form is extremely rare.

The large black opal plaque has a surface stippled all over with minute brilliant colors which change uniformly to other tints as the stone is seen from different angles.

Field Museum of Natural History

Founded by Marshall Field, 1893

Roosevelt Road and Lake Michigan, Chicago

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FIELD MUSEUM NEWS

STEPHEN C. SIMMS, *Director of the Museum*.....*Editor*

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Field Museum is open every day of the year during the hours indicated below:

November, December, January	9 A.M. to 4:30 P.M.
February, March, April, October	9 A.M. to 5:00 P.M.
May, June, July, August, September	9 A.M. to 6:00 P.M.

Admission is free to Members on all days. Other adults are admitted free on Thursdays, Saturdays and Sundays; non-members pay 25 cents on other days. Children are admitted free on all days. Students and faculty members of educational institutions are admitted free any day upon presentation of credentials.

The Library of the Museum, containing some 92,000 volumes on natural history subjects, is open for reference daily except Sunday.

Traveling exhibits are circulated in the schools of Chicago by the Museum's Department of the N. W. Harris Public School Extension.

Lecturers for school classrooms and assemblies, and special entertainments and lecture tours for children at the Museum, are provided by the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures.

Announcements of courses of free illustrated lectures on science and travel for the public, and special lectures for Members of the Museum, will appear in **FIELD MUSEUM NEWS**.

There is a cafeteria in the Museum where luncheon is served for visitors. Other rooms are provided for those bringing their lunches.

Members are requested to inform the Museum promptly of changes of address.

MUSEUM ACTIVITIES BENEFIT

2,000,000 DURING 1930

That Field Museum is successfully fulfilling its mission, not only as a place of immense interest for casual visitors, but also as an active and important educational institution of tremendous scope and influence, is indicated by statistics on the work carried on in 1930.

During the year the number of visitors to the Museum was 1,332,799, an increase of 164,369 or more than 14 per cent over 1929, which had the largest attendance of any previous year (1,168,430). The 1930 record also made the fourth consecutive year in which the one million mark was passed. Of the visitors it seems safe to estimate that fully one-third were children. It is of interest to note that of the total number of visitors, only 160,924 paid admission. Free admissions on pay days (Members, children, teachers, students, etc.) numbered 92,508, while the attendance on free days (Thursdays, Saturdays and Sundays) totalled 1,079,367.

In addition to the number of persons actually coming to the Museum, the institu-

tion's benefits were extended to approximately 716,000 school children through the extra-mural activities conducted by the Department of the N. W. Harris Public School Extension, and the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures. Thus, including both inside and outside work, the educational effects of the Museum reached more than 2,048,000 individuals, of whom approximately 1,160,000 were children. Additional thousands were reached through the publications and leaflets issued by the Museum, while millions more read internationally circulated press reports of the results of scientific research conducted by the institution, and heard radio lectures about the Museum and its activities.

Ever since its foundation in 1912 with an endowment of \$250,000 presented by the late Norman W. Harris, the Harris Extension has yielded splendid results, with a constant increase in its effectiveness as a means of visual education. To its founder, and also to Albert W. Harris who increased the endowment with a gift of an additional \$100,000 in 1924, and other members of the Harris family who have contributed \$25,000, Chicago owes much gratitude for this remarkably successful adjunct to its school system. During 1930, as in other years, practically every child in the Chicago public schools, and many thousands in private and parochial schools and other institutions as well, was reached repeatedly (once every two weeks during the school year) by the traveling exhibition cases circulated by the Harris Extension. The total number reached by this service was well in excess of half a million, as enrollment in the public schools alone included 506,845 pupils. The cumulative educational effect of presenting new subjects in natural history and economic exhibits every fortnight to this vast number of children can readily be imagined. During 1930 there were 430 institutions served by the Harris Extension, an increase of twenty-two over 1929. Of these, 381 are public schools; thirty private or church schools; eight Y. M. C. A.'s; six branch libraries; two boys' clubs; two settlements, and one orphanage. The number of Harris exhibition cases available increased from 1,123 to 1,176 in 1930.

The year 1930 again emphasized the great debt the city owes to Mrs. Anna Louise Raymond who, by her establishment in 1925 of the James Nelson and Anna Louise Raymond Foundation, with an endowment of \$500,000, made possible the development of another great educational work for the school children, carried on through the Museum. Since its establishment the Foundation has increased its activities at an extraordinary pace, and additional gifts up to the end of 1930 totalling \$27,000 have generously been made by Mrs. Raymond from time to time to aid further its progress. In 1930 the activities of the Foundation reached 277,245 children. Of this number, 209,777 attended lectures in their own schools or other gathering places outside the Museum, and therefore are not included in the general attendance figure of 1,332,799, but constitute one of the principal additional items in arriving at the figure of 2,048,000 as the total number of persons coming directly within the Museum's sphere of influence. The detailed statistics of the Foundation for 1930 show the following facts: twenty-nine entertainments (educational motion picture programs, story-hours, etc.) were given in the James Simpson Theatre of the Museum with a total attendance of 39,793 children; 608 groups, totalling 27,143

children, were conducted on lecture tours of the exhibition halls of the Museum; four talks were given in the Museum's small lecture hall with an attendance of 532; and 209,777 children attended extension lectures in schools and camps.

For adults, twenty-seven lectures on science and travel by noted naturalists and explorers were given in the Simpson Theatre during 1930, with a total attendance of 27,603. In addition, there were twelve talks in the small lecture hall attended by 744 persons, and 528 groups of adults, totalling 8,684 persons, were conducted on lecture tours of the Museum's exhibits.

The Library of the Museum, in addition to its constant service as a source of information to the scientific staff in carrying on research work, preparing labels for exhibits, etc., also served some 700 visitors from outside during 1930. These were largely students from universities in and about Chicago. Others who used the Library's facilities were authors, editors, manufacturers' representatives seeking data, teachers, persons engaged in scientific work, and others needing information on subjects within the scope of the 92,500 books and pamphlets available here.

The collections of study material in the various departments of the Museum, maintained for the convenience of students and other researchers, were also used by many persons.

Marshall Field Visits Museum

Marshall Field, of New York, a member of Field Museum's Board of Trustees and one of the institution's principal benefactors, and Mrs. Field, during a visit to Chicago last month, spent an afternoon at the Museum in company with President Stanley Field. They inspected many new exhibits installed since Mr. Field's last visit to the Museum.

Buses Stop at West Door

During the winter months the No. 26 (Jackson Boulevard) buses of the Chicago Motor Coach Company, operating service to Field Museum, will stop at the west entrance of the building as well as the north entrance, for the accommodation of passengers bound for this destination.

Gifts to the Museum

Following is a list of some of the principal gifts received during the last month:

From Richard T. Crane, Jr.—a cut ruby topaz, 97.55 carats, and a polished black opal, 148.43 carats; from A. C. Jones—a specimen group of fossil brachiopods; from Dillman S. Bullock—a ground dove; from General Biological Supply House—8 specimens of snakes, frogs, lizards and salamanders; from Henry Field—2 hats and a shellfish; from Viscount Furness—2 Scotch red deer.

BEQUESTS AND ENDOWMENTS

Bequests to Field Museum of Natural History may be made in securities, money, books or collections. They may, if desired, take the form of a memorial to a person or cause named by the giver. For those desiring to make bequests, the following form is suggested:

FORM OF BEQUEST

I do hereby give and bequeath to Field Museum of Natural History of the City of Chicago, State of Illinois,

Cash contributions made within the taxable year to Field Museum not exceeding 15 per cent of the taxpayer's net income are allowable as deductions in computing net income under Article 261 of Regulation 69 relating to income tax under the Revenue Act of 1926.

Endowments may be made to the Museum with the provision that an annuity be paid to the patron for life. These annuities are tax-free and are guaranteed against fluctuation in amount.

CHILDREN'S ENTERTAINMENTS —RAYMOND FOUNDATION

A special entertainment for children, provided by the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures, will be given in the James Simpson Theatre of the Museum on Lincoln's Birthday, Thursday, February 12.

Motion pictures of episodes in the life of Abraham Lincoln will be presented, including the following films: "My Father," "Abe's First Law Case," and "The Call to Arms."

The Raymond Foundation announces also its annual spring series of ten children's entertainments on Saturday mornings, which will begin this month. The first program of this series will be on February 21, and will be partly devoted to celebration of George Washington's birthday. The films are "Washington Becomes President," "Alexander Hamilton," "Washing the Elephants," and "Sir Stickleback, the Hedgehog."

On February 28 the films will be "Beautiful Winter," "The Falls of Iguassu," "Insect Farmers and Laborers," "Plant and Animal Death-traps," and "A World Unseen."

There will be two showings of each (including that of February 12)—one at 10 A.M. and one at 11. Admission is free.

Announcement of the other eight programs of the spring series will appear in subsequent issues of FIELD MUSEUM NEWS.

MUSEUM HONORS CONFERRED

At a recent meeting of the Board of Trustees of Field Museum, Arthur S. Vernay, of New York and London, and Mrs. E. Marshall Field, of New York, were elected Honorary Members of the Museum. This is a distinction which, under the by-laws of the Museum, is conferred upon those persons who have rendered eminent service to science.

Philip M. Chancellor of Santa Barbara, Calif., was elected a Patron of the Museum, an honor conferred in recognition of eminent service to the Museum.

Mr. Vernay financed and personally led the Vernay-Lang Kalahari Expedition for Field Museum last year. This expedition brought the Museum a vast zoological collection including several thousand specimens of African mammals, birds, fishes and invertebrates. In addition, Mr. Vernay obtained important botanical and ethnological collections which he presented to the Museum.

Mrs. E. Marshall Field has manifested a long continued and deep interest in science, and has actively participated in scientific work in the interest of the Museum. Several years ago she was a member of a Field Museum expedition which made large collections of botanical, geological and zoological material over a wide range of territory in South America. The work of Mrs. Field contributed much to the success of this expedition.

Mr. Chancellor has financed and led two Museum expeditions, the Chancellor-Stuart Expedition to the South Pacific (1929-30), and the Chancellor-Stuart Expedition to Aitutaki (1930). Both of these expeditions brought the Museum valuable zoological collections. Outstanding specimens include giant dragon lizards of Komodo, one of which is now on exhibition in Albert W. Harris Hall (Hall 18), and reticulated pythons of Borneo (the world's largest species of snake) which are now being prepared for exhibition.

Practically all important plants of Illinois, and more than 600,000 specimens of plants from all parts of the world, are contained in the herbaria of Field Museum.

C. SUYDAM CUTTING RETURNS FROM SIKKIM EXPEDITION

C. Suydam Cutting has returned to his home in New York from his recent zoological expedition to Sikkim in India, and along the northern border of Tibet, conducted on behalf of Field Museum. This expedition, organized and wholly financed by Mr. Cutting, was the fifth Museum expedition in which he has participated. He was accompanied by Herbert Stevens, well-known collector from Tring, England, who has remained in the field to continue the work of the expedition. Mr. Cutting devoted himself largely to hunting big game and to photography, while Mr. Stevens' work is for the most part concentrated on the collection of smaller mammals, birds and reptiles.

Both as an active member, and as a contributor of funds and equipment, Mr. Cutting participated in the James Simpson-Roosevelts Asiatic Expedition (1925-26); the Field Museum-Chicago Daily News Abyssinian Expedition (1926-27); an expedition to Assam which he personally conducted in 1928; and the William V. Kelley-Roosevelts Expedition to Eastern Asia (1928-29).

Mr. Cutting's interest in the Museum has been demonstrated also in other ways. After the return of the Daily News Abyssinian Expedition, Mr. Cutting purchased and presented to the Museum the remarkable collection of bird paintings made on that expedition by the late Louis Agassiz Fuertes. Last year he financed the publication by the Museum of a portfolio of fine reproductions in colors of these paintings. He has presented the Museum with a number of highly valued motion picture films made on various expeditions. He is an Honorary Member, a Patron, and a Corporate Member.

EXHIBIT OF THE DRAGON LIZARD OF KOMODO—CHANCELLOR-STUART EXPEDITION

BY KARL P. SCHMIDT
Assistant Curator of Reptiles

Half legendary tales of gigantic lizards current among the Malays in the East Indies were discounted by travelers as variants of

of until 1926, when the Douglas Burden Expedition to Komodo Island collected a sufficient series of specimens to prove that ten feet is about the maximum length which the species in question attains. Even

"natur-monument" after the example of the national monuments of the United States.

The Komodo lizard feeds on small game of all kinds and is undoubtedly able to pull down half-grown wild pigs and deer. This



Giant Lizard of Komodo (Hall 18)—Chancellor-Stuart Expedition to the South Pacific

the Chinese dragon stories until the giant lizard of Komodo Island was described in 1912. The species was named *Varanus komodoensis* by Dr. P. A. Ouwens, Director of the Buitenzorg Gardens in Java, from a series of five specimens, the largest of which measured nearly ten feet in length.

As long as this creature remained known from only a few specimens, the stories of its size and ferocity continued to grow. Exaggerated ideas of a lizard twenty-five to thirty feet in length were not disposed

this leaves the "dragon lizard of Komodo" much the largest of living lizards, for it is relatively short-tailed and powerfully built in limbs and body.

The distribution of this remarkable lizard is curiously restricted for it is found only on Komodo and the adjacent end of the larger island of Flores in the Lesser Sunda chain, east of Java. Fearing the extinction of so remarkable a form, the government of the Dutch East Indies now protects the species and has made Komodo Island a

diet is supplemented by carrion from larger animals.

Field Museum is fortunate in having specimens of the "dragon lizard," which it owes to the Chancellor-Stuart Expedition of 1929, led by Philip M. Chancellor. The reproduction now on exhibition in Albert W. Harris Hall (Hall 18), made by Leon L. Walters of Field Museum's taxidermy staff, by his remarkable cellulose-acetate process, exhibits the varied coloring of the living animal.

HISTORY OF FIELD MUSEUM

By Oliver C. FARRINGTON
Curator, Department of Geology
(Concluding installment)

The great amount of attention devoted to expeditions during the period under consideration, 1925-29, did not lessen activities within the Museum itself. On the contrary, these activities were greatly increased. The large receipts of material from expeditions called for redoubling of efforts on the part of the taxidermists and preparators, and for additional space for exhibition purposes. The needed space was obtained chiefly by the utilization, for the first time for exhibition purposes, of portions of the ground floor of the Museum building.

The two large Mastaba tombs from Egypt, which had been received in 1909, were the first objects to be installed on this floor. These were installed in such a manner as to protect them from injurious climatic influences. Following these, the whole collection of Egyptian antiquities was moved to the same hall (Hall J). From time to time other units of the anthropological exhibits which had been shown on the main floor were transferred to the ground floor. These changes included transfer of the Philippine and African collections and of the collections illustrating the ethnology of the peoples of the South Seas. Among the latter exhibits it was possible for the first time to install the great Maori council house which had been in the possession of the Museum for many years.

From materials collected by later expeditions important group exhibits were prepared in the several Departments and were added to the exhibit halls as fast as they were made ready. Striking exhibits of the Victoria regia of South America and of the cannon-ball tree were added to the botanical exhibits in 1924. The year 1925 saw the completion and installation of the group of the man-eating lions of Tsavo, and of the shark and crocodile groups. Large models of a cement plant and of a modern brick yard were completed and added to the geological exhibits in 1926. Three bronze groups made by the late Carl E. Akeley and donated by Trustee R. T. Crane, Jr., were installed in Stanley Field Hall in 1926. These groups represented lion-spearers by African natives. Provision of an apparatus for a new form of investigation was made by President Field through his donation of instruments and laboratory equipment for the use of X-rays in the study of Museum material.

The year 1927 saw many changes made in the zoological halls through the withdrawal of some of the systematic collections and the assignment of the halls so vacated to mammal groups. Such groups installed during 1927 included those of the mule deer and Olympic elk. During this year the Museum suffered the loss of two members of the Board of Trustees, Messrs. Edward E. Ayer and Arthur B. Jones, who had served the interests of the Museum from the beginning with great devotion and generosity.

During 1928 the groups of Marco Polo sheep and ibex, material for which was collected by the James Simpson-Roosevelts Asiatic Expedition of 1925, were installed, as was also a group of mountain nyala antelopes, material for which was obtained by the Field Museum—Chicago Daily News Abyssinian Expedition of 1926. A group illustrating fire-making by the pygmies of the Malay Peninsula was installed in 1928. In the same year, Director D. C. Davies, who had succeeded Director Skiff, and who, like him, had been a pioneer in the service

of the Museum, died. The present Director, Stephen C. Simms, was appointed to fill the vacancy.

Through the generosity of Trustee Ernest R. Graham, means were provided in 1926 for an elaborate series of murals showing restorations of various animals and plants of successive geological periods. The preparation of these paintings was intrusted to Charles R. Knight of New York City, and up to 1930 about two-thirds of them had been completed and placed upon the walls of Ernest R. Graham Hall. Restorations in three dimensions, of typical plants and animals of past geological times, were also inaugurated during this period. Part of this work was placed in the hands of the sculptor Frederick Blaschke, of Cold Spring-on-Hudson, New York, for execution, and part was undertaken by the Stanley Field Plant Reproduction Laboratories of the Museum under the direction of Acting Curator B. E. Dahlgren. The first group undertaken by Mr. Blaschke and the only one completed before 1930 represented the place of Man in geological sequence by a life-size group of a family of Neanderthal man shown occupying a cave or rock shelter which was a replica of one in France known to have been inhabited by men of this type.

New groups of mammals placed on exhibition during the year 1929 were the Indian rhinoceros and Alaskan bear. Reconstructed groups of the polar bear, bison and musk-ox were also installed. Subsequent history beyond this point has already been recorded in successive issues of FIELD MUSEUM NEWS.

Looking back over the outline which has been given, it is evident that continued expansion and development have characterized the history of the institution as a whole. That this may be continued in the future is the hope and belief of all friends of the institution, and, no doubt, they will give hearty approval to the declaration of President Field in a recent article that "Field Museum will move as the world moves, forever keeping abreast of the times and the changes which they bring."

Gifts from Friends of China

Three important acquisitions were made recently from the fund annually presented to the Museum by the American Friends of China. These are a prehistoric pottery jar of the neolithic period (about 2000 B.C.) decorated with painted designs of spirals, a unique gilt bronze figurine of a rhinoceros, and a porcelain jar painted in enamel colors with scenes from the lives of fishermen. The pottery jar and figurine are in Case 7 of Stanley Field Hall, to which the two polo figures recently presented by David Weber have also been added; the porcelain jar is shown in Case 31 of Hall 24 (East Gallery).

Henry Field Returns

Henry Field, Assistant Curator of Physical Anthropology, who since early last summer has been on a collecting tour in Europe, gathering material and data for use in the projected new Hall of Prehistoric Man, and Chauncey Keep Hall of Physical Anthropology, returned to the Museum in January.

Museum Officers Re-elected

Stanley Field was re-elected President of Field Museum for the twenty-third time at the Annual Meeting of the Board of Trustees of the institution, held Monday, January 19. Mr. Field has been President since January, 1909. All the other Officers who served during 1930 were also re-elected for 1931.

FEBRUARY GUIDE-LECTURE TOURS

Following is the schedule of conducted tours of the exhibits during February:

Week beginning February 2—Monday: 11 A.M., Prehistoric Animals, 3 P.M., Makers of Totem-poles; Tuesday: 11 A.M., Mexican Archaeology, 3 P.M., African Animals; Wednesday: 11 A.M., China, 3 P.M., Systematic Mammals; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Hall of Plant Life, 3 P.M., South Sea Exhibits.

Week beginning February 9—Monday: 11 A.M., Fishes, Past and Present, 3 P.M., Looma and Weaving; Tuesday: 11 A.M., Marine Life, 3 P.M., Primitive Costumes; Wednesday: 11 A.M., Egypt, 3 P.M., Reptiles; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Musical Instruments, 3 P.M., Birds of Gay Plumage.

Week beginning February 16—Monday: 11 A.M., Farmer Indians, 3 P.M., Roman Archaeology; Tuesday: 11 A.M., Gems and Jewelry, 3 P.M., Eskimo Life; Wednesday: 11 A.M., Fur-bearers, 3 P.M., Early Man; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Palms and Cereals, 3 P.M., Mummies.

Week beginning February 23—Monday: 11 A.M., Native Philippine Life, 3 P.M., Lizards and Other Reptiles; Tuesday: 11 A.M., Indian Art, 3 P.M., Habitat Groups; Wednesday: 11 A.M., Asiatic Animals, 3 P.M., South America; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Economic Minerals, 3 P.M., Pottery Makers.

Persons wishing to participate should apply at North Entrance. Tours are free and no gratuities are to be proffered. A new schedule will appear each month in FIELD MUSEUM NEWS. Guide-lecturers' services for special tours by parties of ten or more are available free of charge by arrangement with the Director a week in advance.

NEW MEMBERS

The following persons were elected to membership in Field Museum during the period from December 17 to January 16:

Life Members

Harold J. Coolidge, Jr. (Non-Resident)

Associate Members

Caleb H. Canby, Jr., Henry P. Chandler, Charles A. Danz, Eliot H. Evans, Dr. Lester E. Garrison, Dr. Stanley Gibson, Ward E. Guest, John W. Hutchinson, Archer L. Jackson, Edward H. Kohlsaat, Mrs. Leander H. LaChance, John H. McVoy, Charles Z. Meyer, Dr. A. H. Parmelee, Mrs. Anna J. Peterson, Arnold P. Rayner, Guy A. Richardson, Mrs. Kinney Smith, Mrs. William H. Tuthill, William Upton Watson.

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MEMBERSHIP IN FIELD MUSEUM

Field Museum has several classes of Members. Benefactors give or devise \$100,000 or more. Contributors give or devise \$5,000 to \$100,000. Life Members give \$500; Non-Resident (Life) and Associate Members pay \$100; Non-Resident Associate Members pay \$50. All the above classes are exempt from dues. Sustaining Members contribute \$25 annually. After six years they become Associate Members. Annual Members contribute \$10 annually. Other memberships are Corporate, Honorary, Patron, and Corresponding, additions under these classifications being made by special action of the Board of Trustees.

Each Member, in all classes, is entitled to free admission to the Museum for himself, his family and house guests, and to two reserved seats for Museum lectures provided for Members. Subscription to FIELD MUSEUM NEWS is included with all memberships. The courtesies of every museum of note in the United States and Canada are extended to all Members of Field Museum. A Member may give his personal card to non-residents of Chicago, upon presentation of which they will be admitted to the Museum without charge. Further information about memberships will be sent on request.

Field Museum News

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NEW MURAL DEPICTS STRANGE REPTILES WHICH LIVED 215,000,000 YEARS AGO

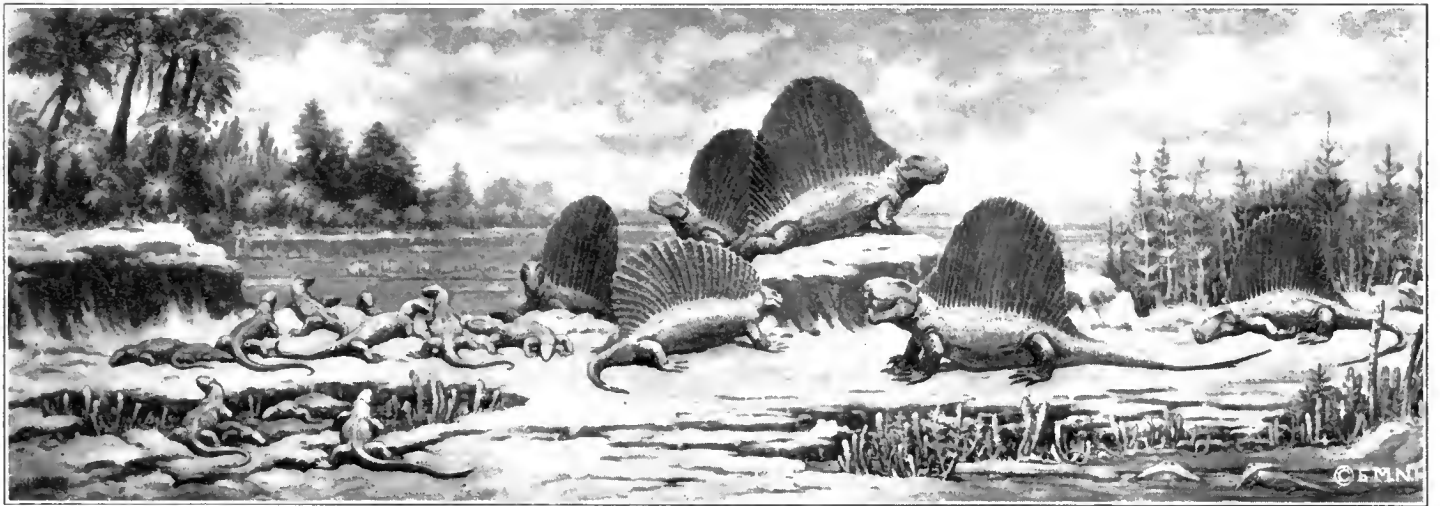
BY ELMER S. RIGGS
Associate Curator of Paleontology

A large mural painting, by Charles R. Knight, in which are restored some of the strange reptiles of the Permian period, is a recent addition to the series of twenty-eight murals which are being installed on the walls of Ernest R. Graham Hall (Hall 38). This painting shows a group of grotesque-looking creatures which lived in the earliest period of the Age of Reptiles. They date back almost

kinds represented, *Dimetrodon* (on the right in the picture), was armed with an ugly series of sharp-pointed teeth which proclaim him an animal of vicious habits and a flesh eater. On his back, spines arose to a height equal to the length of his body. The spines were connected by a membranous covering which extended along the back and formed a great fin-like projection. This fin may have served as a sail to propel the animal over the Permian seas, but as he was more fitted for

have less striking characteristics to distinguish them from modern lizards, but they belonged to an old order which has long since died out.

Basking along the shores of quiet lagoons, these animals formed a distinctively reptilian community. No inquisitive mammals roused them from their drowsy sleep under tropical suns; no birds perched upon the giant horse-tail rushes which bordered the shores. Great dragon flies may have skimmed over the



Mural painting restoring reptiles of the Permian Period. Presented by Ernest R. Graham and on exhibition in Hall 38. Charles R. Knight is the artist.

to the coal age, 215,000,000 years ago, according to estimates.

The animals reproduced include curious fin-back reptiles of two kinds, and several lizard-like reptiles. The former are remarkable, not because of their size, but on account of their unusual proportions. One of the

land habits, it is probable it was of no use beyond the decorative effect.

Naosaurus, the other "fin-back" shown (center of picture), was quite similar to *Dimetrodon* but was inoffensive, and given to feeding upon plants. The lizard-like reptiles shown in the picture (on the left)

waters or rested on a snag of a broken tree, but no hum of busy insects filled the air. It was a time of heavy atmosphere and sluggish life which waited through the long ages until awakening intelligence should dawn upon the animal world to give more activity to the scene.

ROYAL PERSIAN PALACE UNEARTHED AT KISH

The first well-preserved palace of the Sassanian dynasty of Persian kings ever found has been discovered at Kish, in Irak, by the Field Museum-Oxford University Joint Expedition to Mesopotamia, according to reports from Professor Stephen Langdon, director of the expedition.

The discovery was largely accidental, Professor Langdon states. The field director, L. C. Watelin, waiting to begin excavations on the main hill over the site of the ancient city, set his Arab workmen to leveling the mounds of earth near-by. They had not been at work for a week before one wall and two gateways of the royal Persian palace had been laid bare. Professor Langdon estimates its date at about A.D. 350.

Below it, in layers which represent various stages of the civilization at Kish, are the ruins of buildings which preceded the palace. Vertical shafts in the great hill where ancient rulers built temples to the mother goddess show buildings dating back to the Sumerians, probably the first of civilized peoples.

The new discovery is regarded as of the greatest importance for the light which it will throw on the history concerned. The present chief sources of information regarding the Sassanian dynasty are Greek, Arabic and Persian, and it is hoped that the contents of this palace will supplement information already available.

The Byzantine empire was constantly at war with the Sassanian kings, and Professor Langdon believes the palace will contribute new information on this period of the Roman empire. Gold ornaments and pieces of sculpture already found show a blend of Persian and Greco-Roman influences. There is the characteristic Sassanian lotus flower, and on the plaques and friezes on the palace wall are the figures of plants, animals, giants and soldiers. The gateway is decorated with twelve female figures on a lintel. The excavation has not progressed far enough to gauge the size and plan of the palace.

Another report from Professor Langdon indicates the discovery of another huge temple believed to be the greatest monument of the Sumerian period, dating back to about 3500 B.C., but this is not yet confirmed.

THE LARGEST SMALL PLANT

BY PAUL C. STANDLEY
Associate Curator of the Herbarium

A branch of what is probably the largest plant in the world was received recently by Field Museum.

Professor Stanley F. Cain of Butler University presented to the Museum a specimen of the box huckleberry (*Gaylussacia brachycera*), that he collected in June, 1930, near Rugby, Fentress County, Tennessee. This plant has been supposed to be one of the rarest American shrubs, known only from Delaware, Pennsylvania, West Virginia, and Virginia, and in most of those states from very few localities.

It is an evergreen shrub that trails over the ground and forms mats or colonies sometimes one hundred acres in extent. Botanists who have investigated the colonies are of the opinion that often they consist of a single plant, hundreds of years old. If they are right, the box huckleberry, in spite of the fact that it rises scarcely six inches above the ground is perhaps the largest plant of the whole world.

Field Museum of Natural History

Founded by Marshall Field, 1893

Roosevelt Road and Lake Michigan, Chicago

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FIELD MUSEUM NEWS

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Field Museum is open every day of the year during the hours indicated below:

November, December, January	9 A.M. to 4:30 P.M.
February, March, April, October	9 A.M. to 6:00 P.M.
May, June, July, August, September	9 A.M. to 6:00 P.M.

Admission is free to Members on all days. Other adults are admitted free on Thursdays, Saturdays and Sundays; non-members pay 25 cents on other days. Children are admitted free on all days. Students and faculty members of educational institutions are admitted free any day upon presentation of credentials.

The Library of the Museum, containing some 92,000 volumes on natural history subjects, is open for reference daily except Sunday.

Traveling exhibits are circulated in the schools of Chicago by the Museum's Department of the N. W. Harris Public School Extension.

Lecturers for school classrooms and assemblies, and special entertainments and lecture tours for children at the Museum, are provided by the James Nelson and Anna Louisa Raymond Foundation for Public School and Children's Lectures.

Announcements of courses of free illustrated lectures on science and travel for the public, and special lectures for Members of the Museum, will appear in **FIELD MUSEUM NEWS**.

There is a cafeteria in the Museum where luncheon is served for visitors. Other rooms are provided for those bringing their lunches.

Members are requested to inform the Museum promptly of changes of address.

FIELD MUSEUM PRESS

The extent to which Field Museum of Natural History, in its capacity of publisher of scientific books and pamphlets, is contributing to the world's store of scientific information, is probably little realized by the general public, or even by most of the Members of the institution.

In its various regular series of publications—the Anthropological, Botanical, Geological, Zoological, Historical, and Annual Report Series—the Museum has up to date published more than 280 works. These are chiefly of technical character, and intended for free distribution among museums, libraries, and higher institutions of learning, and for exchange with contemporary authors, both in this country and abroad. They are made available, also, to other persons to whom they would be of use, at prices barely covering the cost of printing. The list of institutions and individuals to whom these are regularly sent now comprises 1,250 names.

In addition, the Museum publishes series of Anthropological, Botanical, Geological and Zoological leaflets, written in popular

style and intended primarily to disseminate knowledge among laymen. More than sixty of these have been published to date. They also are sent regularly to a mailing list of more than 1,000 institutions and individuals both in the United States and foreign countries. In addition, they are widely sold to the general public at cost prices.

Additional works issued from Field Museum Press include the *Memoirs Series* of quarto-size scientific publications on the results of specialized research conducted under the auspices of the Museum; the *Technique Series* of handbooks on new and efficient methods of work developed at Field Museum; the *Design Series* intended for the use of artists, designers, art students, textile workers, etc.; and numerous special handbooks, leaflets, portfolios and other works.

In addition to producing all these books and pamphlets, Field Museum Press brings out regularly each month the **FIELD MUSEUM NEWS**; prints the many thousands of labels necessary for the exhibits; and produces all miscellaneous printed matter required by the institution, such as lecture posters, stationery, direction folders, etc. To carry on this work, the Museum has a large and complete book and job printing and binding plant, equipped with modern machinery, and a photogravure studio and press. A large staff of printers is employed, and various members of the Museum staff devote much time to writing and editorial work.

In exchange for the publications distributed free to the institutions and individuals on the regular mailing lists the Museum receives large numbers of valuable publications which are added to the Museum Library. The rest of the Museum's investment in publication work represents a contribution to the advancement of science and the dissemination of knowledge.

Lions Obtained for Museum

Word has been received from Marshall Field, of New York, Field Museum Trustee, that he will present to the Museum a large male lion, a lioness and two cubs, which he obtained on his recent private hunting trip in Tanganyika Territory, British East Africa. The specimens will fill a long-felt need for a habitat group of lions to be added to the exhibits in Carl E. Akeley Memorial Hall.

RARE ANTELOPE RECEIVED

A specimen of the rare giant sable antelope of Africa, in size extremely close to the record specimen ever taken by any hunters, has been received at Field Museum as a result of the Vernay-Lang Kalahari Expedition. The animal was obtained through the efforts of Arthur S. Vernay of New York and London, who financed and led the expedition, and induced the Portuguese government officials in Angola (Portuguese West Africa) to grant permission to take the specimen of this highly protected animal. Allan Chapman was the hunter who finally stalked and shot the handsome beast. The skin, skull and antlers have all arrived at the Museum, and work will soon begin to mount the animal for exhibition.

The horns of the specimen are five feet two and one-half inches long, which is only one and one-half inches less than the record size ever taken by any hunter, according to Dr. Wilfred H. Osgood, Curator of Zoology. Until comparatively recently the giant sable antelope was unknown, having been discovered only about fifteen years ago, Dr. Osgood states. It is found nowhere except in a limited area in Angola. Sportsmen and naturalists generally concede that it is the most magnificent of all antelopes, its nearest

rival being its close relative, the common sable antelope of East Africa. The giant species is distinguished from the common one chiefly by the enormous size of its horns, and the distribution of the white markings



Giant Horns

Antlers and skull of giant sable antelope received from Vernay-Lang Kalahari Expedition, being inspected by Curator Osgood.

on its almost jet black coat. The horns of the giant species run to five feet and more in length, whereas those of the common species average between three and four feet.

The Vernay-Lang Expedition obtained for the Museum also a vast collection including representatives of practically all the larger mammals of South Africa, and several thousand specimens of small mammals, birds, reptiles, fishes and invertebrates.

Gifts to the Museum

Following is a list of some of the principal gifts received during the last month:

From R. Bensabott, Inc.—a carved green jade box, China; from William J. Chalmers—a brick of silver made by first waterjacket furnace operated at Leadville, Colorado, a brick of silver made from ore of early Montana mines, and 8 ethnological objects from Algeria and Morocco; from Dr. I. W. Drummond—10 ethnological objects, China, Near East and Switzerland; from Charles L. Watelin—26 flints of Campignian period, France; from Frank von Draasek—8 specimens diamond satellites, quartz crystals and other minerals, and 9 photographs illustrating diamond mining; from Charles S. B. Smith—2 boards of sugar maple; from J. Neils Lumber Company—4 trunk slabs, 2 boards and a wheel section; from Great Southern Lumber Company—2 boards of longleaf pine; from Harry T. Davis—an etched fragment of Randolph County meteorite, North Carolina; from Charles H. Swift—a beaded buckskin vest, Dakota, and a beaded belt, Menominee; from H. B. Conover—a Canada goose; from T. Gunning Davis—a squirrel monkey, Paraguay; from Henry Field—4 scorpions and 6 jointed spiders, Irak; from R. C. Swank—a hornet's nest, Missouri.

BEQUESTS AND ENDOWMENTS

Bequests to Field Museum of Natural History may be made in securities, money, books or collections. They may, if desired, take the form of a memorial to a person or cause, named by the giver. For those desiring to make bequests, the following form is suggested:

FORM OF BEQUEST

I do hereby give and bequeath to Field Museum of Natural History of the City of Chicago, State of Illinois,

Cash contributions made within the taxable year to Field Museum not exceeding 15 per cent of the taxpayer's net income are allowable as deductions in computing net income under Article 251 of Regulation 69 relating to the income tax under the Revenue Act of 1926.

Endowments may be made to the Museum with the provision that an annuity be paid to the patron for life. These annuities are tax-free and are guaranteed against fluctuation in amount.

SPRING LECTURE COURSE BEGINS MARCH 7

The fifty-fifth free lecture course presented by Field Museum will begin on Saturday, March 7. Eight lectures on science and travel, illustrated with motion pictures and stereopticon slides, will be given by eminent explorers and naturalists. The lectures will be on successive Saturday afternoons, and will be given in the James Simpson Theatre of the Museum.

All lectures begin at 3 P.M. Admission is free. Following is the complete schedule:

March 7—The Lost Valleys of the Caucasus
William Osgood Field, Lenox, Massachusetts

March 14—The Human Side of the Byrd Expedition
Chief Yeoman Charles E. Lofgren, United States Navy (retired), Personnel Officer of the Byrd Expedition to the Antarctic

March 21—Australian Life and Scenery
Professor Griffith Taylor, University of Chicago

March 28—Exploring the Jungles of Surinam
Jean M. F. Dubois, Denver, Colorado

April 4—Alaska
Amos O. Berg, Ottawa, Canada

April 11—Across Asia's Snows and Deserts
William J. Morden, Associate in Mammalogy, American Museum of Natural History, New York City

April 18—The Tale of the Ancient Whaleman
Chester Scott Howland, Boston, Massachusetts

April 25—A Close-up of Early America
Gilbert E. Gable, New York City

No tickets are necessary for admission to these lectures.

CHILDREN'S ENTERTAINMENTS —RAYMOND FOUNDATION

Eight more of the free motion pictures of the spring series provided for children by the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures remain to be given on Saturday mornings during March and April in the James Simpson Theatre of Field Museum. The first two were given in February. Following is the schedule of dates and titles of films to be shown on each:

March 7—The Antics of the Kilowatt; The Eagle's Nest; Traveling in a Goatskin Boat.

March 14—America Raises Rubber; Thrills in Yellowstone; Bare Facts About Bears.

March 21—Fine Furs on Fine Animals; Picturesque Roumania.

March 28—A Jaguar in Stone; Belgian Cities; How Buds Become Leaves; Fishes of Many Waters; Hagotian, the Rug-maker.

April 4—The Story of Silk; Pineapples; Life in a Pond; Undersea Partnerships; The Life History of a Pearl.

April 11—The Story of Asbestos; Fire-making Without Matches; Drummers and Boomers; Porcupines and Their Neighbors.

April 18—The Island of Sugar; Prodigal Palms; Poor Butterfly; The Message of the Flowers.

April 25—In Batik Land; A Dyak Wedding; Teak-logging in Siam; Elephants on Parade; Wooden Shoes.

Each program is given twice, at 10 and 11 A.M. Children from all parts of Chicago and suburbs are invited to attend.

Archaeological Expedition Sails

The Third Marshall Field Archaeological Expedition to British Honduras and Guatemala sailed from New Orleans February 27 for Belize. It will excavate ancient Maya sites and conduct ethnological research among the modern Mayas. J. Eric Thompson, Assistant Curator of Central and South American Archaeology, is leader.

MODELS OF ZAPOTEC TEMPLE AND MAYA PYRAMID PLACED ON EXHIBITION IN HALL 8

By J. ERIC THOMPSON

Assistant Curator of Central and South American Archaeology

Recently a model of the famous palace at Mitla in the state of Oaxaca, Mexico, was placed on exhibition in Hall 8. Mitla was the capital of the Zapotecs, one of the most advanced tribes of ancient Mexico, who evolved a distinct culture and maintained their independence until conquered by the Aztecs in A.D. 1494.

The model, which was made at the United States National Museum, shows the temple as it was when in occupation, but the original, even at the present time, is remarkably well preserved. It consists of a long hall with great stone columns down the center, the long axis at right angles to the entrance, and behind, four long and narrow rooms grouped around an interior court.

depressions in the mortar beds at the top of the walls show how the weight was carried by wooden beams, and in the model part of the roof is restored in such a manner that the original method of construction shows.

According to an early Spanish writer, Burgoa, who visited Mitla shortly after the conquest, this building served as the temple and residence of the Zapotecan rulers and high priests. He writes, "One of the rooms . . . was the palace of the high priest, where he sat and slept, for the apartment offered room and opportunity for everything. The throne was like a high cushion with a high back to lean against, all of jaguar skin, stuffed entirely with delicate feathers or with fine grass. . . All the rooms were clean and well furnished with mats. It was not the custom to sleep on bedsteads, however great a lord might be."

the Carnegie Institution of Washington. The pyramid, which is adorned with grotesque masks of the rain gods, has a somewhat un-Maya appearance. The later inhabitants of the city of Uuaxactun had covered it up in order to build a larger pyramid on top, and to this the under pyramid owes its remarkably good state of preservation. The excavation was the work of Oliver G. Ricketson of the Carnegie Institution, and the model was made by Samuel Guernsey of Boston.

The structure is of peculiar interest because it appears to antedate the earliest dated stelae at Uuaxactun, which in turn are more ancient than any monument known from any other Maya city.

Casts of two Maya lintels from Yaxchilan in Guatemala have recently been hung at the east end of the same hall. These are



Model of famous Zapotec temple at Mitla, Oaxaca, Mexico. On exhibition in Hall 8.

The chief interest of the building lies in the very fine series of geometric patterns in stone that adorn the outer and inner walls. These designs are arranged in horizontal panels, the relief having a depth of about an inch and a half. The panels consist of a large number of separate stones, each with its portion of design carefully carved on its surface so that it fitted without error into the general pattern. The effect was enhanced by painting the background a deep red. Although the roof has now collapsed, the

According to this same writer, the high priests and kings were buried under the palace; for Mitla, which is a corruption of an Aztec word *Mictlan*, meaning the abode of the dead, was supposed to be above the entrance to the underworld. Human sacrifice, too, was performed in this building.

Another model, representing the earliest known Maya building, has also been placed on exhibition in Hall 8. This represents a stucco covered pyramid excavated at Uuaxactun in the Peten District of Guatemala by

magnificent examples of Maya sculpture. They are both from the same building and represent the drawing of blood from the tongue and its offering to the two-headed plumed serpent god. The carving, which is in deep relief, portrays clearly the deformation of the head, the head-dresses of quetzal feathers, ear-plugs, and finely woven textiles.

Other improvements to Hall 8 include a series of large photographs of Maya temples and buildings, additional casts, and the reinstallation of material in the cases.

THE GAME OF POLO

BY BERTHOLD LAUFER

Curator, Department of Anthropology

Many Museum visitors viewing the exhibit of four Chinese clay figures of women on horseback engaged in a polo match, exclaim in surprise, "We never knew polo was played in China, and that Chinese women indulged in athletic sports." Yet polo has had a long and honorable history in China, and has been a favorite subject of many illustrious painters and sculptors.

The clay figures in question, which were buried with sport-loving noblemen in the eighth century of our era, are the earliest monuments to polo now extant. The first great polo match on record was played in A.D. 709, at the imperial court of Ch'ang-an, between Chinese princes and Tibetan ambassadors who had arrived from Lhasa to receive a daughter of the Chinese emperor who was to marry the king of Tibet.

Polo was first played about the beginning of our era by Iranian tribes of nomadic horsemen inhabiting Central Asia, and from this center both the polo horses and the game were transmitted to Persia and China. In its origin it was not a game, but rather an exercise in preparation for war, and a trial of skill and endurance, on a par with archery.

In China polo was vigorously cultivated by several emperors of the T'ang dynasty, and also under the Sung dynasty, during which it was adopted as an exercise in the army. Under the Manchu dynasty the game became extinct.

There is a story of an old general, who used to place a pile of ten coins in the polo court, and galloping his horse strike one off with his club each time he passed, knocking the coin up seventy to eighty feet in the air.

The polo sticks are described as terminating in a point like the crescent moon, and are therefore styled "moon sticks." In Chinese paintings they appear provided with a scoop or ladle, exactly as in Persia. The balls were of an elastic vermilion painted wood, but leather balls are also mentioned. The players formed two teams and contended for the same ball. The goal was set up at the south end of the course and consisted of two stakes connected by a board on top, making an open gate, in which was suspended a net to receive the ball. The side able to strike the ball into the net was the winner. The horses were gorgeously adorned with pheasant feathers, tassels, bells,

and metal mirrors. Once tossed into the air, the ball was not allowed to fall to the ground, and the highest ambition was to keep it spinning in the air, so that it never became detached from the stick.

It is a singular fact that in China donkeys and mules as well as horses were trained for polo. From ancient times Shantung Province has been celebrated for its enormous



Polo Player

Chinese mortuary clay figure of woman polo player. One of a pair presented by David Weber.

donkeys, and it was there that the initiative was taken to train them for the game. In the year 826 an official of Shantung sent a present of polo donkeys to the imperial court and four renowned players who performed before the emperor. The prince of Ting-siang under the T'ang taught his ladies to play polo on donkey-back. The Museum owns several Chinese paintings representing women on donkeys playing polo.

Bird Collecting Expedition

Staff Taxidermist Ashley Hine was dispatched to California toward the end of last month to conduct an expedition which will make collections of important birds needed for addition to the Museum's North American ornithological series. A special effort will be made to obtain specimens of many small birds which are to be found in the middle and southern parts of the state during the next few months.

NEW MEMBERS

The following persons were elected to membership in Field Museum during the period from January 17 to February 17:

Non-Resident Life Members

W. C. Stephens

Associate Members

Arthur L. Allais, Dr. Nathaniel Allison, Mrs. Clay Baird, David Degen, Robert J. Dunham, Howard Elting, Edward George Felsenthal, James D. Grant, Michael Karpen, John A. McGarry, Edward Mohr, Professor Claude Irwin Palmer, Miss Jessie H. Rankin, William J. Rathje, Charles W. Stiger, Sr., J. W. Watzek, Jr., Samuel W. Weis.

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MARCH GUIDE-LECTURE TOURS

Following is the schedule of conducted tours of the exhibits during March:

Week beginning March 2—Monday: 11 A.M., Life in the Far North, 3 P.M., Horses; Tuesday: 11 A.M., South American Indians, 3 P.M., Cereals and Spices; Wednesday: 11 A.M., Users of Horn, Bone and Ivory, 3 P.M., Reptiles, Past and Present; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Horned and Hoofed Animals, 3 P.M., Chinese Ethnology.

Week beginning March 9—Monday: 11 A.M., Armor and Weapons, 3 P.M., Economic Fibers; Tuesday: 11 A.M., Prehistoric Animals, 3 P.M., Costumes; Wednesday: 11 A.M., Indians of the Southwest, 3 P.M., Musical Instruments; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Egypt, 3 P.M., Trees of the Chicago Area.

Week beginning March 16—Monday: 11 A.M., Birds of March, 3 P.M., Crystals and Gems; Tuesday: 11 A.M., Fishes, 3 P.M., Polynesia; Wednesday: 11 A.M., Animal Life of the Seas, 3 P.M., Basketry; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Skeletons, 3 P.M., The Story of Man.

Week beginning March 23—Monday: 11 A.M., Economic Minerals, 3 P.M., The Mound Builders; Tuesday: 11 A.M., North American Game Animals, 3 P.M., Roman Archaeology; Wednesday: 11 A.M., Carl Akeley Hall, 3 P.M., Jewelry of Many Lands; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Mummies, 3 P.M., Plant Families.

Week beginning March 30—Monday: 11 A.M., Africa and Madagascar, 3 P.M., Physical Geology; Tuesday: 11 A.M., Animals of the Plains; 3 P.M., Peoples of the Pacific.

Persons wishing to participate should apply at North Entrance. Tours are free and no gratuities are to be proffered. A new schedule will appear each month in FIELD MUSEUM NEWS. Guide-lecturers' services for special tours by parties of ten or more are available free of charge by arrangement with the Director a week in advance.

An Important Plant Collection

Field Museum has received in exchange from the Royal Museum of Stockholm, through Dr. Gunnar Samuelsson, a valuable collection of 1,336 specimens of plants for the Herbarium. The sending consists in part of 450 specimens collected in the State of Paraná, Brazil, by the late Per Dusén. These include many rare species not represented previously in the Museum Herbarium, and they are the more desirable because of the extreme care used in their preparation.

An equally desirable portion of the sending consists of 640 plants collected in Cuba by Dr. Erik L. Ekman.

Museum hours in March: Daily, 9 A.M. to 5 P.M.

Chancellor Collection Arrives

A collection of some 400 fishes, and numerous corals and other marine invertebrates, collected by the recently returned Chancellor-Stuart-Field Museum Expedition to Aitutaki, Cook Islands, was received at the Museum last month. Among the fishes are many remarkable for their curious forms and their beautiful coloration, and these will make excellent subjects for exhibits which are to be prepared in the near future. Material for addition to the study collections was also received.

Philip M. Chancellor, who sponsored and led this expedition and the previous Chancellor-Stuart-Field Museum Expedition to the South Pacific in 1929-30, is now engaged in supervising the making of a motion picture film, "The Dragon Lizard of Komodo." Part of this film, which will have sound effects, was made on the first expedition, and some scenes were taken at Field Museum as a result of the exhibition here of the Komodo lizard reproduction made from one of the specimens Mr. Chancellor collected.

Clifford A. Rowley, Joseph P. Savage, Mrs. George J. Schmitt, Mrs. Charles R. Simmons, Charles H. Smart, Harold E. Stenbridge, Mrs. Louis L. Thurstone, Mrs. Mary Tuma, Irving M. Tuteur, Mrs. Gerard Van Dyke, Fred VanO'Linda, Frederick W. Vodocz, Miss Mary D. Weir, Elmer J. Whitty, Gerhard C. Wolterding, Ferdinand H. Young.

MEMBERSHIP IN FIELD MUSEUM

Field Museum has several classes of Members. Benefactors give or devise \$100,000 or more. Contributors give or devise \$5,000 to \$100,000. Life Members give \$500; Non-Resident (Life) and Associate Members pay \$100; Non-Resident Associate Members pay \$50. All the above classes are exempt from dues. Sustaining Members contribute \$25 annually. After six years they become Associate Members. Annual Members contribute \$10 annually. Other memberships are Corporate, Honorary, Patron, and Corresponding, additions under these classifications being made by special action of the Board of Trustees.

Each Member, in all classes, is entitled to free admission to the Museum for himself, his family and house guests, and to two reserved seats for Museum lectures provided for Members. Subscription to FIELD MUSEUM NEWS is included with all memberships. The courtesies of every museum of note in the United States and Canada are extended to all Members of Field Museum. A Member may give his personal card to non-residents of Chicago, upon presentation of which they will be admitted to the Museum without charge. Further information about memberships will be sent on request.

Field Museum News

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No. 4

EXHIBIT OF SLOTH SKELETONS OBTAINED BY MARSHALL FIELD EXPEDITION

BY ELMER S. RIGGS
Associate Curator of Paleontology

The skeletons of two South American ground sloths of the Pleistocene Age (one to one and one-half million years ago), mounted in positions characteristic of their habits in life, have recently been placed on exhibition in Ernest R. Graham Hall of Historical Geology (Hall 38). The specimens are part of the collection of fossils obtained by the Marshall Field Paleontological Expedition to Bolivia in 1927. They were excavated from an accumulation of valley sands and clays.

In the Museum exhibit, one of the sloths is mounted in the position assumed when digging for roots and tubers. The other is rearing up to reach up among the branches of a tree to feed. These sloths are of the species which is known by the scientific name of *Scelidodon capellinii*.

Many kinds of ground sloths have lived in various parts of the western hemisphere at earlier periods of the earth's history, but all of them are now extinct. In addition to the abundance of fossil skeletons of them which have been found, some pieces of dried skin, preserved by nature for thousands of years, have been discovered and add to man's knowledge of these great beasts. Some of these skin fragments were found in the cave of Ultima Esperanza in Chile, and more recently a desiccated body of a smaller species was discovered in a cave in New Mexico.

All of the ground sloths are related to the little tree sloths which still live in the forested regions of South America. During their earliest history the ground sloths inhabited the spacious shores of southern Argentina, where they were among the most numerous animals of their time. In later geological periods they lived in great numbers on the

plains or *pampas* of central Argentina, and in the fertile valleys of northern Argentina, Bolivia, and other parts of South America. Many specimens have been found in caves of eastern Brazil. They became the largest and most powerful, as well as probably the most numerous, of all the mammals native to South America.

After land had been formed between North and South America, the ground sloths found their way northward into the territory now occupied by the United States. Remains of

has been recorded from the vicinity of Minneapolis.

Most of the ground sloths had massive bodies and short, stout legs. Their heads were small in comparison. The jaws were armed with five pairs of short, pig-like teeth above and below. The teeth were not provided with the hard coating of enamel which in most animals protects them from wear. In many species of sloths there were no front teeth of the kind used by most animals in seizing their food. These sloths

apparently drew their food into the mouth by means of a long, flexible tongue.

The fore legs were longer than the hind legs, and capable of greater freedom of movement. Each fore foot was armed with three claws, which were apparently used in pulling down the branches of trees and in digging food out of the ground. The hind legs were short and stout, and used in supporting the body when the fore part was raised to reach into trees.

From the famous specimen aforementioned, found in the Chilean cave, and from various other fragments, the outer covering of these animals is known to have been a thick skin with a coat of coarse hair. The animal was further protected by a layer of small, rounded bones at the base of the skin. These were arranged much like cobblestones in a pavement. Specimens of these small bones are often found scattered through the earth along with the fossil skeletons. A specimen which may be seen in Ernest R. Graham Hall shows a large section of these pebble-like

bones or ossicles, lying closely joined together and covering part of the ribs. This arrangement apparently served, like the shells of turtles and armadillos, to protect these slow-moving creatures from the attacks of their flesh-eating enemies.



New ground sloth group in Ernest R. Graham Hall

certain species closely related to those in the Museum exhibit have been found in the asphaltum pits of Los Angeles. Others have been recovered from river sands in Nebraska, and from caves in Pennsylvania. Perhaps the most northerly occurrence is one which

STONE AGE MAN'S SKELETON ARRIVES AT MUSEUM

However much they may have loved him, when a man died among a certain tribe which inhabited part of southern Hungary in neolithic times, his comrades did not want him or his spirit to come back. At least, so it appears from a skeleton of a prehistoric inhabitant of Hungary which recently arrived at Field Museum of Natural History, for the toes of both feet were cut off at the first joint before burial.

That this was a custom among this man's people is indicated by the fact that several other skeletons excavated from the same burial mound reveal the same treatment of the feet. From this fact, Henry Field, Assistant Curator of Physical Anthropology,

suggests that these people, who lived some 7,000 to 10,000 years ago, believed that by mutilating the feet they could prevent departed souls from walking back to frighten or annoy their survivors.

The specimen received at the Museum comprises not only the human remains but the complete grave with the original earth in which the skeleton was found. It represents the neolithic or late stone age. With it are two prehistoric pottery vessels and part of a wild boar tusk which had been buried with the deceased. The skeleton is of a man who was about thirty-five years old when he died, according to Mr. Field. It is of great scientific importance, as it is the only practically complete human skeleton representing this period of neolithic culture which has reached the United States.

Persian Mammals En Route

Specimens of Persian wild ass and Persian wild goat are on their way to Field Museum of Natural History, as a result of the recent hunting trip in Persia of James E. Baum, Jr., who returned to Chicago last month. The specimens, now en route, will be presented to the Museum by Mr. Baum on their arrival.

To Hunt in Indo-China

George E. Carey, Jr., of Baltimore, and G. F. Ryan of Lutherville, Md., are on their way across the Pacific to Indo-China for a hunting expedition in the results of which Field Museum will participate. They will collect certain animals needed to complete the series of habitat groups of Asiatic mammals in William V. Kelley Hall.

Field Museum of Natural History

Founded by Marshall Field, 1893

Roosevelt Road and Lake Michigan, Chicago

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FIELD MUSEUM NEWS

STEPHEN C. SIMMS, *Director of the Museum* *Editor*

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Field Museum is open every day of the year during the hours indicated below:

November, December, January	9 A.M. to 4:30 P.M.
February, March, April, October	9 A.M. to 5:00 P.M.
May, June, July, August, September	9 A.M. to 6:00 P.M.

Admission is free to Members on all days. Other adults are admitted free on Thursdays, Saturdays and Sundays; non-members pay 25 cents on other days. Children are admitted free on all days. Students and faculty members of educational institutions are admitted free any day upon presentation of credentials.

The Library of the Museum, containing some 92,000 volumes on natural history subjects, is open for reference daily except Sunday.

Traveling exhibits are circulated in the schools of Chicago by the Museum's Department of the N. W. Harris Public School Extension.

Lecturers for school classrooms and assemblies, and special entertainments and lecture tours for children at the Museum, are provided by the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures.

Announcements of courses of free illustrated lectures on science and travel for the public, and special lectures for Members of the Museum, will appear in **FIELD MUSEUM NEWS**.

There is a cafeteria in the Museum where luncheon is served for visitors. Other rooms are provided for those bringing their lunches.

Members are requested to inform the Museum promptly of changes of address.

A GRACIOUS ACT

On exhibition in Field Museum's Egyptian archaeological collections is a cut leather ceremonial corselet of a priest of ancient Thebes, dating back to the eighteenth dynasty (sixteenth century B.C.). It is one of the only two known examples of this kind of corselet in the world. It was placed in the Museum by T. M. Davis of Newport, Rhode Island, on permanent loan.

Mr. Davis recently died, and in his will left all of his Egyptian collections to the Metropolitan Museum of Art, New York. It was a debatable point whether Mr. Davis intended the permanent loan he had made of this object to Field Museum to continue after his death, or whether he intended it to be included with his other Egyptian collections bequeathed to the Metropolitan Museum.

By agreement between President Robert W. de Forest of the Metropolitan Museum, and President Stanley Field of Field Museum, the question was submitted privately to Judge Julian Mack for decision. Judge Mack studied the will, and all of the cor-

respondence with Mr. Davis and other files relating to the permanent loan of the object to Field Museum. As a result, he decided that Field Museum had a proper claim to retain the corselet. This decision was accepted by Mr. de Forest and the Metropolitan Museum. The administration of Field Museum is deeply appreciative of the courtesy of Mr. de Forest and the other authorities of the Metropolitan Museum for their courtesy in allowing decision of the question on the basis of this investigation, and their gracious act in relinquishing their claim.

ANNUAL REPORT PUBLISHED

The Annual Report of the Director of Field Museum of Natural History to the institution's Board of Trustees, a book of 256 pages with twenty photogravure illustrations, is off the press, and copies will be sent to all Members of the Museum at an early date. All activities of the Museum during 1930 are reviewed in the Report by Director Stephen C. Simms.

The Museum was the recipient of a number of noteworthy benefactions during the year, the Report shows. Among the outstanding gifts were six contributions for various purposes, totaling \$154,547 from President Stanley Field; gifts totaling \$196,000 from Marshall Field; \$60,600, representing a legacy of \$50,000 and payment of a previous pledge of \$10,600, received from the estate of the late Chauncey Keep; \$50,000 from Mrs. E. Marshall Field; \$10,000 from Martin A. Ryerson; \$5,000 from Mrs. James Nelson Raymond; \$7,819 from R. T. Crane, Jr.; \$10,762 from C. Suydam Cutting of New York, who in addition financed an expedition which he led for the Museum in Sikkim, India; \$5,000 from Mrs. William H. Moore; \$3,700 from Albert W. Harris; \$3,000 from William V. Kelley; \$5,000 from the Rockefeller Foundation; \$2,000 from Mrs. Louise E. Thorne; \$1,000 each from Bruce Thorne, Henry Graves, Jr., and George Coe Graves II; \$834 from William J. Chalmers, and \$655 from the American Friends of China. In addition, a pledge of \$18,000 for a group to be placed in Chauncey Keep Memorial Hall, was made by Mrs. Charles H. Schweppe.

After allocation of all contributions, and all income from the Museum's endowments and other sources, the institution ended the year with an unprovided for operating deficit of \$114,898, the Report shows. Total expenditures for the year, including general operating expenses, purchases of collections, cost of expeditions (excluding those privately financed for the Museum by various sponsors), equipment, the N. W. Harris Public School Extension, and the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures, amounted to \$920,110.

Persons named in the Report who by their gifts during the year of money or materials ranging in value from \$1,000 to \$100,000 were made eligible and elected to the membership classification designated as Contributors, include Arthur S. Vernay, L. M. Willis, Lee Ling Yün, Mrs. E. Marshall Field, Mrs. William H. Moore, Mrs. Charles H. Schweppe, and Mrs. Louise E. Thorne. Many of the others whose 1930 gifts would place them in this group are not named here simply because their gifts in previous years had already placed them in this class or in the list of Benefactors (persons giving \$100,000 or more).

Life Members elected during the year are Mrs. Frank H. Armstrong, Louis E. Asher, Henry B. Babson, Thomas M. Boyd, Herman

A. Brassert, Aldis J. Browne, George R. Carr, Mrs. Lewis L. Coburn, William M. Collins, George A. Cooke, Charles A. Paesch, and Mrs. A. A. Sprague II.

The Report gives detailed statistics of attendance, and full accounts of seventeen expeditions, research, educational activities, accessions, installations, and all other branches of the Museum's activities.

THE DIK DIK



The dik dik of Africa, about the size of a rabbit, is one of the world's smallest antelopes. Full grown specimens attain a shoulder height of only about thirteen inches, and a weight of not more than twenty pounds. Their horns range between two and three inches in length. They have curiously enlarged trunk-like muzzles. The group in the accompanying photograph is on exhibition in Carl E. Akeley Memorial Hall of the Museum. It is composed of specimens of male, female and young, obtained by the Field Museum—Chicago Daily News Abyssinian Expedition. The group was mounted by Staff Taxidermist Leon L. Pray.

Gifts to the Museum

Following is a list of some of the principal gifts received during the last month:

From Mrs. Merritt Starr—papoose cradle and 6 other objects of the Kiowa tribe, Oklahoma; from George M. Coram—a specimen of box crystal; from Russell T. Neville—2 spotted salamanders and 10 photographs of cave formations; from Henry Field—16 specimens of rock types, Scotland; from Joseph A. Goski—269 specimens of agate, California; from Robert M. Zingg—55 specimens of small mammals, birdskins, lizards, snakes, etc., Mexico; from Professor Emanuel Fritz—a board of Monterey cypress; from Dr. Charles E. Burt—30 specimens of frogs, toads, lizards and snakes; from Marshall Field—7 reels of motion picture films taken in Africa.

BEQUESTS AND ENDOWMENTS

Bequests to Field Museum of Natural History may be made in securities, money, books or collections. They may, if desired, take the form of a memorial to a person or cause, named by the giver. For those desiring to make bequests, the following form is suggested:

FORM OF BEQUEST

I do hereby give and bequeath to Field Museum of Natural History of the City of Chicago, State of Illinois,

Cash contributions made within the taxable year to Field Museum not exceeding 15 per cent of the taxpayer's net income are allowable as deductions in computing net income under Article 251 of Regulation 69 relating to the income tax under the Revenue Act of 1926.

Endowments may be made to the Museum with the provision that an annuity be paid to the patron for life. These annuities are tax-free and are guaranteed against fluctuation in amount.

THE ANTIQUITY OF PYORRHEA REVEALED BY X-RAY

BY ANNA REGINALDA BOLAN
Division of Roentgenology

The incidence of pyorrhea in present times is too well known to merit discussion; its antiquity, however, has not been exploited. This disease has been the common lot of man from pre-dynastic times to the present day.

Careful modern diagnosticians consider pyorrhea an important etiologic factor. All patients suffering from chronic systemic disorders are subjected to an intra-oral examination before definite diagnosis is made. Every physician's and dentist's X-ray laboratory has a file of case histories which includes patients with pyorrhea. Field Museum X-Ray Laboratory has a record of mummies which display roentgenologic evidence of having been afflicted with this same disease.

Peruvian mummies dating back over hundreds of years, and Egyptian mummies dating back thousands of years before Christ, are on the Museum's pyorrhea list. Included is one of the oldest Egyptian mummies on record, a pre-dynastic specimen of a woman antedating 3,500 B.C., who lost most of her teeth, probably due to pyorrhea.

This pre-dynastic mummy comes from a period before the introduction of the practice of embalming; the body was dried by nature. A shallow pit was dug in the desert sands and a grass mat was spread in the bottom of it. The body, folded in the embryonic position, rested on this mat, and was covered with skins pieced and stitched together, the short fur on the inside. This in turn was covered by a woven piece of linen cloth, and a second



Ancient Pyorrhea Sufferer

X-ray picture of mummy of Egyptian woman in Field Museum collection, revealing that modern disease attacked ancients. From a film made in the Museum's roentgenological laboratory.

grass mat was placed on top. The head was usually toward the south. Around the body were set jars of food and drink, tools and weapons, and sometimes toilet requisites. The pit was then filled with sand and left undisturbed until the advent of the archaeologist.

The accompanying illustration is a roentgenogram of this pre-dynastic Egyptian mummy. The specimen is on exhibition in the Egyptian Hall (Hall J) of the Museum.

This woman, who, judging from her skeleton, was not an elderly individual when she died, was nevertheless aged physically. In the print, it can easily be seen that her back was bowed, and to the observer accustomed to the interpretation of these films, her entire attitude is one of physical decrepitude and despair. Pyorrhea may have been a contributing cause of this woman's physical disability. Prophylactic measures at the onset of her disease might possibly have prevented her deformity and added to the span of her life.

An interesting series of research problems is being carried out in the Division of Roentgenology of Field Museum. This laboratory is a gift to the institution from President Stanley Field.

A new and unique X-ray technique which produces films of greater brilliancy than it is possible to produce by the usual methods, and is peculiarly adapted to museum work, has been developed in this laboratory. The ray used in this technique could not be used on living tissue because of its caustic effect, but it does not in any way harm the materials that are submitted for examination in the Museum.

BATS OF THE CHICAGO AREA

BY COLIN C. SANBORN
Assistant Curator of Mammals

Bats are flying mammals belonging to the order Chiroptera. The seven species found in the Chicago area are beneficial rather than harmful. They feed entirely on insects, and do not suck blood or fly into a person's hair. Blind bats can fly about and avoid striking objects with as much ease as bats which can see, so there is no reason to be afraid of their becoming entangled in one's hair. The vampire or bloodsucking bats are found only in Mexico and South America.

Bats are common in this region between May and September. The red and silver-haired bats are the most abundant. Then follow the little brown bats and also the larger brown species. The hoary bat, the largest one found here, is rather scarce, and there are but few records of Trouessart's and Rafinesque's bats. These last two resemble externally the little brown bat, and could easily be confused with it.

Bats are more plentiful during their migrations in the spring and fall. Some bats do not migrate for the winter but hibernate here. A silver-haired bat was found in the Museum on February 5, and a brown bat was taken from a wood-pile in late December. The young number from one to two. When small they cling to the mother as she flies about in search of food.

There is still much to be learned about the bats of the Chicago area, and Field Museum will be glad to receive specimens or records of occurrence. Most of the bats of this region may be seen in the Museum in a case especially devoted to mammals of the Chicago area.

Nature Study Classes

Approximately 65 scoutmasters and assistant scoutmasters of boy scout troops in the Chicago area attended a series of classes in nature study held at Field Museum between February 28 and March 28. The course was presented by lecturers of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures. Its aim was to train the scoutmasters for conducting nature study work among the boys enrolled in their troops.

REINSTALLATION OF WOODS IS NEARLY COMPLETED

The forests of North America are scarcely excelled by those of any other country for the wealth of timbers they provide. According to Sargent's *Manual of the Trees of North America* there are more than 700 species of trees growing in North America.

A few years ago Professor Samuel J. Record, the Museum's Research Associate in Wood Technology, was asked to formulate



Typical Wood Exhibit

This case, containing specimens of southern cypress, illustrates the manner in which all exhibits of North American woods are being reinstalled.

a plan for reinstallation of the exhibits of North American woods in Charles F. Mills-paugh Hall (Hall 26) whereby they would be displayed to the best advantage to meet the requirements of the student interested in American forestry, and the person seeking definite information on the properties and characteristics of various woods with a view to some specific use, as well as the casual visitor to the Museum. Professor Record worked out a plan under which reinstallation was begun in 1929, and this work is now nearing completion.

Of the very large number of species of trees native to the United States and Canada, a few are of vastly greater importance than the rest. Some, such as walnut, stand out because of their excellent quality; others, such as yellow pine, because of their relatively great abundance. Almost the entire supply of useful timbers of the United States and Canada is at present derived from about ten per cent of the total number of existing species. Because of this, together with space limitations, the exhibits have been restricted for the most part to the trees which are industrially and commercially of actual importance, or some eighty-four species. However, the Museum also has study collections comprising samples of almost all of the trees of North America.

The present appearance of the wood exhibits as reinstalled is well illustrated in the accompanying photograph showing the case containing southern cypress. Arranged in the sequence of their botanical relationships, beginning with the pines, each tree is represented in a standardized manner by a section of trunk showing the bark, a cross section of the trunk, and selected boards which show the appearance of the wood and varieties of grains. These specimens are supplemented by photographs or reproductions of branches showing foliage, flowers or fruit; photographs showing the trees growing both under summer and winter conditions, and maps indicating the distribution. In the labels information is given as to the principal characteristics and physical properties, and the chief uses for which the wood is suitable.

The model of the moon at Field Museum is the largest and most elaborate ever made.

FOUR MORE LECTURES IN SPRING COURSE

Four more lectures in the fifty-fifth free course presented by Field Museum remain to be given on Saturday afternoons during April. These lectures, by eminent explorers and naturalists, will be illustrated with motion pictures and stereopticon slides.

All lectures are given in the James Simpson Theatre of the Museum, and begin at 3 P.M. Following is the schedule of dates, titles, and speakers:

April 4—Alaska

Amos O. Berg, Ottawa, Canada

April 11—Across Asia's Snows and Deserts

William J. Morden, Associate in Mammalogy, American Museum of Natural History, New York City

April 18—The Tale of the Ancient Whalesman

Chester Scott Howland, Boston, Massachusetts

April 25—A Close-up of Early America

Gilbert E. Gable, New York City

No tickets are necessary for admission to these lectures.

CHILDREN'S ENTERTAINMENTS —RAYMOND FOUNDATION

Four more of the free motion pictures of the spring series provided for children by the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures remain to be given on Saturday mornings during April in the James Simpson Theatre of Field Museum. Following is the schedule of dates and titles of films to be shown on each:

April 4—The Story of Silk; Pineapples; Life in a Pond; Undersea Partnerships; The Life History of a Pearl.

April 11—The Story of Asbestos; Fire-making Without Matches; Drummers and Boomers; Porcupines and Their Neighbors.

April 18—The Island of Sugar; Prodigal Palms; Poor Butterfly; The Message of the Flowers.

April 25—In Batik Land; A Dyak Wedding; Teak-logging in Siam; Elephants on Parade; Wooden Shoes.

Each program is given twice, at 10 and 11 A.M. Children from all parts of Chicago and suburbs are invited to attend.

FURTHER TREASURES REVEALED BY KISH EXCAVATIONS

Priceless jewelry worn at the court of Nebuchadnezzar some 2,500 years ago, magnificent sculptures of the Sassanian period (A.D. 226-637), and royal tombs more than 5,500 years old, have been discovered as a result of this season's excavations on the site of the ancient city of Kish by the Field Museum-Oxford University Joint Expedition to Mesopotamia, according to reports received from Professor Stephen Langdon, director of the expedition, and L. C. Watelin, director of excavations.

Solid gold ornaments are included among the treasures of the Babylonian period which have been unearthed from the buried city, Professor Langdon states. These, with other jewelry of outstanding beauty and artistry, represent the time of Nebuchadnezzar.

Far below the Temple of Nebuchadnezzar have been found the Sumerian royal tombs which Professor Langdon estimates date back 5,500 years. Work of opening and exploring them has begun. The remains

of several chariots, oxen, and harnesses have been found.

It has now been revealed that the Sassanian palace, discovery of which was reported in the March issue of FIELD MUSEUM NEWS, had a spacious open court with a fountain. Brick columns with bases of yellow glazed bricks have been discovered. Doorways from the court lead into suites of rooms in which magnificent sculptures were recovered. These include heads of women, flying angels, friezes of giants and animals, and plaques of lotuses and pomegranates.

In the previously excavated neo-Babylonian temple glazed coffins containing gold jewelry have been found. Beneath this temple the expedition has come upon the top of a massive building believed to date from the age of Sargon of Accad, about 2700 B.C. This newly discovered building has walls eighteen feet thick. It is believed to have been the Temple of Aruru and probably was a ruin long before Nebuchadnezzar was king.

The present season is the ninth in which operations have been conducted at Kish. More than 300 men are engaged in the work this year. The expedition is financed on behalf of Field Museum by Marshall Field, and on behalf of Oxford by a group of British philanthropists.

NAVAHO HOMES



A miniature model of winter and summer homes of the Navaho Indians of Arizona and New Mexico is on exhibition in Hall 6 of the Museum. As may be seen in the accompanying photograph, figures in the group are arranged to show the various occupations and pastimes these Indians engage in, such as pottery making, weaving, shearing of sheep, gathering wood, gambling (pole and hoop game), and other activities.

Stowaway Land Crab

While installing large corals, secured under the sea near the Bahamas by the Field Museum-Williamson Undersea Expedition, for a new exhibit in preparation at Field Museum, workers discovered a live Bahaman land crab which had stowed away in the crates and thus stolen a ride to Chicago. The crab itself is now preserved for use in the zoological collections. This is the first appearance of a land crab in Chicago by such means in the experience of the Museum, although the accidental dispersion of species of various living things is not uncommon.

Chinese Type in Museum

A complete font of Chinese type, recently imported from China by Field Museum, has been added to the equipment of the Division of Printing. It is being used under the supervision of Dr. Berthold Laufer, Curator of Anthropology, for special work in connection with certain Museum publications where it is necessary to present excerpts from Chinese literature in the Chinese characters, in addition to giving their English translations.

APRIL GUIDE-LECTURE TOURS

Following is the schedule of conducted tours of the exhibits during April:

Week beginning March 30—Monday: 11 A.M., Africa and Madagascar, 3 P.M., Physical Geology; Tuesday: 11 A.M., Animals of the Plains; 3 P.M., Peoples of the Pacific; Wednesday: 11 A.M., Egypt, 3 P.M., American Trees; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Crystals and Gems, 3 P.M., Indians of the Plains.

Week beginning April 6—Monday: 11 A.M., Pre-historic Life, 3 P.M., Industrial Models; Tuesday: 11 A.M., The Story of Early Man, 3 P.M., Birds and Their Nests; Wednesday: 11 A.M., Lizards, Past and Present, 3 P.M., Musical Instruments; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Comparative Anatomy, 3 P.M., Chinese Art of the Past.

Week beginning April 13—Monday: 11 A.M., Roman Exhibits, 3 P.M., Looms and Textiles; Tuesday: 11 A.M., Systematic Birds, 3 P.M., Tibet; Wednesday: 11 A.M., Eskimo Customs, 3 P.M., American Archaeology; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Tropical Plants, 3 P.M., American Mammals.

Week beginning April 20—Monday: 11 A.M., Melanesia, 3 P.M., The Primates; Tuesday: 11 A.M., Animal Families, 3 P.M., Mummies; Wednesday: 11 A.M., Fishing in Many Lands, 3 P.M., Indian Art; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Man Through the Ages, 3 P.M., Marine Life.

Week beginning April 27—Monday: 11 A.M., Iron, Coal and Petroleum, 3 P.M., Indians of the Northwest Coast; Tuesday: 11 A.M., The Grasses, 3 P.M., Chinese Art of Today; Wednesday: 11 A.M., Work of Wind and Water, 3 P.M., Madagascar; Thursday: 11 A.M. and 3 P.M., General Tours.

Persons wishing to participate should apply at North Entrance. Tours are free and no gratuities are to be proffered. A new schedule will appear each month in FIELD MUSEUM NEWS. Guide-lecturers' services for special tours by parties of ten or more are available free of charge by arrangement with the Director a week in advance.

NEW MEMBERS

The following persons were elected to membership in Field Museum during the period from February 17 to March 17:

Associate Members

Harry C. Daley, Harry Eisenstaedt, Mrs. Alfred K. Foreman, R. W. Gerding, Harold J. Gordon, Mrs. William Brooks Greenlee, Mrs. E. M. Hill, George W. Hubbard, Charles W. Isaacs, Jr., Dr. Henry H. Kleinpell, Fred L. Mills, Thomas H. Monaghan, Kurt Rosenthal, Richard M. Rosenwald, Mrs. Edward L. Ryerson, Sr., Jesse D. Scheinman, J. E. Slocum, Robert Wheeler Swett, Kay Wood, Jr.

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Museum hours in April: Daily, 9 A.M. to 5 P.M.

MEMBERSHIP IN FIELD MUSEUM

Field Museum has several classes of Members. Benefactors give or devise \$100,000 or more. Contributors give or devise \$1,000 to \$100,000. Life Members give \$500; Non-Resident (Life) and Associate Members pay \$100; Non-Resident Associate Members pay \$50. All the above classes are exempt from dues. Sustaining Members contribute \$25 annually. After six years they become Associate Members. Annual Members contribute \$10 annually. Other memberships are Corporate, Honorary, Patron, and Corresponding, additions under these classifications being made by special action of the Board of Trustees.

Each Member, in all classes, is entitled to free admission to the Museum for himself, his family and house guests, and to two reserved seats for Museum lectures provided for Members. Subscription to FIELD MUSEUM NEWS is included with all memberships. The courtesies of every museum of note in the United States and Canada are extended to all Members of Field Museum. A Member may give his personal card to non-residents of Chicago, upon presentation of which they will be admitted to the Museum without charge. Further information about memberships will be sent on request.

Field Museum News

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Vol. 2

MAY, 1931

No. 5

HABITAT GROUP OF GUANACOS IS PLACED ON EXHIBITION IN HALL 16

By COLIN C. SANBORN
Assistant Curator of Mammals

A habitat group of the strange looking guanaco has just been installed in the Hall of American Mammal Habitat Groups (Hall 16). There are five specimens in the group, one adult male, two adult females, and two young. The animals were collected by the Marshall Field South American Expedition of 1926.

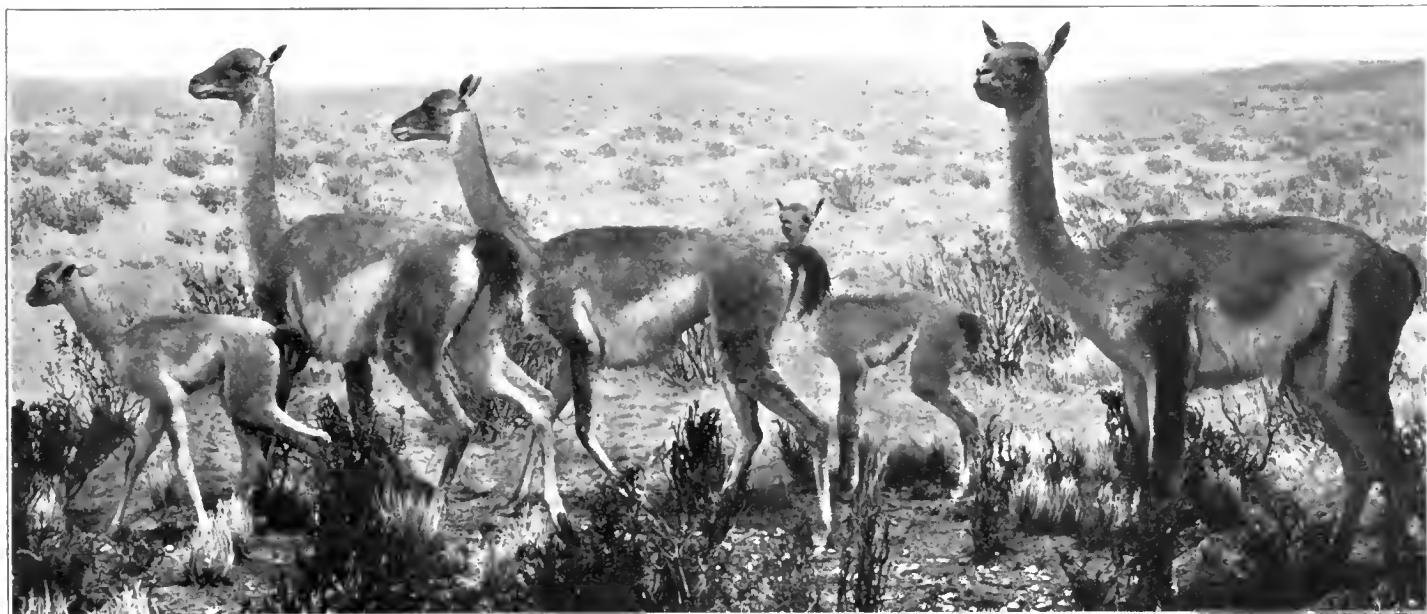
The guanaco is a member of the camel family. At one time it ranged over all the

found in South America, and these are likewise related to the guanaco.

The guanacos of Patagonia collect in herds of from five individuals up to about three hundred. In winter (July, August, September) they go south to the timbered and more hilly country where there is shelter from the cold winds and snow. They return north in the spring to the open pampas, and there the young are born, in November or December. There is only a single offspring.

will attack a person by striking from behind with both knees.

Before the white man came, the flesh of this animal, like the bison of our western plains, was used by the Indians for food, while its skin was used for clothing and tents, but today it is being rapidly killed off to provide more pasture for sheep raising. It is claimed that in one year a guanaco will eat as much as three sheep. During its migrations and in the rutting season the guanaco is charged with destroy-



Guanaco group on exhibition in Hall 16. Specimens collected by Marshall Field South American Expedition.

bare pampas country of South America, from the Straits of Magellan, north through the Argentine, and across the Andes into Chile, Bolivia, and Peru. Today it is most common in the southern part of the Argentine Republic (Patagonia).

The llama and alpaca are domesticated forms of the guanaco and are used as beasts of burden in northern Chile, Bolivia, and southern Peru. The vicuña, which is found only in the very high Andes, is smaller than the guanaco and has finer, silkier hair, which is woven by the Indians into various sorts of clothing. There are also a number of extinct forms of camel, fossils of which are

Guanacos are generally wild and shy, especially when in large herds. The females and young move off first at a brisk canter while the males slowly bring up the rear, turning now and then to face the enemy and uttering their shrill neighing challenge. A small herd of but four or five individuals is apt to stand and watch the intruder for a short time before running away. A curious habit of the guanaco when running rapidly is to stretch its neck and lower its head until it almost touches the ground. Young guanacos are easily tamed and make interesting pets until they are grown. Then they become savage, especially the males, and

ing fences and otherwise damaging property.

The hides of the old animals seem to have no market value today. The young, however, up to two weeks old are persistently hunted down and the skins made into "capas" or robes. At this age they are called "chulencos" and from two weeks to a month old, "barbuchos," when they are worth but half the value of a "chulenco." A good "chulenco" cape is worth about \$15. This wholesale killing of the young each year may soon exterminate the species.

The taxidermy on the Museum's group is by Julius Friesser of the staff, and the background by Staff Artist C. A. Corwin.

Former Curator Dies

With deep regret members of the administrative and scientific staff received news of the death, on March 29, of Dr. George A. Dorsey, former Curator of Anthropology at Field Museum. Many lasting and important contributions to the collections and publications of Field Museum resulted from Dr. Dorsey's work at this institution. He was the leader of many Museum expeditions.

Dr. Dorsey joined the Museum staff in 1896 as an assistant curator, and became Curator of Anthropology in 1898, holding that post until 1915. He did important work among the American Indians, especially among the Pawnee, and during his travels collected much material in Peru, India, Ceylon, Java, Australia, New Ireland, Buka, Bougainville, and New Guinea. Dr. Dorsey was 63. He died in New York.

Professor Record Views Progress

Professor Samuel J. Record, Research Associate in Wood Technology for Field Museum, and Professor of Forest Products at Yale University, visited the Museum last month to inspect the progress made in re-installing the timber exhibits in the Hall of North American Woods. He also formulated plans to proceed with work necessary in the Hall of Foreign Woods.

Field Museum of Natural History

Founded by Marshall Field, 1893

Roosevelt Road and Lake Michigan, Chicago

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FIELD MUSEUM NEWS

STEPHEN C. SIMMS, *Director of the Museum*..... *Editor*

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Field Museum is open every day of the year during the hours indicated below:

November, December, January	9 A.M. to 4:30 P.M.
February, March, April, October	9 A.M. to 5:00 P.M.
May, June, July, August, September	9 A.M. to 6:00 P.M.

Admission is free to Members on all days. Other adults are admitted free on Thursdays, Saturdays and Sundays; non-members pay 25 cents on other days. Children are admitted free on all days. Students and faculty members of educational institutions are admitted free any day upon presentation of credentials.

The Library of the Museum, containing some 92,000 volumes on natural history subjects, is open for reference daily except Sunday.

Traveling exhibits are circulated in the schools of Chicago by the Museum's Department of the N. W. Harris Public School Extension.

Lectures for school classrooms and assemblies, and special entertainments and lecture tours for children at the Museum, are provided by the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures.

Announcements of courses of free illustrated lectures on science and travel for the public, and special lectures for Members of the Museum, will appear in FIELD MUSEUM NEWS.

There is a cafeteria in the Museum where luncheon is served for visitors. Other rooms are provided for those bringing their lunches.

Members are requested to inform the Museum promptly of changes of address.

TEN YEARS IN THE NEW BUILDING

The second day of May this year marks the tenth anniversary of the occupation of the present building by Field Museum of Natural History. In looking back over the records of these ten years it is gratifying to note the tremendous progress made in every channel of the Museum's activities.

The foresight in choosing the present site, which is almost equally convenient from all sides of the city, has been proved during this time by the attendance figures. During the more than twenty-five years of occupancy of the old Jackson Park building the total number of visitors received at the Museum was 5,839,579, while in the less than ten years from the opening of the new building until the time of going to press with this issue of the NEWS (April 20) the total number was 8,568,571.

When the new building was first opened it was the solitary occupant of an area of rough, bare, newly made land. The surroundings looked almost like a devastated region in a war torn country. As yet only crude roads and footpaths led to the Mu-

seum. In the years that have intervened this has been transformed into a beautiful park area which is being further improved. Grass, shrubbery and trees now adorn the landscape; broad well paved boulevards lead to the Museum from north and south; bus transportation is available direct to the Museum doors; wide sidewalks invite those who prefer to walk. The once solitary Museum building has been joined by two sister scientific institutions—the Shedd Aquarium and the Adler Planetarium. Another neighbor is Soldier Field with its great stadium.

Huge Moving Operation

The moving of the Museum from Jackson Park was undoubtedly one of the largest transfer operations ever seen anywhere. Many months were spent on careful packing of the priceless treasures in the collections to guard them against damage in transit. Certain exhibition material required drastic treatment to make it ready for moving. The African elephant with trunk elevated, from the group mounted by Carl E. Akeley, had to have its head removed before it was practicable to transport it. To protect the heavy but fragile bones, the huge skeleton of the dinosaur from Fruita, Colorado, had to be completely disarticulated and reassembled after arrival in the new building—a task of proportions comparable to the original mounting of the skeleton. Other large skeletons required similar treatment.

The large model of the moon (nineteen feet in diameter) had to be separated into 116 sections, and reassembled at the new building in proper order. Some of the exhibits moved numbered thousands of specimens, the identity of each of which had to be preserved, while their arrangement had to be so systematized that they could be reinstalled in the same order. Protection from weather and dust was also essential.

The month of May brings shudders to many who have to, or have had to move their possessions from one apartment or house to another. They can appreciate the gigantic task that faced the Museum staff. The moving involved 1,727 standing exhibition cases, 98 disassembled cases, 11,645 boxes, crates, barrels, and packages, and 8,006 pieces of office furniture, general equipment, and other objects. Once all the preparations were made, the actual moving was carried out with utmost dispatch. A large part of the transfer was made over the tracks of the Illinois Central, special spurs of track and loading platforms being built up to the doors of both the old and new buildings. There were 321 freight car loads, and the transfer of material by rail was completed in 34 days. The balance of the material was transported in 354 five-ton truck loads, and movement was completed in 132 days.

So carefully had the preparations been made that out of the hundreds of thousands of specimens not a single one was lost or misplaced, and the damage suffered was negligible. With material worth many millions of dollars moved, the repairs for material damaged, including the replacing of broken glass in exhibition cases, amounted to only slightly over \$4,000. The amount of glass alone which was moved, at the 1921 prices, was valued at more than \$750,000.

Due to careful planning and the assigning of space in the new building in advance, and then depositing material in the assigned spaces upon arrival, it was possible to push through the greater part of the new installation of exhibits in a remarkably short time, considering the magnitude of the work. Thus, with transfer operations concluded on

June 4, 1920, the Museum was ready for reopening within less than a year.

Great strides have been made in increasing the exhibition space in the Museum building since 1921. Due to a vast program of reconstruction on the ground floor many additional exhibition halls, not contemplated in the original plans, have been created. The exhibits themselves have been largely reinstalled or improved in various ways since the building opened, and the additions of new material to the exhibits have been extensive.

All other forms of Museum activity have likewise seen great advances during these ten years. The number of expeditions has been unprecedented. Many of these have been organized on a larger scale than any from this institution which preceded them. The explorations and collecting undertaken have been broadened in scope, and widely scattered and remote parts of the world have been searched for material.

An outstanding step during the period was the practical doubling of the educational facilities provided for children by the creation (in 1925) of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures. This was made possible by the \$500,000 endowment generously established by Mrs. James Nelson Raymond.

The N. W. Harris Public School Extension of the Museum has increased its work until now its service of circulating traveling exhibition cases reaches some 430 schools and other institutions with an enrollment of more than 500,000 children.

More Lectures Given

More lectures in the spring and autumn courses and special series have been given at the Museum in these ten years than ever before, and attendance at these has reached new pinnacles. Guide-lecture service for the public has been increased in scope and in numbers of people served. The issue of scientific publications, popular leaflets on scientific subjects, and other books and pamphlets has been on a larger scale than at any previous time, requiring large additions to the equipment and working force of the Division of Printing.

These are but a few of many achievements of the Museum during the ten years since it left Jackson Park. To go into detail would require a large volume.

The Museum's plans for the future forecast as great or greater strides forward in the next ten years as in the past. Great projects further to increase and improve the exhibits are under way at the present moment. All Departments and Divisions of the Museum are busily engaged to the end that the institution may ever grow greater, and better fill the needs of Chicago.

BEQUESTS AND ENDOWMENTS

Bequests to Field Museum of Natural History may be made in securities, money, books or collections. They may, if desired, take the form of a memorial to a person or cause, named by the giver. For those desiring to make bequests, the following form is suggested:

FORM OF BEQUEST

I do hereby give and bequeath to Field Museum of Natural History of the City of Chicago, State of Illinois,

.....

Cash contributions made within the taxable year to Field Museum not exceeding 15 per cent of the taxpayer's net income are allowable as deductions in computing net income under Article 251 of Regulation 69 relating to the income tax under the Revenue Act of 1926.

Endowments may be made to the Museum with the provision that an annuity be paid to the patron for life. These annuities are tax-free and are guaranteed against fluctuation in amount.

FOREST OF 350,000,000 YEARS AGO IS SUBJECT OF NEW MURAL PAINTING IN HALL 38

BY SHARAT K. ROY

Assistant Curator of Invertebrate Paleontology

A large mural painting representing a forest of Devonian times has been installed in Ernest R. Graham Hall (Hall 38). The painting visualizes the diverse flora of this remote period, approximately 350,000,000 years ago. So far as known, these were the truly primeval forests, since in this period the gradually expanding plant life first attained the size of trees. The representation of the forest is based chiefly on observations made from fossil specimens.

Prominently shown in the painting are large trees with bushy crowns, believed to be the oldest of all trees. They are commonly known as Gilboa trees, and technically called *Eospermatopteris* (*eos*, dawn; *sperma*, seed; *pteris*, fern—thus, the dawn of seed ferns). They were first discovered in the vicinity of Gilboa, New York, when an autumn freshet sweeping the upper valley of Schoharie Creek exposed in the bedrock of the banks a series of erect or slightly inclined stumps. One of these stumps is now on exhibition in Graham Hall. Roots, foliage and seed-bearing capsules of the trees are preserved in the study collection of the Department of Geology.

extensive root systems. Their trunks tapered gradually and terminated in bushy crowns of long, gently arched fronds, spirally arranged. These fronds are shown in the painting in various stages of development. The Gilboa trees strongly resemble the tree ferns of modern tropical jungles.

Interspersed with the Gilboa trees grew a giant ancestor of the modern clubmosses, the *Protolepidodendron* (*proto*, first; *lepis*, scale; *dendron*, tree), or Naples tree, as it is commonly known, due to its discovery near Naples, New York.

The Naples tree attained a height of twenty-five feet, and a diameter of nearly a foot at the base. From this base rose a straight trunk, tapering, at first rapidly, then very gently, and finally dividing into slender, gracefully drooping, forked branches to which the open, needle-like, persistent leaves imparted a feathery aspect. The Naples tree is the oldest of its kind known.

Also shown in the painting are *Calamites* (*calamus*, a reed), ancestors of our present day "horsetails" or scouring rushes. Fossil evidences of these plants have been found in widely distributed areas.

The *Calamites* grew in swamps, from stout, underground rhizomes. They had hollow

stems, must have been much taller than their modern dwindled descendants.

Of the less conspicuous plants represented in the painting, *Psilophyton* (*psilon*, smooth; *phyton*, stem) may be mentioned. These grew in marshes from cylindrical, woolly rhizomes that were attached by short, round rootlets. They were comparatively small plants, seldom exceeding six feet in height. *Psilophyton* may be considered transitional between seaweeds and true land plants.

The Devonian forest may have been entirely devoid of insect life. However, since insects, like worms, are soft-bodied organisms and therefore rarely found in the fossil state, it is possible that crickets and katydids may have chirped in the Devonian jungles, but have left no records of their existence.

Another remarkable fact with regard to this ancient flora is that none of the trees show annual rings of growth. This was doubtless due to the fact that the climate was generally uniform and not subject to marked seasonal changes. The flora extended from eastern North America through the Arctic region to northwestern Europe. It is obvious, therefore, that there was a land connection between North America and



Mural painting representing a Devonian forest, by Charles R. Knight. Presented by Ernest R. Graham and on exhibition in Hall 38.

Gilboa trees grew abundantly in shore muds bordering the Devonian Sea west of the present Catskill Mountains. They were majestic for their time, attaining heights up to forty feet. They had bulbous bases, with

or pithy stems which were divided into inequidistant nodes. The few branches were placed in whorls. Leaves were short and pointed, and also in whorls. The Devonian *Calamites*, judging from the size of their

Europe during the period.

The painting is one of the nearly completed series of twenty-eight presented to the Museum by Ernest R. Graham. Charles R. Knight is the artist.

BURDOCK AND EVOLUTION

BY PAUL C. STANDLEY

Associate Curator of the Herbarium

Are new plants originating today in the Chicago region? A curious burdock never found elsewhere indicates that this may be the case. In the summer of 1930 William F. C. Grams presented to the Museum specimens of a strange burdock with deeply cut leaves that he had found growing at Des Plaines, Illinois. The deep cutting made the leaves very different in appearance from those of the common barnyard burdock, which is an immigrant from Europe.

Several years ago the same abnormal burdock was described by Professor W. N. Clute, formerly of Joliet, as a new form, *Arctium minus* f. *laciniatum*. Search made this year in botanical books by the Department of Botany of Field Museum revealed

no record of the occurrence of such a form in Europe. Specimens from Des Plaines were sent to the Botanical Museum of Berlin, which owns probably the largest collection of European plants in the whole world; the Director reported that the plant was not represented in the Berlin collections.

It seems probable, therefore, that the cut-leaved burdock, which has been found only in northeastern Illinois and near-by Indiana, really has originated recently there, as a mutation or sport from the common burdock. If this is true, there is a paradox of a distinct form of a European plant that is unknown in Europe!

PREHISTORIC TOOLS RECEIVED

A collection of flint implements approximately one million years old, representing the earliest definitely determined handiwork

of prehistoric man yet discovered anywhere in the world, has been received at Field Museum of Natural History from Ipswich, England, where they were found. These tools were discovered as the result of excavations made in a gravel deposit of Pliocene age by J. Reid Moir, well-known British archaeologist, who has been placed in charge of certain investigations for Field Museum.

According to Henry Field, Assistant Curator of Physical Anthropology, who worked with Mr. Moir for a period last year, the gravel bed in which investigations are being conducted was deposited about one million years ago, and this indicates that the implements found there are approximately of the same date as the famous Peking skull. Coming from below the "red crag" or stratum deposited by the first glaciation, the implements apparently prove that man existed previous to the glacial period.

EXPEDITION IN CHINA REPORTS PROGRESS

After a successful trip of about 2,000 miles into the interior from Shanghai, the Marshall Field Zoological Expedition to Southern China has arrived in the mountains above Mouping in the province of Szechwan and begun the collecting of rare animals for Field Museum. This was learned in a recent report, dispatched by courier, received from Floyd T. Smith, leader of the expedition. Large parts of the journey on the Yangtse River and its tributaries were made in native hand-propelled boats, and other long stretches were made afoot.

Mr. Smith, who is from Long Island, N. Y., is the only white man on the expedition. He is accompanied by about forty native hunters and skinners. A whole fleet of the small paddled boats was necessary to carry his caravan up the Yangtse, Ya and Min rivers. On the land sections of the journey native porters carried supplies.

An immediate object of the expedition is to collect specimens of the rare goat-antelope called the takin, and one of these animals has already been obtained, Mr. Smith reports. Specimens of many other kinds of animals have also been collected.

BUSHMAN COLLECTION RECEIVED

A valuable collection of ethnological material representing the Bushmen of Africa, who are probably the most primitive people in existence today, has been received at Field Museum of Natural History as a gift from Arthur S. Vernay, of New York and London. Mr. Vernay collected the objects while leading the Vernay-Lang Kalahari Expedition of Field Museum, which recently returned to this country.

The simple hunting culture of the nomadic Bushmen, against whom other African tribes as well as European settlers have constantly waged war, is completely represented. As the part of the Kalahari Desert where this material was obtained is extremely difficult of access, the Bushman culture is illustrated in a form unaffected by European influence.

Included in the collection are quivers and poisoned arrows, bows, ornaments consisting of ostrich-eggshell beads threaded to form necklaces, girdles and head-bands, beaded aprons, and an engraved ostrich egg. There is also a well-preserved Bushman skull, much valued because of the difficulty of obtaining anatomical specimens.

COPTIC TEXTILES INSTALLED

One of the two largest collections in this country of Coptic textiles from ancient Egypt has been placed on exhibition at Field Museum. Several hundred pieces are included, some of them almost complete garments, others fragmentary. In displaying them, a method new to archaeological exhibits in museums has been adopted, whereby the entire collection appears in one huge architecturally built-in case 108 feet long, forming part of one of the walls of the Egyptian hall (Hall J). The case is divided into a large lower section and a smaller upper section, and the display is made especially attractive by the use of concealed lighting.

The collection is representative of all phases of textile making and decorative design of the Coptic period in Egypt (first centuries of the Christian era), and includes many beautiful and rare examples which possess highest artistic merit as well as great archaeological interest. Not only the character of the designs, some of them being intricately woven pictures, but also the

interweaving of many colors in a large number of the pieces, make the textiles noteworthy. The figure of a dancing girl playing her own accompaniment on a tambourine is almost modern in composition and is one of the most attractive pieces in the collection.

The bulk of this valuable collection was presented to the Museum by Ernest R. Graham. The other pieces were contributed by D. G. Hamilton and others.

Almost all of the pieces are of linen, with their ornamentation in tapestry, woven with wool. They date from early centuries of the Christian era. Included are children's and adults' garments, parts of mummy wrappings, a red wool hair net, bonnets and caps, ornamental panels and medallions, and other textile products. The designs show a great variety of motifs, some illustrating the persistence of native Egyptian art of earlier periods, and others exemplifying the influence of Greek, Roman and Persian art.

SPECIAL NOTICE

All Members of Field Museum who have changed their residences or are planning to do so are earnestly urged to notify the Museum at once of their new addresses, so that copies of FIELD MUSEUM NEWS and all other communications from the Museum may reach them promptly.

Members going away for a period during the summer, who desire Museum matter to be sent to their temporary addresses, may have this service by notifying the Museum of the summer addresses and the dates between which they are to be used.

Kish Season Closes

The 1930-31 season of operations on the site of the ancient city of Kish by the Field Museum-Oxford University Joint Expedition to Mesopotamia ended last month, it is reported by L. C. Watelin, field director of the expedition. In the division with the several cooperating institutions of the relics unearthed, the greater part of the treasures found in the recently discovered Sasanian palace (see FIELD MUSEUM NEWS, March and April, 1931) was allotted to Field Museum, Mr. Watelin states. The objects brought to light, and the data collected, will now be studied by Professor Stephen Langdon, director of the expedition, who will interpret their archaeological significance.

Gifts to the Museum

Following is a list of some of the principal gifts received during the last month:

From Mrs. Charles K. Bassett—85 prehistoric arrow-points and knives, Oregon; from Charles Beckman—72 prehistoric arrowheads, knives and pendants, Washington; from L. K. Johnston—a prehistoric stone axe, scraper and 3 arrowheads, Indiana; from Gilbert Sellers—an ironstone concretion, Illinois; from E. B. Faber—a fossil amphiblyd jaw, Colorado; from H. C. Eggers—5 photographs illustrating desert phenomena; from Dr. Charles E. Burt—113 specimens of frogs, toads, snakes, lizards and salamanders, Texas; from A. B. Scott—a prehistoric stone ear-plug, Arkansas; from William B. Parmelee—3 paper carps used at the boys' festival, Japan; from Dr. and Mrs. C. E. Hellmayer—226 butterflies and moths, Bavaria and Switzerland; from Emil Liljeblad—392 beetles, Idaho; from Von Platen-Fox Company—a trunk of tamarack, and a board of sugar maple, Michigan; from Edward Hines Western Pine Company—2 boards (flat grain) of western larch, Oregon; from Richmond Cedar Company—a trunk and 2 boards of southern white cedar, Virginia; from West Coast Lumbermen's Association—4 trunk slabs, a wheel section and 2 boards of western red cedar, Washington; from Eastman-Gardiner Hardwood Company—a trunk slabs, a wheel section and 2 boards of sycamore, Mississippi; from Berst-Forster-Dixfield Company—a trunk, a wheel section and 2 boards of paper birch, Minnesota; from the Conservator of Forests at Belize—62 samples of woods of British Honduras.

MAY GUIDE-LECTURE TOURS

Following is the schedule of conducted tours of the exhibits during May:

Friday, May 1—11 A.M., Primitive Art, 3 P.M., Dinosaurs and Other Reptiles.

Week beginning May 4—Monday: 11 A.M., Asiatic Animals, 3 P.M., Peoples of the South Seas; Tuesday: 11 A.M., Crystals and Gems, 3 P.M., Economic Plant Life; Wednesday: 11 A.M., Roman Exhibits, 3 P.M., Marine Animals; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Game Animals, 3 P.M., Melanesian Art.

Week beginning May 11—Monday: 11 A.M., Fishes, Past and Present, 3 P.M., Eskimo Life; Tuesday: 11 A.M., Indian Ceremonies, 3 P.M., Mummies; Wednesday: 11 A.M., Basket Makers, 3 P.M., Physical Geology; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Birds of the Chicago Area, 3 P.M., Africa and Madagascar.

Week beginning May 18—Monday: 11 A.M., Peat, Coal and Oil, 3 P.M., Egyptian Art; Tuesday: 11 A.M., Jewelry, 3 P.M., Prehistoric Life; Wednesday: 11 A.M., Chinese Exhibits, 3 P.M., Makers of Totem-poles; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., South America, 3 P.M., Animals of Economic Value.

Week beginning May 25—Monday: 11 A.M., Story of the Horse, 3 P.M., Trees of the Chicago Area; Tuesday: 11 A.M., Animal Habitat Groups, 3 P.M., Pottery Makers; Wednesday: 11 A.M., Story of Early Man, 3 P.M., Weavers; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Rare Animals, 3 P.M., Mexico.

Persons wishing to participate should apply at North Entrance. Tours are free and no gratuities are to be proffered. A new schedule will appear each month in FIELD MUSEUM NEWS. Guide-lecturers' services for special tours by parties of ten or more are available free of charge by arrangement with the Director a week in advance.

NEW MEMBERS

The following persons were elected to membership in Field Museum during the period from March 17 to April 16:

Life Members

Max Epstein

Associate Members

Louis L. Becker, Edwin Bluthardt, Dr. Frank Cary, Arthur E. Chapman, Theodore Dickinson, James H. Douglas, Jr., C. P. Dubbs, Kenneth P. Edwards, Walter L. Fisher, Mrs. J. Arthur Friedlund, H. B. Gear, Mrs. Marianna L. Griest, A. O. Hartmann, George J. Holmes, Mrs. Virginia H. Kendall, Arthur F. Klein, Mrs. Albert E. Leight, Mrs. Andrew MacLeish, Maurice S. Marcus, Mrs. William Remy, Harold F. Reynolds, Henry S. Robbins, Mrs. Walter J. Seifert, George V. Wienhoeber.

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MEMBERSHIP IN FIELD MUSEUM

Field Museum has several classes of Members. Benefactors give or devise \$100,000 or more. Contributors give or devise \$1,000 to \$100,000. Life Members give \$500. Non-Resident (Life) and Associate Members pay \$100. Non-Resident Associate Members pay \$50. All the above classes are exempt from dues. Sustaining Members contribute \$25 annually. After six years they become Associate Members. Annual Members contribute \$10 annually. Other memberships are Corporate, Honorary, Patron, and Corresponding, additions under these classifications being made by special action of the Board of Trustees.

Each Member, in all classes, is entitled to free admission to the Museum for himself, his family and house guests, and to two reserved seats for Museum lectures provided for Members. Subscription to FIELD MUSEUM NEWS is included with all memberships. The courtesies of every museum of note in the United States and Canada are extended to all Members of Field Museum. A Member may give his personal card to non-residents of Chicago, upon presentation of which they will be admitted to the Museum without charge. Further information about memberships will be sent on request.

Field Museum News

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WHEN MASTODONS AND MAMMOTHS ROAMED CHICAGO AND ITS ENVIRONS

By ELMER S. RIGGS
Associate Curator of Paleontology

A question often asked is, "How long is it since Mastodons and Mammoths lived in and around what is now Chicago?"

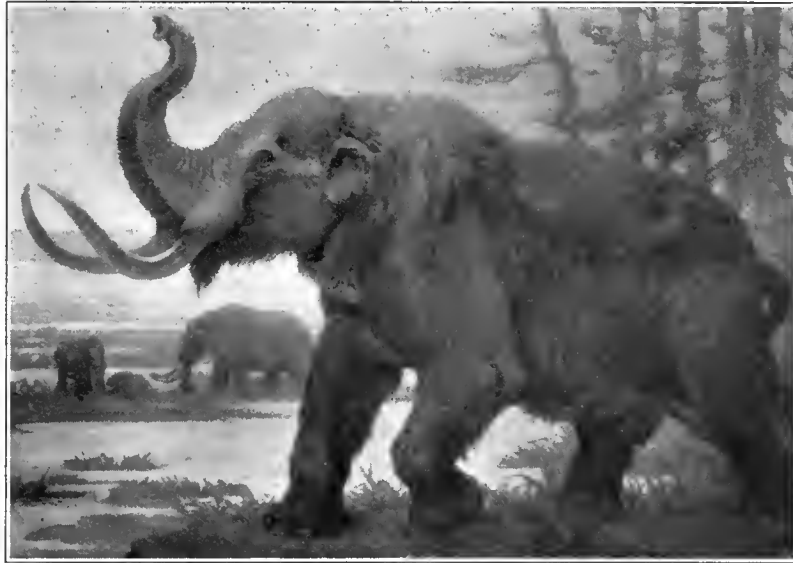
It is estimated that the ice-sheet finally disappeared from the "Wisconsin area" (including the site of Chicago) some twenty thousand years ago. The bones of Mastodons and Mammoths are found in bogs and small lakes which were formed after the ice had melted away. Mastodon and Mammoth bones now in Field Museum which were excavated near Minooka, Illinois, came from gravels around a spring left there by the melting glacial ice. The animals had apparently come there for a drink, become mired in the bog around the spring, and, unable to extricate themselves, had sunk to their deaths in its bottom. A Mastodon skull which the Museum obtained at Yorkville, Illinois, came from black muck only eighteen inches below the surface, which would indicate that a comparatively short length of time, geologically speaking, had elapsed for the remains of the animal to be covered to that depth. So, from this and many other evidences, it seems to be a safe conclusion that Mastodons and Mammoths lived in

the Chicago area as late as ten thousand years ago.

One eminent authority believes that the Mastodon lived in North America after the coming of the American Indian, and that

region, or how long they lived here. They had among them, so far as is known, no traditions of these animals. They left no implements in America carved of Mastodon or Mammoth bones or ivory, such as are found in the Old World. They left no carvings or picture-writings of these animals such as decorate the cave-dwellings of primitive man in western Europe. Therefore we have no evidence that the Mastodon or the Mammoth were ever hunted, or that they were known to any race of primitive men about Chicago.

We do know from abundant evidence that both these races of extinct elephants were very common throughout North America; that the Mastodon came first and that his race was well established here some millions of years ago. We know also that the Mammoths came later, from Asia; that both lived throughout the greater part of the United States; and that both races died out on this continent after the Ice Age and apparently long after the ice had melted in this latitude. The region about the southern end of Lake Michigan is one where their fossil remains are very abundant. Therefore it may be said with full assurance that these elephants roamed about Chicago only a few thousand years ago.



Mural Painting of Mastodon

One of the series of prehistoric studies by Charles R. Knight, on exhibition in Ernest R. Graham Hall.

the red man doubtless had a hand in exterminating it. This conclusion is largely based on apparent probabilities. Nobody knows when the first Indians came to the Chicago

their fossil remains are very abundant. Therefore it may be said with full assurance that these elephants roamed about Chicago only a few thousand years ago.

A PREHISTORIC NEEDLE

By HENRY FIELD
Assistant Curator of Physical Anthropology

A perfect bone needle, 25,000 years old, has come to Field Museum as a result of the recent Marshall Field Archaeological Expedition to Europe. This bone needle, which is more than three inches in length, is complete, and has as perfect an eye as if it had been made yesterday. It was made by a prehistoric Magdalenian craftsman, and was undoubtedly used for making clothes out of reindeer skins.

The needle was excavated by Jean Cazedessus in a rock shelter at Ganties in the south of France, and was found associated with implements of flint and bone, representatives of a cold-loving fauna, and a typical Upper Magdalenian culture. The entire results of these excavations were acquired by the expedition.

Field Museum has on exhibition near Stanley Field Hall the only complete Magdalenian skeleton in the United States. When this young man was alive, western Europe was cloaked under a mantle of ice and snow. Reindeer and other animals adapted to the specialized life of a cold climate were abundant, and there was a plentiful supply

of food for the Magdalenian hunter. Hence there was time for relaxation, and this resulted in the dawn of art.

This beautiful bone needle, fashioned with a flint blade and drilled by a flint borer, is a witness to the advanced technique evolved by the Magdalenian hunter-artists more than twenty thousand years before the beginning of the Christian era.

Museum Cooperation in Jubilee

Field Museum participated in the recent Chicago Jubilee by remaining open in the evening from 6 to 10 P.M. on Tuesday, May 12, at the request of the committee in charge of the jubilee. Although the day was one when normally admission is charged, during the evening hours the public was admitted free.

Museum Handbook in Press

A new Handbook of Field Museum, containing in brief form general information concerning the institution, its history, its building, its exhibits, its expeditions, and its varied activities, is now on the press. It will be published soon, and placed on sale at a nominal price.

MR. AND MRS. MARSHALL FIELD PRESENT LIONS AND FILMS

Field Museum received last month, as gifts from Mr. and Mrs. Marshall Field, five specimens of lions which they shot in Africa, and several thousand feet of motion picture film depicting wild life on that continent.

The films, which were made by Mrs. Field, contain especially good views of groups of lions amid rock dens as well as in the open. An unusual and most interesting bit of motion photography was achieved by Mrs. Field in filming two cheetahs in action, these being among the most difficult of all animals to photograph because they rank with the fleetest of mammals.

The specimens and films result from the recent hunting trip of Mr. and Mrs. Field in Tanganyika Territory, British East Africa. Included among the lions are a large full grown male, a female, and two cubs. The male is between nine and ten feet long, which is almost the maximum size attained by lions. It is heavily maned.

The lion specimens are to be used in the preparation of a habitat group which has long been desired for addition to the Museum's African exhibits.

Field Museum of Natural History

Founded by Marshall Field, 1893

Roosevelt Road and Lake Michigan, Chicago

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FIELD MUSEUM NEWS

STEPHEN C. SIMMS, Director of the Museum.....Editor

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Field Museum is open every day of the year during the hours indicated below:

November, December, January	9 A.M. to 4:30 P.M.
February, March, April, October	9 A.M. to 5:00 P.M.
May, June, July, August, September	9 A.M. to 6:00 P.M.

Admission is free to Members on all days. Other adults are admitted free on Thursdays, Saturdays and Sundays; non-members pay 25 cents on other days. Children are admitted free on all days. Students and faculty members of educational institutions are admitted free any day upon presentation of credentials.

The Library of the Museum, containing some 92,000 volumes on natural history subjects, is open for reference daily except Sunday.

Traveling exhibits are circulated in the schools of Chicago by the Museum's Department of the N. W. Harris Public School Extension.

Lectures for school classrooms and assemblies, and special entertainments and lecture tours for children at the Museum, are provided by the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures.

Announcements of courses of free illustrated lectures on science and travel for the public, and special lectures for Members of the Museum, will appear in FIELD MUSEUM NEWS.

There is a cafeteria in the Museum where luncheon is served for visitors. Other rooms are provided for those bringing their lunches.

Members are requested to inform the Museum promptly of changes of address.

EDITORIALS

Vacation time is here. Vacations offer a good opportunity to make those long deferred visits to the Museum which so many people have planned, but put off during the year on account of pressure of business or for other reasons. A day, or part of a day, of your vacation used in visiting the Museum will be well spent. If you have not made such a visit for a year or more, you will find many new exhibits of great interest. Everything has been done to make your visit convenient. There are motor coaches running direct to the entrance of the Museum (the No. 26, Jackson Boulevard line with free transfers to and from all other lines of the Chicago Motor Coach Company). Ample free parking space is available for your own car. The Museum is open from 9 A.M. to 6 P.M. during the summer months. There is a cafeteria in the building where luncheons may be obtained.

As a Member of the Museum you are entitled to bring or send your family and friends, who will be admitted free on presentation of your personal card. Take full

advantage of this and the other privileges granted under your membership.

With the schools closing this month, it is gratifying to note that Field Museum's educational work for children has been carried on in full force and with noteworthy results. The Department of the N. W. Harris Public School Extension of Field Museum has again circulated hundreds of traveling exhibition cases among all the public schools, and many parochial and private ones as well, changing the exhibits every two weeks, and reaching approximately 500,000 children over and over again through the school year. The James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures has continued all of its activities—Saturday entertainments for children at the Museum, lecture-tours of the exhibits, extension lectures in the schools before several hundred classrooms and assemblies of pupils, and other work. Its statistics are not available at this time, being compiled on a January to December basis, but it seems safe to predict that its record of reaching more than a quarter of a million children a year will be maintained in 1931. It will soon announce a summer series of entertainments for children.

BARRO COLORADO ISLAND

By PAUL C. STANDLEY
Associate Curator of the Herbarium

Recently the Department of Botany determined an important collection of plants gathered last winter on Barro Colorado Island, Panama, by Professor C. L. Wilson of Dartmouth College. The most striking feature of the collection was the fact that it contained thirty-two plants never found before on the island, and one, a *Mimosa*, that represents a new species. Three lists of Barro Colorado Island plants have been published at various times by the present writer.

In the North statements regarding the wealth of plants and animals in the tropics often are received with skepticism. Just how rich in animals and plants a tropical island can be is shown by the recently issued seventh annual report of the Barro Colorado Island Laboratory in the Panama Canal Zone.

Field Museum is one of nine institutions supporting the Barro Colorado Biological Laboratory. This laboratory is directed by the Institute for Research in Tropical America, through Dr. Thomas Barbour. The resident custodian of the laboratory, James Zetek, has been the patient counselor and friend of almost every scientist who has visited Panama in recent years.

The Barro Colorado laboratory has become the chief center for research work in natural history in tropical America, and it is visited each year by increasing numbers of scientists from the United States. It is situated on an island of six square miles in Gatun Lake, the shipping of the Panama Canal passing directly before its door.

The island has been set aside as a permanent reservation for the wild life of the region. It is covered with dense forest, composed of an inexhaustible variety of trees, shrubs, ferns, orchids, and other plants, the known species now numbering more than 900 varieties. One of them is the famous dove or Holy Ghost orchid, whose flowers represent perfectly a white dove with outspread wings.

The report lists forty-three mammals from the island, including sloths, armadillos, tapirs, porcupines, squirrels, pumas, ocelots, four kinds of monkeys, and many others. The

report records also thirty-two kinds of frogs and toads, two crocodiles, four turtles, twenty-three lizards, and twenty-five snakes. Although the snakes include some of the most venomous kinds found in America, they seldom are seen by visitors.

From personal experience, the writer can state that the comfortable laboratory on Barro Colorado is an ideal headquarters for field and laboratory work, and that its surroundings, made accessible by well-kept trails, afford a fascinating field for study.

Ancient Installment Buying

Evidence that something similar to the modern plan of "installment buying" may have been in existence in ancient Egypt has been found in a collection of examples of Egyptian writing and writing equipment now on exhibition in Hall J of the Museum. In deciphering a number of inscribed tablets, boards, limestone flakes and potsherds in the collection, Dr. T. George Allen, Assistant Curator of Egyptian Archaeology, came upon one which proved to be a receipt for a series of payments made by a man named Pedikhonsu, in the year 30 of some Ptolemaic or Roman ruler of Egypt. The receipt seemed to imply that Pedikhonsu had purchased something on the installment plan.

Included also in the collection are wooden tags for attachment to mummies in shipment to living relatives, limestone tablets bearing legal documents and prayers, as well as the palettes and pens used by the scribes.

Russian Scientist Visits Museum

Dr. N. I. Vavilov of the Institute of Plant Industry, Leningrad, returning from a tour of Mexico and Central America, recently visited Field Museum. He has in press an important monograph upon cultivated plants, and consulted with the Staff of the Museum to obtain information regarding economic plants of tropical America.

Gifts to the Museum

Following is a list of some of the principal gifts received during the last month:

From Linus Long—2 ceremonial jade axes, Sung and K'ien-lung periods, China; from Ralph M. Chait—a large barrel-shaped pottery wine vessel, Han period, China, and 2 specimens chalcedony geodes containing water, Uruguay; from Frank von Drasek—40 specimens Arkansas minerals; from Joseph Comer—lower jaw of a fossil beaver, Indiana; from R. M. Barnes—a marcasite concretion, Illinois; from Professor C. L. Wilson—131 herbarium specimens, Panama; from William C. Meyer—147 herbarium specimens, British Honduras; from Ralph Hoffman—29 herbarium specimens, Santa Cruz Island; from General Biological Supply House—2 crayfish frogs, Louisiana; from Doctor Charles E. Burt—29 anakes, lizards, frogs and toads, Texas; from Doctor Frank J. Psota—6 damselflies, Mindanao, Philippine Islands.

BEQUESTS AND ENDOWMENTS

Bequests to Field Museum of Natural History may be made in securities, money, books or collections. They may, if desired, take the form of a memorial to a person or cause, named by the giver. For those desiring to make bequests, the following form is suggested:

FORM OF BEQUEST

I do hereby give and bequeath to Field Museum of Natural History of the City of Chicago, State of Illinois,

.....
.....
Cash contributions made within the taxable year to Field Museum not exceeding 15 per cent of the taxpayer's net income are allowable as deductions in computing net income under Article 251 of Regulation 69 relating to the income tax under the Revenue Act of 1926.

Endowments may be made to the Museum with the provision that an annuity be paid to the patron for life. These annuities are tax-free and are guaranteed against fluctuation in amount.

THE RETICULATED PYTHON ADDED TO EXHIBITS

BY KARL P. SCHMIDT
Assistant Curator of Reptiles

The Old World pythons include the largest extant species of snakes, and of them all the reticulated python of the East Indies is much the largest. This form is said to reach a length of thirty-five feet, while specimens twenty-five feet long or more are impressively gigantic snakes. An example twenty-six feet long, collected on the Ogan River in Sumatra by the Chancellor-Stuart-Field Museum Expedition to the South Pacific in 1929, is the subject of an exhibit recently completed and installed in Albert W. Harris Hall (Hall 18) at Field Museum.

The reticulated python is distinctively a forest creature. It lies stretched out on the lower limbs of trees, and captures for food both the tree-dwelling monkeys and the



Reticulated Python

The specimen, when taken, concealed a clutch of 82 eggs in her coils. A few of these are shown in the exhibit.

terrestrial pigs, deer and other forest animals. Like the boas, pythons are powerful constrictors, and kill their prey by the crushing action of their coils.

Unlike the American boa constrictors, which bring forth living young, the pythons are egg-laying snakes. The mother snake coils herself compactly around her eggs and remains with them until they hatch. This habit evidently protects the eggs from marauding egg-eating animals, such as monitor lizards and mongooses, which abound in the Malayan forests. The first of the young snakes to hatch may even return to their eggshells for a few days for shelter until the whole mass is abandoned by the parent snake. Very few other species of snakes care for their eggs in this manner.

The Museum's exhibit is a reproduction in cellulose-acetate of the twenty-six foot specimen obtained by the Chancellor Expedition. The expedition, which was financed and led by Philip M. Chancellor of Santa Barbara, California, brought the Museum a second specimen only slightly shorter than the other. The reproduction was made by Taxidermist Leon L. Walters, who has developed a special process for this type of work.

EXPEDITION TO SOUTHWEST RESUMES OPERATIONS

The Field Museum Expedition to the Southwest, which worked through the summer of 1930 (see FIELD MUSEUM NEWS, June, July, September, November, 1930) has resumed operations for the season of 1931. Led by Dr. Paul S. Martin, Assistant Curator of North American Archaeology, it left Chicago late in May to continue work on the site of the Lowry ruin in southwestern Colorado, upon which extensive excavations were made last year. The expedition is financed from income derived from the Julius and Augusta Rosenwald Fund.

En route to Colorado, Dr. Martin, accompanied by Modeler John G. Prasnun of the

Department of Anthropology, made a special trip, financed from the Marshall Field Fund, to the Dakota Indian reservation at Pine Ridge, South Dakota. This trip was for the purpose of obtaining casts, sketches, and data to be used in the construction of a projected life-size group for Hall 5, devoted to the Indian Tribes of the Great Plains.

The first few weeks of work on the Lowry ruin will be devoted to the continuation of the preservation of the rooms which were examined last year. The walls of these rooms were found to be in excellent condition, but since the individual stones are held in place by mud mortar only, it is necessary to protect the mortar from weathering and disintegration by capping the top courses of masonry with cement, and to point with cement the lower courses so that the mud will not wash out. Walls cared for in this manner will stand indefinitely, but if left unprotected will tumble down in four or five years. Of course, when the Indians inhabited this large village, they probably applied fresh mud mortar every season. After the abandonment of the site, the wooden roofs, while they lasted, prevented rains and snows from damaging the interiors, while drifting sand soon blew around the exterior of the rooms, thus happily preserving the pueblo for modern study.

When the walls have all been properly cared for, excavations will be resumed. It is hoped this season to continue work in one of the smaller kivas and perhaps in the large kiva. A kiva is a subterranean, ceremonial chamber, wherein many sacred rites were performed, and it is perhaps the most important single portion of any village of the southwest, as its origins may reach back into considerable antiquity.

Likewise, some digging will be done in the secular or living quarters, with a view of gaining more knowledge of the everyday life of the ordinary individual. It is in the living quarters that one is more likely to find wooden roof beams, by the tree rings of which the pueblo may be approximately dated.

One of the most puzzling problems of the Lowry ruin is the fact that no burial ground has yet been discovered. The village must have been occupied for some time, perhaps a century or more, and yet not a single grave has been found. Since it is from burial mounds and rubbish heaps that archaeologists glean most of their knowledge of the past, further search will be made for the burial ground of the Lowry ruin.

Hebrew Educator at Museum

Arrangements for cooperation between the Hebrew University of Jerusalem and Field Museum were completed during a visit to the Museum made by Dr. Julius Magnes, president of the university, on May 8. Dr. Magnes consulted with members of the scientific staff, and formulated plans for exchange of specimens and publications between the two institutions.

Lectures for Girl Scouts

A group of Girl Scouts from Oak Park and Berwyn, under the leadership of Mrs. A. J. Kudrna, was given a course of lectures on nature study last month by lecturers of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures. Classes were held in the Museum on four Saturdays, and talks given covered the birds, trees, wild flowers and mammals of the Chicago area. The course was designed to equip the girls to pass examinations for special scout honors.

RARE IDOL-LIKE FIGURE FROM ILLINOIS MOUND

BY PAUL S. MARTIN
Assistant Curator of North American Archaeology

In 1900, Field Museum purchased, along with some pottery and other archaeological material, a stone "idol," carved from a piece of fluorite. This figure is now on display in Mary D. Sturges Hall (Hall 3). It was excavated in 1873 from an Indian burial mound by Thomas M. Perrine, near Anna, Union County, in southern Illinois. Since then it has become famous and is known as the "Perrine image."

The figure represents the work of the ancient mound builders. Few such elaborately carved pieces have been found by archaeologists in Illinois. The idol represents a human figure, seated with the right knee drawn up by the right hand towards the chin, and the left leg folded over the body. It is twelve inches high, and weighs forty-two pounds.

The carving of the features is executed with remarkable skill, and is quite modern in conception, although it is estimated the figure must have been made about 1,000 years ago, long before any Europeans set foot in America. It is similar in proportions and style to other stone figures and effigy



The "Perrine Image"

Prehistoric figure carved in fluorite, from an Indian burial mound in southern Illinois.

pottery which have been excavated at various places in the Mississippi-Ohio area, and illustrates well the highly developed art of the prehistoric Indians.

Japanese Royalty Visits Museum

Their Imperial Highnesses, Prince and Princess Takamatsu of Japan, attended by their suite, were visitors at Field Museum on May 12. They were received by the Director, and conducted on a tour of some of the most interesting exhibits. Other members of the party were Commander T. Yamagata, Master of Ceremonies; Madame Ochiai, Lady-in-Waiting; S. Kato, Counsellor of the Japanese Embassy at Washington; Dr. T. Sakamoto, physician; Lieutenant-Commander K. Midzuno, Aide-de-Camp; Yoshio Muto, Japanese Consul at Chicago, and Commander Zacharias, United States Navy.

BONGO SPECIMENS RECEIVED FROM CAPTAIN WHITE

From Africa there arrived at Field Museum last month five specimens of the bongo, one of the rarest and handsomest of all antelopes. The animals were sent by Captain Harold A. White of New York and Major John Coats of London, who are leading an expedition, financed by them jointly, in behalf of the Museum.

The bongos will be used in the near future in the preparation of a new habitat group. For years specimens of these animals have been desired at the Museum, but none of the institution's previous expeditions to Africa have been fortunate enough even to come within sight of the elusive creatures. Included among those sent by Captain White is a huge bull which is close to the record size ever obtained by any hunter.

The bongo is a giant beast of reddish brown color with numerous vertical white stripes on its body. Full-grown bongos weigh from 400 to 600 pounds. The group of them was the most important objective of the expedition, although there have also been obtained specimens of Colobus monkeys, rhinoceros, eland, and various other animals. Hunting the bongo is an extremely difficult task, according to Dr. Wilfred H. Osgood, Curator of Zoology. One must often crawl on hands and knees for long distances through extremely deep dense wet forest areas on the higher mountains while tracking it. The chief habitation of the animal centers around Mount Kenya and neighboring peaks.

Captain White has notified the Museum that he and his associates not only obtained the specimens, but were also successful in making the first motion and still photographs ever taken of living bongos.

PATINA ON ANCIENT BRONZE

By H. W. NICHOLS
Associate Curator of Geology

The more ancient among the antique bronzes and coppers which are being restored by an electrolytic process in Field Museum, now possess, upon completion of the treatment, a good natural patina. The patina of a bronze is the thin coating which the bronze acquires in the course of time through a slight oxidation of its surface from exposure to the atmosphere. The patina, when well formed on a bronze of good composition, has an attractive color, texture, and luster, and it is highly prized.

The antique metal treated at Field Museum has, when first received, a heavy crust composed of a mixture of soil with the products of corrosion of the bronze. When this is removed by electrolysis the bright surface of the metal is exposed. Any original patina, if not already destroyed by corrosion of the buried bronze, will be removed with the crust. In several years' study of the problem methods have been developed, based on minor modifications of details of the electric treatment, by which the metal surface is left in such a sensitive state that it will acquire naturally in a few hours a patina that it takes years for a normal bronze surface to take on.

This method of patinating bronze is still in the development stage. At present it is uniformly successful only with the most ancient bronzes. It is expected that further study will so develop the process that it will be effective on bronzes of more recent origin.

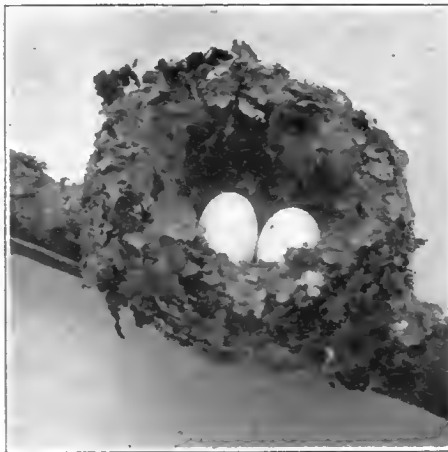
Replacing lost patina on bronze has long been a problem in museums. Methods of obtaining the patina which depend on burying the bronze for a long time in decaying

organic matter, such as spent tan bark, are uncertain and often destructive. Methods depending upon the use of corrosive gases and liquids form patinas that are not as pleasing in color as might be desired. Accurate imitations of patina can be secured by the use of colored lacquers and waxes, but as these are imitations they are not much favored in the large museums.

THE NESTING OF THE HUMMINGBIRD

By COLIN C. SANBORN
Assistant Curator of Mammals

The smallest feathered architect of the Chicago area is the ruby-throated hummingbird. It is the female of this tiny bird which not only broods, feeds the young, and starts them on their way in the world, but builds the nest before their coming. The male seems to expend all his energy in a very acrobatic



Hummingbird's Nest

Photograph is approximately natural size. The specimen is $1\frac{3}{4}$ inches long, $1\frac{1}{2}$ inches wide, $1\frac{1}{4}$ inches deep on the outside, and $\frac{3}{4}$ inch deep inside. This is a fair average size.

courtship, flying back and forth before the female in a great U-shaped arc, and displaying his bright-colored throat for her benefit.

The nest is placed in a crotch or astride a small limb, from four to twenty feet from the ground. It is made of downy fibers from ferns and milkweeds, and silky filaments from willows and poplars, which are bound together by spider or tent-caterpillar webs. As it is built, the outside is covered with lichens and bits of bark so that, when completed, it appears to be a knot or growth on the tree. The female shapes the nest with her body while arranging the material with her bill and feet. The nest measures about one and a half inches in diameter and about the same in depth. With fair weather, it usually takes about a week to build.

The two elliptical, white eggs, about the size of a navy bean, are laid a day or so apart and hatch in from eleven to fourteen days. The young remain in the nest from fourteen to twenty-eight days.

The young are fed by regurgitation, on nectar from flowers and on small insects which are caught on the wing.

The ruby-throat breeds in this region in late May and early June, and sometimes raises a second brood in August. It arrives early in May and leaves in September.

Of the eighteen hummingbirds found in North America, the ruby-throat is the only one occurring in the east. It breeds from Labrador to Florida and west to North Dakota, Nebraska, and Kansas.

JUNE GUIDE-LECTURE TOURS

Following is the schedule of conducted tours of the exhibits during June:

Week beginning June 1—Monday: 11 A.M., Indians of the Northwest, 3 P.M., Trees of the Chicago Area; Tuesday: 11 A.M. and 3 P.M., General Tours; Wednesday: 11 A.M., Chinese Art, 3 P.M., Musical Instruments; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Eskimo Exhibits, 3 P.M., The Cat Family.

Week beginning June 8—Monday: 11 A.M., Rare Animals, 3 P.M., Physical Geology; Tuesday: 11 A.M. and 3 P.M., General Tours; Wednesday: 11 A.M., Habitat Groups, 3 P.M., Looms and Weaving; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Marine Life, 3 P.M., The Story of Man.

Week beginning June 15—Monday: 11 A.M., Workers in Metals, 3 P.M., Oils and Fibers of Economic Value; Tuesday: 11 A.M. and 3 P.M., General Tours; Wednesday: 11 A.M., Prehistoric Life, 3 P.M., Roman Culture; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., South America, 3 P.M., Systematic Birds.

Week beginning June 22—Monday: 11 A.M., North American Mammals, 3 P.M., Indians of the Southwest; Tuesday: 11 A.M. and 3 P.M., General Tours; Wednesday: 11 A.M., Peoples of the South Seas, 3 P.M., Gems and Jewelry; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Egypt, 3 P.M., African Animals.

Week beginning June 29—Monday: 11 A.M., Mexico, 3 P.M., Reptiles, Past and Present; Tuesday: 11 A.M. and 3 P.M., General Tours.

Persons wishing to participate should apply at North Entrance. Tours are free and no gratuities are to be proffered. A new schedule will appear each month in FIELD MUSEUM NEWS. Guide-lecturers' services for special tours by parties of ten or more are available free of charge by arrangement with the Director a week in advance.

NEW MEMBERS

The following persons were elected to membership in Field Museum during the period from April 17 to May 16:

Life Members

Walter S. Carr, Scott S. Durand

Associate Members

Dr. Samuel W. Chavis, Duncan L. Clinch, Howell W. Kitchell, Miss Frances Railton, Dr. William M. Scholl, Mrs. Frederick W. Spiegel, Miss Josephine Stockton.

Sustaining Members

Mrs. Maude Staley

Annual Members

Miss Lily A. Beritzheimer, Mrs. Rollin T. Chamberlin, Mrs. D. F. Cleary, J. H. Clemer, C. Groverman Ellis, Mrs. R. V. Fletcher, Miss Maude Gordon, Mrs. M. A. Griffith, Fred C. Holmes, John Hayes Kelly, Charles F. Keyser, Sr., Raymond H. Koch, George Kort, Howard L. Krum, L. L. Lazelle, A. L. Lettermann, George Russell McVay, Edward F. Moore, Treadway B. Munroe, Miss Ida Peirce, Mrs. J. P. Pfeifer, Daniel C. Plummer, Jr., John W. Shaver, Mrs. Paul Amandus Thomas, Ernest H. Thompson, Mrs. E. H. Waterman, Roswell B. Whidden, Rudolph L. Wild, Mrs. James D. Woolf, Mrs. Joseph W. Young, Mrs. H. Zitzewitz.

MEMBERSHIP IN FIELD MUSEUM

Field Museum has several classes of Members. Benefactors give or devise \$100,000 or more. Contributors give or devise \$1,000 to \$100,000. Life Members give \$500. Non-Resident (Life) and Associate Members pay \$100. Non-Resident Associate Members pay \$50. All the above classes are exempt from dues. Sustaining Members contribute \$25 annually. After six years they become Associate Members. Annual Members contribute \$10 annually. Other memberships are Corporate, Honorary, Patron, and Corresponding, additions under these classifications being made by special action of the Board of Trustees.

Each Member, in all classes, is entitled to free admission to the Museum for himself, his family and house guests, and to two reserved seats for Museum lectures provided for Members. Subscription to FIELD MUSEUM NEWS is included with all memberships. The courtesies of every museum of note in the United States and Canada are extended to all Members of Field Museum. A Member may give his personal card to non-residents of Chicago, upon presentation of which they will be admitted to the Museum without charge. Further information about memberships will be sent on request.

Field Museum News

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No. 7

LIFE-SIZE RESTORATION OF TITANOTHERES IS PLACED ON EXHIBITION

BY ELMER S. RIGGS

Associate Curator of Paleontology

A life-size restoration of gigantic titanotheres—extinct animals which resembled rhinoceroses in appearance, but were as tall and bulky as elephants—has just been placed on exhibition in Ernest R. Graham Hall of Historical Geology (Hall 38). The group, a gift to the Museum from Mr. Graham, is the work of Frederick A. Blaschke, sculptor of Cold Spring-on-Hudson, New York, who also made the restoration of the Neanderthal family and the *Mesohippus* which have now been on exhibition in the same hall for some time past. The group of titanotheres is composed of three animals—an enormous male in standing position, a female, and a young titanotheres lying down. A background reproducing the supposed natural habitat of these huge beasts has been provided, this being the work of Charles A. Corwin, staff artist of the Museum.

The titanotheres were great two-horned beasts which were abundant in the Bad Lands of Nebraska and the Dakotas about 30,000,000 years ago, according to scientific estimates. The animals, as restored in the Museum's exhibit, are modeled to show them as it is indicated by fossils they must have appeared in life. The male figure was constructed from measurements and studies of a fossil skeleton in the Museum of Yale University; the female from a skeleton in the American Museum of Natural History, New York; and the young one from a skeleton in the University of Wyoming.

This is the first time an attempt has been made by scientists to reproduce in full-size three-dimensional form amid natural surroundings a group of these great beasts. In the work the sculptor has had the advice of Professor Henry Fairfield Osborn, President of the American Museum of Natural History, New York, and Professor W. K. Gregory of

They were related on the one hand to the horse family and on the other to the rhinoceroses, but they differed from both of these in many ways. They died out suddenly millions of years ago. In recent years numerous fossil skeletons of them which have been covered up by sands and clays have been found in the Bad Lands of Nebraska and the Dakotas as the bones have been washed out by rains and streams.

The largest titanotheres attained a height of more than eight feet and weighed fully as much as African elephants. Their legs were massive, and their feet were padded like those of elephants. Splendid fossil specimens are preserved in Field Museum and in a number of other museums throughout America.

Transportation of the life-size models of these huge creatures from the sculptor's studio at Cold Spring-on-Hudson to Chicago offered a unique problem. They were brought in motor trucks, but many detours had to be made on account of low bridges and the tremendous height of the male model. Even with these

detours, it was necessary to cut off the hump of the standing animal model temporarily, and to release all air from the truck tires to get clearance for the load under certain bridges. Mr. Blaschke personally rode the trucks to supervise the safe transit of the models.

A large mural painting of a group of titanotheres, by Charles R. Knight, also presented by Mr. Graham, has been added to the series of prehistoric scenes on the walls of Graham Hall.



Restoration of Titanotheres

Life-size group prepared by Frederick Blaschke, on exhibition in Ernest R. Graham Hall.

Columbia University, who are among the foremost authorities on prehistoric life, as well as Curator of Geology Oliver C. Farrington of Field Museum, and the present writer.

The titanotheres lived in wet marshy lands and fed upon plants. They were once almost as abundant as bison were when white men first explored America. Their two blunt horns were placed side by side on the nose and served as offensive weapons.

Totems for Exchange or Sale

After having selected types of totem poles, house posts and grave posts representing the Alaskan Eskimos and Northwest Coast Indians for its exhibits in Hall 10, Field Museum has left a number of excellent similar specimens for which no use can be found here due to the lack of space. It is believed that these would be of value to other institutions or to private collectors, and negotiations as to their disposal either by exchange or sale are solicited. Those who might be interested are invited to correspond with the Director of the Museum.

51,917 Visitors in One Day

Field Museum was visited by 51,917 persons on May 21. This vast number of people came to the Museum largely as a result of the fact that Grant Park was thronged that day with spectators viewing

the United States Army Air Corps parade on the lake front, a feature of the recent Chicago Jubilee. This attendance was exceeded on only one previous day in the Museum's history—May 24, 1929, when the number of visitors was 59,843.

University Honors Dr. Laufer

Dr. Berthold Laufer, Curator of Anthropology at Field Museum, received an honorary degree of Doctor of Laws from the University of Chicago during the June commencement exercises at the university. The honor was in recognition of the important work he has performed in Asiatic research.

The many important economic products of palm trees, with specimens from the trees themselves, are the subject of a Museum exhibit.

Argali Sheep Received

Three specimens of the Argali or Hodgson's sheep, a mountain animal very difficult to obtain, have been received at Field Museum of Natural History as a result of the expedition to Sikkim (on the Tibetan border) conducted for the Museum by C. Suydam Cutting of New York. The animals were encountered at high altitudes in the mountains, and were shot by Mr. Cutting himself. He was accompanied by a party of native hunters. The sheep are somewhat similar to the rare Marco Polo sheep, also found in Asia, of which the Museum has mounted specimens which were obtained by Colonel Theodore Roosevelt and Kermit Roosevelt while leading the James Simpson-Roosevelts Asiatic Expedition.

An assembled skeleton of the extinct great auk, huge bird which once inhabited North America, is on exhibition at the Museum.

Field Museum of Natural History

Founded by Marshall Field, 1893

Roosevelt Road and Lake Michigan, Chicago

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FIELD MUSEUM NEWS

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Field Museum is open every day of the year during the hours indicated below:

November, December, January	9 A.M. to 4:30 P.M.
February, March, April, October	9 A.M. to 5:00 P.M.
May, June, July, August, September	9 A.M. to 6:00 P.M.

Admission is free to Members on all days. Other adults are admitted free on Thursdays, Saturdays and Sundays; non-members pay 25 cents on other days. Children are admitted free on all days. Students and faculty members of educational institutions are admitted free any day upon presentation of credentials.

The Library of the Museum, containing some 92,000 volumes on natural history subjects, is open for reference daily except Sunday.

Traveling exhibits are circulated in the schools of Chicago by the Museum's Department of the N. W. Harris Public School Extension.

Lectures for school classrooms and assemblies, and special entertainments and lecture tours for children at the Museum, are provided by the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures.

Announcements of courses of free illustrated lectures on science and travel for the public, and special lectures for Members of the Museum, will appear in FIELD MUSEUM NEWS.

There is a cafeteria in the Museum where luncheon is served for visitors. Other rooms are provided for those bringing their lunches.

Members are requested to inform the Museum promptly of changes of address.

NEW IMPROVED CAFETERIA SERVES MUSEUM VISITORS

Representing another effort on the part of Field Museum to serve the comfort and convenience of the public, the Museum's cafeteria, completely remodeled, redecorated and equipped with the most modern facilities, opened again last month with a new concessionaire in charge of its management.

This has been done at great expense, and once again, as has been the case with so many of the improvements made in the Museum, the burden of its cost and the work of planning for it have been borne by Mr. Stanley Field, the Museum's President.

The cafeteria has in the past few years become an increasingly important adjunct to the Museum, due to the ever increasing numbers of visitors, of whom so many are always in the building at lunch time. The improved facilities now offered make possible a much more efficient and satisfactory handling of crowds.

The remodeling has resulted in a completely new cafeteria of a type unique in institutions of this kind. While it is in the

same location on the ground floor as the old one, everything in the large room is new, and even the ceiling has been reconstructed of a soundproof material which produces a far quieter and pleasanter atmosphere for the diners. During the reconstruction a smaller temporary room was fitted out and used so that there would be no interruption in service to the public.

An attractive and at the same time instructive scheme of decoration has been adopted in the new cafeteria. On the walls of the room have been painted large maps of the continents—North America, South America, Africa, Europe, Asia and Australia—and on one wall appears a map of the world as a whole together with maps of the Arctic and Antarctic regions. These provide a pleasing decoration in light pastel colors, and at the same time they suggest the world-wide scope of the expeditions and other activities of the Museum, and the vast sweep of lands and seas from which have been gathered its collections of exhibited material. The rest of the color scheme is in two pleasing shades of green, with trim of harmonious woods and marble, and an attractive and comfortable floor covering. Colorful new tables and chairs, new blue china, new silverware and other table service, all enhance the pleasant atmosphere created.

The most modern and complete equipment for cooking, electric refrigeration and dish-washing has been installed. Operation of the cafeteria has been placed in the hands of the John R. Thompson Company, whose widespread interests and long experience in the restaurant business, and whose large commissary with its extensive buying power, assure the cafeteria of obtaining the best foods and selling them at reasonable prices. The cafeteria is open daily after 11 A.M. Since its opening on June 8 it has been patronized by many persons who have graciously expressed their admiration of the new facilities and the quality of service being rendered.

As previously, the Museum makes available also accommodations for children and other persons bringing their own lunches. The room with many tables and chairs for this purpose has also been improved. Those using these facilities have the privilege of supplementing their lunches with coffee, tea, milk, and other things purchased at a special counter provided in this room. For the benefit of the thousands of school children who come to the Museum, special reduced prices have been placed on the beverages and other things sold in this room. The welfare of the children is assured by the purity of the foods and drinks, and the cleanliness of the service.

A special lunch room has been provided for the scientific and administrative staffs of the Museum. This room has been equipped to permit of luncheon conferences to discuss Museum business when required. Its walls are attractively decorated with enlarged reproductions of designs from a codex of the Aztecs, the original of which is in the possession of the Vatican. It connects with the pantry of the main cafeteria and is served from there.

NEWSPAPER COOPERATION

Field Museum has recently received two especially valuable pieces of publicity due to the interest of the publishers of Chicago newspapers. On Sunday, June 14, the *Chicago Tribune* published a comprehensive article about the institution, prepared by its noted staff writer, James O'Donnell Bennett. This began with a full column on the first page of the main news section,

and continued for several more columns inside. A special checkup at the Museum on the day of publication revealed that at least 3,000 of the 15,655 visitors who came that day were influenced to do so by this article, while many more, concerning whom no definite information was obtainable, also probably came as a result of this publicity.

A few weeks previously the Museum was given a full page advertisement in the *Chicago Evening American* through the courtesy of the publisher of that newspaper. This page, printed in large type, which must have attracted the attention of most of the newspaper's hundreds of thousands of readers, emphasized the cultural advantages offered by the Museum.

These are outstanding recent courtesies extended by the press of the city to the Museum. It should be added that all of the Chicago newspapers are constantly co-operating with the institution by publishing news of its activities, and there can be no question that this publicity is reflected in the increasing number of visitors the Museum receives.

Expedition to Nebraska

An expedition to collect fossil mammals of Miocene age (19,000,000 to 23,000,000 years ago) in various parts of Nebraska left Chicago June 6 on behalf of Field Museum. Elmer S. Riggs, Associate Curator of Paleontology at the Museum, is the leader. Other members of the Museum staff in the party are Bryan Patterson, James Quinn and Sven Dorf. The expedition is sponsored by Marshall Field. Localities never before investigated by a Field Museum expedition will be the scene of operations.

Gifts to the Museum

Following is a list of some of the principal gifts received during the last month:

From Mrs. Margaret S. Fitch—5 ethnological specimens, Portuguese East Africa; from Frank Vondrasek—68 prehistoric arrowheads, Magnet Cove, Arkansas; from Mrs. Frances Cowles Badger—globular stone jar with band of incised designs, California; from Professor Sir Flinders Petrie—2 hair samples from Egyptian mummies of Roman period; from Jesús González Ortega—200 herbarium specimens, Sinaloa; from Frank Schoble and Company—17 samples of men's straw hats and hat-making materials; from Frederick Blaschke—model of the horse Man o' War, one-fifth natural size; from William J. Chalmers—group of crystallized cuprite, Arizona; from Museum of Comparative Zoology—198 sea urchins (13 species), Europe and North America; from A. A. Dunbar Brander—17 birdskins and 2 mounted birds, Scotland; from John G. Shedd Aquarium—a marine iguana, a geographic turtle and a tree frog; from Robert M. Zingg—22 lizards, 9 snakes and a toad, Chihuahua; from Doctor K. K. Chen—5 Japanese toads; from Captain R. J. Walters—a large scorpion fish and a large shark sucker, Florida; from Professor T. D. A. Cokerell—2 shells (cotypes), New Caledonia; from Henry Field—80 lantern slides, Egypt and the Near East.

BEQUESTS AND ENDOWMENTS

Bequests to Field Museum of Natural History may be made in securities, money, books or collections. They may, if desired, take the form of a memorial to a person or cause, named by the giver. For those desiring to make bequests, the following form is suggested:

FORM OF BEQUEST

I do hereby give and bequeath to Field Museum of Natural History of the City of Chicago, State of Illinois,

Cash contributions made within the taxable year to Field Museum not exceeding 15 per cent of the taxpayer's net income are allowable as deductions in computing net income under Article 251 of Regulation 69 relating to the income tax under the Revenue Act of 1926.

Endowments may be made to the Museum with the provision that an annuity be paid to the patron for life. These annuities are tax-free and are guaranteed against fluctuation in amount.

IDEAS OF MANHOOD IN WEST AFRICA

By W. D. HAMBLI

Assistant Curator of African Ethnology and leader of Frederick H. Rawson-Field Museum Ethnological Expedition to West Africa

In many primitive societies boys are not allowed to grow gradually into manhood. The adult stage is attained only by passing through ceremonies which invariably impose many restraints and much physical suffering.

When at Cangamba in the far east of Angola, with the Frederick H. Rawson-Field Museum Ethnological Expedition to West Africa, my attention was called to a large enclosure built of brushwood in such a way that the interior was entirely screened from passers-by. It was for the boys' initiation ceremonies, which are held only once in four years. With some difficulty I obtained admittance, chiefly because I was able to say that I was not a government official, and was thus enabled to witness parts of the ceremonies.

The first stage in the initiation proceeding is the approach of a group of young boys to the elders of the village asking that such initiation may take place. The ceremony is essential as a prelude to marriage; moreover, the uninitiated boy is regarded as a child who may never be a companion of the initiated.

On entering the enclosure I found five boys apparently varying in age from twelve to seventeen years. Each boy had to make for himself a mask of bark cloth which is painted black and white. The masks are newly made for each initiation ceremony, but the netting fiber costumes had evidently seen long service.

Usually the boys live for two months in this enclosure. During this period each boy has to spend fourteen days continuously lying on his back in a small cage built from branches of trees. The long seclusion is marked by semi-starvation and flogging; in fact there are deaths among the boys from time to time.

The message sent to the parents of a boy who has died under this treatment has a touch of pathos. The wooden food platter used by the deceased is sent to the parents after it has been perforated, so as to suggest that it will be of no further use.

About the time of my departure from Cangamba, all the newly-initiated boys were presented at a village feast. Four expert

drummers played continuously for several hours, almost to the point of my exhaustion and their own. Everyone knows that these weird figures are the boys who disappeared for initiation some eight weeks ago, but everyone pretends that the village has been visited by the ochigangi, or spirits of the dead. The garbed figures dance wildly here and there, occasionally darting about to disperse a group of women and girls who run screaming to the bush.

Several complete costumes, including masks, were obtained, which will, in due course, be exhibited in Hall D, devoted to African ethnology.

AMAZON WOODS EXHIBITED

A collection of two dozen planks representing the principal species of woods of economic importance which are obtained from the Amazon valley has been placed on exhibition in the Hall of Foreign Woods (Hall 27). These specimens were obtained in the state of Pará, Brazil, by the Marshall Field Botanical Expedition to the Amazon.

According to Dr. B. E. Dahlgren, Acting Curator of Botany, who was leader of the Amazon Expedition, no region on earth has vaster forest areas or is more prolific in species of trees than the Amazon valley. More than a thousand kinds, almost twice as many as exist in all of North America above the Rio Grande, have been described from the state of Pará alone. In the presence of such a wealth of forest resources a notable development of lumbering could be expected. However, while a considerable export business both in logs and cut lumber does exist, it is with some surprise that one discovers that the local utilization of wood is confined to a few dozen kinds at most.

For the names of some of these woods the native Indian designations have been retained. Thus one encounters a variety of strange and sonorous terms like massaranduba, muirapiranga, araracanga, piquiárana, sapucaia, tatajuba, marupá—words, someone has said, made to order for the naming of Pullman cars.

The woods to which they are applied are as different as their appellations. Some are distinguished for their beautiful or unusual color, some for peculiar grain, characteristic striping or bizarre markings; others for lightness and excellent working qualities or for solidity and resistance to wear and exposure.

VOLCANIC BOMBS

By HENRY W. NICHOLS
Associate Curator of Geology

Volcanic bombs do not explode, although they fall from such height that they can do much damage when they hit the earth. They have a curious origin. A volcano in violent eruption throws melted lava high in the air. Most of it is torn to fragments by the violence of the eruption and falls as volcanic ash and scoria. Occasionally a lump of lava in a semi-fluid state is thrown so high that it has time to cool enough, before falling to the earth, to retain the form impressed upon it during its aerial travel. Such a mass during its ascent and descent spins rapidly. The rapid revolution forces the plastic mass to assume the spindle form by which volcanic bombs are recognized. The outside of the mass chills rapidly so that it has a thin glassy glaze. The inside cools more slowly and may have the aspect of stony lava.

Usually, however, the molten lava is saturated with dissolved gases and steam, in which case the inside of the bomb is porous and resembles pumice or the inside of a loaf of bread. The resemblance to bread is more marked in the breadcrust variety of volcanic bomb which has a surface reticulated by shallow cracks such as appear on bread crust. This is due to contraction from cooling.

The recent Marshall Field Expedition to Mount Taylor added a number of specimens to the volcanic bomb collection in Clarence Buckingham Hall (Hall 35).

Museum's Printing Chief Dies

U. A. Dohmen, for more than thirty-five years Chief of the Division of Printing of Field Museum, died on May 21. Mr. Dohmen was born December 24, 1874, and began his work for the Museum in 1895. Starting with hand-set type, foot-operated printing press, and himself as the only printer, Mr. Dohmen developed the plant in his charge into a large one with modern typesetting, printing, binding and cutting machinery, and a staff of numerous workers. His devotion to his duties and the great success he made of the printing plant, were greatly appreciated by the administrative officers of the Museum, and his death represents a serious loss.

Dewey S. Dill, for several years an assistant of Mr. Dohmen's, has been placed in charge of the Division of Printing.

GOOD FOOD AMID PLEASANT SURROUNDINGS PROVIDED FOR MUSEUM VISITORS



Field Museum's New Cafeteria

View of part of new lunchroom looking toward the serving counter. Improved facilities make possible quicker and more efficient service for large numbers of people. See editorial on page 2.

RAYMOND FOUNDATION PROGRAMS

The James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures offers a summer series of free entertainments for children, to be presented at Field Museum during July and August. There will be six programs, beginning with one on Thursday, July 9, and running on consecutive Thursdays up to and including August 13.

The programs are varied in character, including motion pictures, story hours, and tours of certain sections of the exhibits conducted by Raymond Foundation lecturers. The motion pictures and the story hours will be presented in the James Simpson Theatre of the Museum.

Following is the schedule:

July 9—10 A.M., motion picture: "With Byrd at the South Pole."

July 16—10 A.M., story hour: "Giants of Long Ago"; 11 A.M., tour: Prehistoric Animals and People.

July 23—10 A.M., tour: Chinese Exhibits; 11 A.M., motion picture: "Glimpses of China."

July 30—10 A.M., motion picture: "The Silent Enemy."

August 6—10 A.M., story hour: "Children of Many Lands"; 11 A.M., tour: Exhibits Showing Child-life.

August 13—10 A.M., tour: "Animals of Land and Water; 11 A.M., motion pictures: "Alligators," "Alaskan Sheep," "Bears," "Animals of the Galapagos," "Lions at Home."

Children from all parts of the city and suburbs are invited to these entertainments, and no tickets are necessary for admission. In addition to those coming individually, large groups organized in various community centers are expected.

KISH ANTIQUITIES ARRIVE

Twenty-one boxes of stuccos, sculptures, jewelry and other treasures excavated from the ruins of Kish, including objects from the Persian temples which were discovered on the site of the ancient city by the Field Museum-Oxford University Joint Expedition to Mesopotamia during its 1930-31 season, have been received at the Museum.

Professor Stephen Langdon, director of the expedition, reports various archaeological discoveries which may have an important bearing in reconstructing the history of the world's earliest civilizations. Among these was the finding of a seal of the early Indus Valley, which was buried nine meters below the surface of the mound covering the great temple area of Kish. It bears an inscription of seven hieroglyphs of a type previously known from excavations at Mohenjo-Daro and Harappa, representing the prehistoric but advanced civilization of India. This is the first time that one of these seals has been found *in situ* in a pre-Sargonic stratum in Mesopotamia, according to Professor Langdon. It was found with an object inscribed with a cuneiform text, which can be dated by its script at about 2800 B.C.

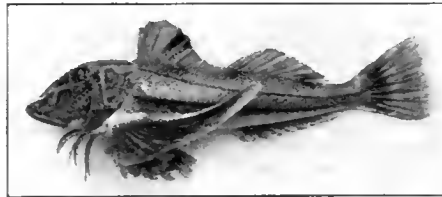
"It is therefore clear that the great civilization now recovered in India and entirely unsuspected until very recent times is extremely ancient," states Professor Langdon. "It further appears that a race, related to the Sumerians, who had founded a great civilization in India before 3000 B.C. had close commercial relations with Sumer and Elam in that remote period. They may even have invaded Mesopotamia, for the palace decorations of the old Sumerian palace at Kish have revealed a race of kings and prisoners whose dress and tonsure are totally unlike those of the Sumerians. They wear the pigtail tonsure, and surely indicate a foreign invasion."

Professor Langdon further reports that of two Persian palaces of the Sassanian period found on the site of Kish this season, one has a court shaped like the nave of a Christian church, with a "choir" at the back. The building suggests the influence of the famous sect of the Manichaeans, he says. So striking is its resemblance to a Christian cathedral that one is led to question description of the building as a palace, except for the fact that four busts of a Sassanian king were found in the ruins, and the mural decorations show no religious motifs whatever.

THE SEA ROBIN

BY ALFRED C. WEED
Assistant Curator of Fishes

Many fishes have received the name "flying fishes." Some of them can make long gliding jumps through the air. Others never leave the water of their own accord and are called fliers simply because they have large fins. In the latter group we find some creatures that have also been called "sea robins" because they have long, wingleike



The Sea Robin

Reproduction exhibited in Albert W. Harris Hall.

fins and usually show much red color on the body. On our coasts they are found from Maine to the Gulf of Mexico.

In European waters some of the sea robins are called gurnards. There they are common food fish but are not so used in this country. Most of ours are small and would furnish very little meat.

In an aquarium the sea robins are among the showiest species. Their colors are brilliant. They are almost always in motion and spread their immense pectoral (arm) fins in all sorts of strange ways. Ordinary fishes do not seem to make much use of their side fins, but the sea robin waves them around in the most unexpected manner. One fin may be folded like a fan while the other is spread like a great umbrella. One may be spread out horizontally in an almost perfect imitation of a certain type of airplane wing while the other is spread as widely but pointed straight downward. All the while there is a continual flow of color changes over the whole fish. All sorts of bronzy tints in reds, browns, purples and golds come and go as body colors and as surface washes.

When the fish comes to rest on the bottom we have another surprise. The three lower rays of the pectoral fin on each side are separated from the rest and look like long skinny fingers. They are as movable as fingers and are used just as freely. When the distance is not too great the fish may walk on them just as a crab walks on the tips of its legs. If the fish wishes to rest quietly on the sand it may dig a shallow pit with these same fingers. It may also poke and prod around in the sand in search of something to eat.

A very fine specimen of one of the larger sea robins has been received from the John G. Shedd Aquarium and has been reproduced in celluloid by A. G. Rueckert of the Museum staff. It is now on exhibition in Albert W. Harris Hall (Hall 18).

JULY GUIDE-LECTURE TOURS

Following is the schedule of conducted tours of the exhibits during July:

Wednesday, July 1—11 A.M., Man Through the Ages, 3 P.M., The Horse and Its Relatives; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Birds of Shores and Swamps, 3 P.M., Egypt.

Week beginning July 6—Monday: 11 A.M., Palms and Cereals, 3 P.M., Industrial Models; Tuesday: 11 A.M. and 3 P.M., General Tours; Wednesday: 11 A.M., Dwellers of the Far North, 3 P.M., Plant and Animal Life of Long Ago; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Textiles, 3 P.M., Sea Life.

Week beginning July 13—Monday: 11 A.M., Rare and Exotic Plants, 3 P.M., Africa and Madagascar; Tuesday: 11 A.M. and 3 P.M., General Tours; Wednesday: 11 A.M., Mummies and Burial Customs, 3 P.M., Gems and Jewelry; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Trees and Wood Products, 3 P.M., Weapons and Armor.

Week beginning July 20—Monday: 11 A.M., Reptiles and Fishes, 3 P.M., China; Tuesday: 11 A.M. and 3 P.M., General Tours; Wednesday: 11 A.M., Primitive Musical Instruments, 3 P.M., Mines and Minerals; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Indians of Plains and Deserts, 3 P.M., Asiatic Animals.

Week beginning July 27—Monday: 11 A.M., Boats and Fishing, 3 P.M., Work of Wind and Water; Tuesday: 11 A.M. and 3 P.M., General Tours; Wednesday: 11 A.M., Oriental Theatricals, 3 P.M., Primitive Costumes; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., African Game Animals, 3 P.M., Mexico, Past and Present.

Persons wishing to participate should apply at North Entrance. Tours are free and no gratuities are to be proffered. A new schedule will appear each month in FIELD MUSEUM NEWS. Guide-lecturers' services for special tours by parties of ten or more are available free of charge by arrangement with the Director a week in advance.

NEW MEMBERS

The following persons were elected to membership in Field Museum during the period from May 17 to June 16:

Associate Members

Miss Ruth D. Bannister, Oliver A. Blackburn, Dr. Walter L. Blomgren, John F. Cuneo, Mrs. C. W. McLaury, Mrs. Albert J. Metzler, Mrs. Olive C. Sleeper.

Annual Members

Marshall Frank Barrett, Mrs. Grace L. Cowan, Miss Louise K. Dittmar, Mrs. Clarence L. Frederick, Dr. William W. Gibbs, J. Roberts Hann, Mrs. George Francis Hartford, Mrs. A. N. Hauter, Mrs. Marshall W. Hill, Mrs. Robert L. Holmes, Miss Edna Gray Johnson, Frank Johnson, Meyer Kestnbaum, Maurice Leigh, Dr. Thomas McGuigan, E. E. McInnis, Rev. Jesse L. McLaughlin, S. D. McNeal, Clarence E. Mehlhope, Arthur M. Nichelson, Stephen M. Paddock, Samuel Schweitzer, Eben Stanley, Charles F. Thomas, Mrs. H. Tift, William M. Tippet, Mrs. Joseph Triner, John Tutbill Walbridge, Mrs. G. Albert West, Mrs. Thomas Y. Wickham, Gerald T. Wiley, Lawrence M. Williams, Donald M. Wood, Robert M. Zacharias, Tytus Zbyzawski.

New Guidebook To Be Issued

The fifteenth edition of the General Guide to Field Museum will be published shortly. Revisions cover important changes made in the exhibits during the past year.

MEMBERSHIP IN FIELD MUSEUM

Field Museum has several classes of Members. Benefactors give or devise \$100,000 or more. Contributors give or devise \$1,000 to \$100,000. Life Members give \$500. Non-Resident (Life) and Associate Members pay \$100. Non-Resident Associate Members pay \$50. All the above classes are exempt from dues. Sustaining Members contribute \$25 annually. After six years they become Associate Members. Annual Members contribute \$10 annually. Other memberships are Corporate, Honorary, Patron, and Corresponding, additions under these classifications being made by special action of the Board of Trustees.

Each Member, in all classes, is entitled to free admission to the Museum for himself, his family and house guests, and to two reserved seats for Museum lectures provided for Members. Subscription to FIELD MUSEUM NEWS is included with all memberships. The courtesies of every museum of note in the United States and Canada are extended to all Members of Field Museum. A Member may give his personal card to non-residents of Chicago, upon presentation of which they will be admitted to the Museum without charge. Further information about memberships will be sent on request.

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No. 8

GREAT ANTEATERS OF SOUTH AMERICA ON VIEW IN NEW HABITAT GROUP

BY WILFRED H. OSGOOD
Curator, Department of Zoology

The latest addition to the Hall of American Mammal Habitat Groups (Hall 16) is an exhibit showing the great anteater amid a reproduction of its natural habitat. This group was completed and opened to public view last month.

The great anteater, which ranges from southern Mexico to southern Brazil, is one of the queerest of the many queer beasts inhabiting the American tropics. It is peculiar in appearance, in structure, and in habits. One of its names is ant bear, perhaps on account of its large size and shaggy coat, but it is not even remotely related to bears. It belongs to that rather anomalous group of mammals called edentates, of which the known extinct species are much more numerous than those now living. It is one of three principal kinds of anteaters in South and Central America. The other two are the medium sized tamandua and the much smaller silky anteater, both of which are highly arboreal in habits.

The grotesque appearance of the great anteater is largely due to its very long and very narrow head which is actually six times as long as wide. In other words, it is longer than that of a very large grizzly bear and scarcely wider than that of a jackrabbit. The mouth is reduced to very small size,

servicing only as an opening through which to protrude its long, extensile tongue and draw in its insect food.

That such a large animal should be wholly sustained on a diet of ants and termites seems incredible, but this is the case. Al-

board bill runs to high figures. To supply it with all the insects it needs reaches a cost rivaling that of the tons of hay for the elephant.

Teeth are unnecessary for an anteater and they have been entirely eliminated, but the

animals are provided with unusually large salivary glands which supply a viscid secretion to assist the effectiveness of the tongue. The long, heavy claws of the front feet are used mainly for tearing open the ant and termite nests, but when necessary can be used very effectively in defense. For this reason the anteater is held in very great respect by local hunters and also by such predatory animals as the jaguar and the puma which are usually inclined to give it a wide berth. Many a good hunting hound has been literally disemboweled by a powerful sweep of these claws.

The Museum's group was obtained by Colin C. Sanborn, Assistant Curator of Mammals, while a member of the Marshall Field South American Expedition of 1926. The animals are shown in the light forest or semi-savanna of southwestern Brazil where the physical conditions are those they prefer. They may also occur about the edges of heavy, humid forests but do not penetrate far into them. The taxidermy is by Julius Friesser and the painted background by Charles A. Corwin.



Great Anteater Group

Exhibit in Hall 16 of animals obtained by Marshall Field South American Expedition

though this must be regarded as strong testimony as to the abundance of these insects in the countries to the south of us, it is still stronger as to the efficiency of nature's machine for capturing them in large quantities. The great anteater has sometimes been kept alive successfully in zoological gardens, but it is an expensive pet, for its

death rites; large ear-plugs of jade weighing more than three ounces each; jade amulets; the contents of a child's grave, including various toys such as dolls with whistles; and peculiar flint implements shaped like scorpions, dogs, human beings and other creatures.

MUSEUM EXPEDITION RETURNS FROM MAYA LANDS

The Third Marshall Field Archaeological Expedition to British Honduras and Guatemala, which had been in the field since February, concluded its work and returned to the Museum in June. Collections of rare and curious objects, and many new scientific data on both the ancient and modern Mayas were brought back by J. Eric Thompson, Assistant Curator of Central and South American Archaeology, who was leader of the expedition.

Reconnaissance and research work was conducted by the expedition at several points in British Honduras and Guatemala, and on a site near San José in western British Honduras fifteen burial mounds were excavated. Before the excavations could proceed, Mr. Thompson and his assistants had the arduous task of clearing the site of a heavy overgrowth of forest in which were trees reaching as high as 100 feet. The site is one which had hitherto been untouched by archaeologists.

Among the specimens brought back are a number of sets of human teeth with inlays of jade. The practice of drilling and filling teeth with jade and other ornamental stones was a common one among the ancient Mayas, according to Mr. Thompson. Apparently it was purely for personal adornment, and there was no dental hygiene idea behind it, he says. Certain old women developed great skill in the work, and practically all of it was done by them. They were kept almost constantly busy at it, old records indicate. Drilling was done with a sharpened stone drill or file, turned by a string bow. The operations must have been extremely painful, but apparently were regarded as an ordeal to be endured as a proof of Spartan-like fortitude, or as part of the ceremonies for initiation of youths into manhood.

Among other objects brought to the Museum by Mr. Thompson are skulls showing the results of the practice of deformation by binding planks to the forehead during childhood; bowls containing skulls of persons who had been the victims of sacrificial

Museum Member's Cooperation

The interest taken in the Museum by many of its Members is exemplified by a recent occurrence. Work on the restoration of a Carboniferous forest, now in course of preparation for Ernest R. Graham Hall, had proceeded to a stage where it was necessary to procure a certain kind of peat to simulate the mucky soil. As only a certain variety of peat, not readily available, would do, this threatened to be a matter of considerable expense and difficulty. However, when C. N. Ackerman, an Associate Member, heard of the difficulty he at once presented the Museum with several hundred pounds of the necessary peat from his property in Antioch, Illinois.

Field Museum of Natural History

Founded by Marshall Field, 1893

Roosevelt Road and Lake Michigan, Chicago

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FIELD MUSEUM NEWS

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Field Museum is open every day of the year during the hours indicated below:

November, December, January	9 A.M. to 4:30 P.M.
February, March, April, October	9 A.M. to 5:00 P.M.
May, June, July, August, September	9 A.M. to 6:00 P.M.

Admission is free to Members on all days. Other adults are admitted free on Thursdays, Saturdays and Sundays; non-members pay 25 cents on other days. Children are admitted free on all days. Students and faculty members of educational institutions are admitted free any day upon presentation of credentials.

The Library of the Museum, containing some 92,000 volumes on natural history subjects, is open for reference daily except Sunday.

Traveling exhibits are circulated in the schools of Chicago by the Museum's Department of the N. W. Harris Public School Extension.

Lectures for school classrooms and assemblies, and special entertainments and lecture tours for children at the Museum, are provided by the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures.

Announcements of courses of free illustrated lectures on science and travel for the public, and special lectures for Members of the Museum, will appear in FIELD MUSEUM NEWS.

There is a cafeteria in the Museum where luncheon is served for visitors. Other rooms are provided for those bringing their lunches.

Members are requested to inform the Museum promptly of changes of address.

DEPARTMENT OF ANTHROPOLOGY —ITS AIMS AND OBJECTS

Departments of anthropology have been founded at many of our leading universities and in the larger natural history museums. The scientist who desires to make anthropology his lifetime vocation has therefore the choice between an academic and a museum career. The teaching of anthropology is, of course, an important task, as investigators must be trained to shoulder the burden of their predecessors, and our museums must look to the universities for a supply of competent men.

The anthropologist devoting his energies to museum work enjoys a wide sphere of activities and an unlimited range of opportunity; he may be explorer, research-worker, author, lecturer and educator at the same time. A hall in the museum covering the ethnology or archaeology of a certain country or group of tribes, properly arranged and labeled, has the same value and offers the same advantages as a university lecture course on the same subject—with two notable differences, however: the university

course is given for the benefit of a limited number of students, while the silent course offered by a museum hall will reach many hundreds and thousands of people daily. Moreover, it is a permanent institution, a visual demonstration of facts and data accompanied by lectures printed on labels, while the class room instruction naturally is transient and evanescent and lacks the actual demonstration of culture objects, models, and groups.

At present eighteen large halls are installed with labeled exhibits in the Department of Anthropology of Field Museum. These cover all parts of the world and represent the equivalent of eighteen lecture courses, which is far more than all university departments of anthropology combined are able to offer. Any visitor to the Museum who is determined to study these collections carefully case by case and to digest the information given on the labels will receive a liberal education in anthropology and a thorough knowledge of the cultural achievements of mankind.

The label is the bond that links the Museum with the public. A label may be very concise, consisting of only a line or two, and yet it will embody the results of long and painstaking research and considerable thought.

It is hoped to publish a guide for each of the halls. Three such guides have already been issued, and a fourth is in press now. The object of this series of handbooks is to furnish the synthesis to the analytic collections, to present a survey of the region or culture in question and to depict in particular its geographical, historical, social and religious background. These booklets are amply provided with illustrations, maps, and bibliographies, and are gotten up in an attractive style.

While all resources are thus supplied by the Museum for an intensive study and appreciation of all phases of human cultures, the Department is not content with the mere role of disseminating knowledge of its science, but it is also eager to perform a distinct service to the public. The practical value of the art of primitive and oriental nations to our own art and industries is now generally recognized, and the creators of new and better ideas have always discovered in the Museum's collections many suggestions and inspirations. Art students, artists, craftsmen, designers, and manufacturers have made liberal use of decorative forms and designs such as those shown in the American Indian, ancient Egyptian, Chinese, South Pacific and other collections.

A new study room has just been opened in the quarters of the Department of Anthropology on the third floor of the building. It is spacious, well lighted, attractively furnished and equipped with study material from all parts of the world, arranged in wall cases. This room is open to all who desire to pursue specific studies in any anthropological subject or to apply material to any legitimate purpose in art or industry.

—BERTHOLD LAUFER

(An article on the purposes and functions of the Department of Botany will appear next month, and similar articles on the Departments of Geology and Zoology in succeeding months.)

MODEL OF FAMOUS HORSE

"Man o' War," one-time race track favorite, has been immortalized by the placing of a model, showing his sleek lines, on permanent exhibition in Field Museum.

The famous race horse was selected to represent the highest development of the modern horse in the Museum's series of models illustrating the evolution of the horse from a four-toed animal about the size of a cat, through the various stages of development to the present day.

The model of Man o' War is the work of Frederick Blaschke, sculptor of Cold Spring-on-Hudson, New York, who has presented it to the Museum as a gift. It is one-fifth actual size, and was made from life by Mr. Blaschke shortly after Man o' War's retirement from the turf.

With the addition of the model of Man o' War, the Museum's horse evolution exhibit shows six stages of development. The display begins with the *Eohippus* or "dawn horse," which had four toes on the fore feet and three on the hind feet. It grew no



Man o' War

Model of famous race horse presented to Field Museum by the sculptor, Frederick Blaschke, and added to series illustrating evolution of horse.

larger than a cat, and lived about 55,000,000 years ago, according to Dr. Oliver C. Farrington, Curator of Geology. Next is shown the *Mesohippus*, a three-toed horse about the size of a collie dog, which lived about 35,000,000 years ago. Following this are a slender-limbed small desert horse, of 19,000,000 years ago; a larger one-toed horse of some 7,000,000 years back; and finally the modern horse as represented by Man o' War.

In addition to the models, fossil skulls and feet of each of these are on exhibition. Although the horse appears to have originated in North America, soon spreading to South America, and appearing later in Asia and Europe, it was completely exterminated on the American continents in prehistoric times, and modern horses here are descended chiefly from European and Asiatic stock.

BEQUESTS AND ENDOWMENTS

Bequests to Field Museum of Natural History may be made in securities, money, books or collections. They may, if desired, take the form of a memorial to a person or cause, named by the giver. For those desiring to make bequests, the following form is suggested:

FORM OF BEQUEST

I do hereby give and bequeath to Field Museum of Natural History of the City of Chicago, State of Illinois,

Cash contributions made within the taxable year to Field Museum not exceeding 15 per cent of the taxpayer's net income are allowable as deductions in computing net income under Article 251 of Regulation 69 relating to the income tax under the Revenue Act of 1926.

Endowments may be made to the Museum with the provision that an annuity be paid to the patron for life. These annuities are tax-free and are guaranteed against fluctuation in amount.

THE DEATH VINE— AYAHUASCA

BY LEWELYN WILLIAMS

Assistant in Wood Technology;

Leader, Marshall Field Botanical Expedition to Peru

A primitive art of curing and healing was developed to an astonishing degree by the Incas, even before the advent of the Spaniards. These natives of America knew the medicinal value of certain herbs, shrubs, and the roots, barks, resins and leaves of trees, and how to administer them to effect cures. They were acquainted also with the use of certain narcotics. This knowledge, modified by the passing of time, has been transmitted from generation to generation, and is the basis of practices carried on today by a few Indian tribes in certain regions in the eastern ranges of the Andes and the adjacent equatorial forests. Many ancient customs and traditions have survived unaltered among these people because of the simple environment in which they live. It is therefore not surprising to find among them certain individuals regarded as wizards or medicine-men.

Among the botanical specimens brought back by the Marshall Field Expedition to Peru, one of the most interesting is the *ayahuasca*, used by these medicine-men. This name derives from the Quecha dialect words *aya*, meaning death, and *huasca*, meaning vine. The "death vine" belongs to the tropical family Malpighiaceae.

Among these Indians the leaves of this vine are boiled in water for several hours, and the resulting infusion is drunk copiously at ceremonial feasts to eliminate fear and to stimulate reckless bravery in warfare. The narcotic element in the drink has a rapid and violent effect on the nervous system. It is strongly habit forming.

During a tribal gathering the medicine-man acts as cup-bearer. He serves the *ayahuasca* drink in a small calabash containing about a cupful. In about two minutes its effect begins to be apparent. The drinker turns pale, trembles in every limb, and is swept by dizziness. When this

stage has passed he announces that he sees charming landscapes, trees laden with fruits, birds of gorgeous plumage and other beautiful things. Then, suddenly, the vision changes. Unable longer to support himself, he has hallucinations of persons appearing to ridicule him, of tigers, serpents and supernatural creatures preparing to attack him, and other fearsome things. He howls and groans mournfully, screams incoherent unintelligible words. All of this, the medicine-man explains later, is due to some particular individual—usually an enemy of the family—for whom a poisonous concoction should be prepared.

When the Indian awakes from his trance he must be held down by force to prevent him from seizing his weapons and attacking the first person he encounters. This stage is followed by lethargy, lapsing into unconsciousness. Finally, upon recovering, there is a feeling of heavy drowsiness and headache which lasts for several days.

The *ayahuasca* concoction is drunk also by the medicine-man himself, to produce a trance supposed to enable him to do such things as settle a dispute or quarrel, discover robbers, tell if strangers are approaching, give proper answer to an envoy from another tribe, discover the plans of an enemy, discover if wives are unfaithful, or, in the case of a sick man, to tell who bewitched him.

The powerful *ayahuasca* narcotic, which is similar in its effects to both opium and henbane (although botanically it is very different from either), does not seem to have been studied by toxicologists.

MISSIONARIES AND MUSEUMS

BY KARL P. SCHMIDT

Assistant Curator of Reptiles

So many rare or otherwise interesting specimens of plants, animals, and ethnological objects come to museums from missionaries stationed in foreign lands that these workers may well take pride in the mark their collecting has made in scientific history. From the nature of their primary interests,

it is natural that the chief scientific contributions of missions and missionaries have been made in anthropology and linguistics. Many individuals, however, have turned to the strange animal and plant life of their surroundings for recreation and diversion, and the sum of their collecting has produced notable advances in our knowledge of the plant and animal life of the world. Some have even become trained collectors, quite on a par with museum professionals.

Aside from their collecting, mission stations in remote parts of the world have proved extremely hospitable to scientists or scientific expeditions passing through their territory. The debt of science to missions is perhaps even greater in this respect than for more direct contributions.

A few instances from Field Museum's recent contacts with missionaries will illustrate both these relations. The Museum not long ago received, through Miss Emily A. Clark, of the Sudan Interior Mission (Interdenominational), in Central Nigeria, a specimen of one of the rarest of African lizards, the curious primitive gecko *Hemithecony caudicinctus*. Last year it obtained specimens of the largest of all frogs, the West African Goliath frog, and of the even more remarkable "haired" frog of the same region, from Mrs. Edwin Cozzens of the Presbyterian Mission in the Cameroons. These were the latest of a long and notable series of collections received by various American museums from this group of missions. On the recent Cornelius Crane Pacific Expedition of Field Museum the eminent immunologist, Dr. W. L. Moss, who accompanied the expedition as physician, was enabled to make a unique series of blood tests of native Fijians through the cordial cooperation of the Wesleyan Mission in the Fiji Islands. When the expedition planned to visit the upper Sepik River in northern New Guinea, an ideal guide and leader was available in Father Franz Kirschbaum, whose knowledge of New Guinean ethnology and linguistics has grown to be pre-eminent during his eighteen years of service with the Catholic Mission of the Society of the Holy Word.

MODEL OF MENANGKABAU NATIVE VILLAGE IN SUMATRA IS NOW COMPLETED IN HALL G

A miniature model of a village of the Menangkabau, powerful Malayan tribe which inhabits the Padang Highlands of Sumatra, and is especially interesting for its matriarchal form of social organization, has been completed and is now on exhibition in Hall G of the Museum.

The model shows several typical dwellings, among them one under construction on which the men are seen busily engaged in thatching the roof and putting up carved wall panels. In the background is seen Mount Merapi at a distance, with terraced rice fields extending far up its slopes, and scattered settlements buried beneath coconut palms and other tropical foliage. In the foreground is the village pool which serves for fishing, bathing, and providing the water supply. Here two men are seen washing clothes, while a young girl bathes a baby. Scattered about are groups and individuals engaged in various other typical activities.

Among these people, inheritance and descent are reckoned in the female line, and this leads to unusual situations which are

a head woman, her sisters, daughters, nieces and their families. A large common room is provided where sons and brothers have equal rights as to sleeping and eating; but after marriage the men become visitors in the homes of their wives and spend much of their time there. However, they continue as members of the house in which they were born, and have equal vote there with the women, whereas they have no authority in the homes of their wives.

Several villages make up a clan, and a number of these form a phratry. Each phratry has a council house (one of which is represented in the Museum's exhibit), where representatives of the clans meet.

The data for the exhibit were collected several years ago by Dr. Fay-Cooper Cole while conducting an expedition for the Museum in Sumatra, Java and Borneo. The modeling was done by John G. Prasuhn of the Museum staff.



Menangkabau Village

Miniature model showing varied activities of strange tribe

reflected in the village life, according to Dr. Berthold Laufer, Curator of Anthropology. A settlement, such as is shown in the Museum's model, consists usually of only three or four houses, each of which is occupied by

RAYMOND FOUNDATION PROGRAMS

The final two programs of the summer series of free entertainments for children, provided by the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures, will be given in August.

On Thursday, August 6, the program will consist of a story hour, "Children of Many Lands," to be given in the James Simpson Theatre at 10 A.M., and a tour of exhibits showing child-life, conducted by Raymond Foundation lecturers, which will begin at 11 A.M.

On Thursday, August 13, the program includes a lecture-tour illustrating the subject "Animals of Land and Water," to be conducted at 10 A.M., and motion pictures at 11 A.M. in the James Simpson Theatre, the films to be shown being as follows: "Alligators," "Alaskan Sheep," "Bears," "Animals of the Galapagos," and "Lions at Home."

Children from all parts of the city and suburbs are invited to these entertainments. No tickets are necessary for admission. In addition to those coming individually, children may come in groups from clubs, community centers and other organizations.

EGYPTIAN SANDALS AND BASKETS

A collection of ancient Egyptian sandals and baskets was recently added to the exhibits in Hall J. Iron candlesticks equipped with snuffers, and wooden headrests used in place of pillows are also included in the exhibit.

Even before the first Egyptian dynasty (about 3500 B.C.) sandals had been invented, according to Dr. T. George Allen, Assistant Curator of Egyptian Archaeology. However, most Egyptians, both of the high and low classes, for a long time thereafter preferred to go barefoot except when protection for the feet was absolutely needed, as in crossing fields of stubble. The wearing of sandals did not become prevalent until about 1500 B.C., and even then it was customary to remove them in the presence of one's superiors. The sandals were made of papyrus, palm fiber and leather. They protected only the soles of the feet, and were held on by looped thongs or cords.

The baskets exhibited are made of reeds, grass and palm fibers, and range in date from about 2000 to 1300 B.C. The sandals were presented by Stanley Field, President of the Museum, H. J. Patten, and Charles B. Pike, and the baskets were collected by the late Edward E. Ayer.

EPOCHAL X-RAY PICTURE PRODUCED AT MUSEUM

BY ANNA REGINALDA BOLAN
Division of Roentgenology

After a long series of experiments, the Division of Roentgenology of Field Museum has succeeded in producing a new type of large roentgenogram which it is expected will mark the opening of a new chapter in X-ray work.

The first roentgenogram of this new type, with an Egyptian mummy as its subject, was finally successfully completed on July 7, 1931. The dimensions of the film are seven feet by two feet. This is the first time that an entire adult mummy in its casket has ever been X-rayed on one film and with only one exposure. It is also, so far as is known, the largest roentgenogram ever made of any subject. The accompanying illustration is a photograph of this history-making film, and the success of the experiment from a

diagnostic standpoint can readily be seen.

Heretofore mummies have been X-rayed in sections on the regulation size film, fourteen by seventeen inches. Then these smaller films were pieced together and from this "mosaic" the specimen was viewed and its anatomical relation to cartonnage and casket estimated. The advantage of the new type of single large film is obvious.

The Museum's roentgenological laboratory was established and equipped about five



World's Largest Single X-ray Film

Roentgenogram of Egyptian mummy, produced in Museum laboratory. The size of the film may be gauged by comparison with the height of the roentgenologist.

years ago by President Stanley Field. Special apparatus was recently built and installed to produce the new type of work described in this article.

One of the best panoramic views of Chicago's sky line and water front to be found anywhere in the city may be enjoyed by visitors from the steps at the north entrance of the Museum.

Gifts to the Museum

Following is a list of some of the principal gifts received during the last month:

From Miss Carolyn Wicker—a nest of boxes and pair of flutes, Japan and India; from James Britton and Lawrence Britton Reed—24 prehistoric flint arrowheads and spearheads, Pennsylvania; from William A. Schipp—155 barium specimens, British Honduras; from American Gem and Pearl Company—cluster of Amazonite crystals, Virginia; from C. S. Williams—a fossil erinoid, Illinois; from William B. Pitts—2 polished specimens of colite and jasper, and 3 rock and mineral specimens, California and Nevada; from Frank von Drasek—31 rock and mineral specimens, Arkansas; from Karl Plath—a green lizard, Dalmatia; from P. B. Clark—12 Alaskan blackfish; from Walter L. Necker—34 salamanders, toads and treefrogs, Tennessee; from Robert Zing—14 birdskins, 11 mammal skins and 10 mammal skulls, Mexico; from George M. Stevens—a giant snapping turtle, Arkansas.

AUGUST GUIDE-LECTURE TOURS

Following is the schedule of conducted tours of the exhibits during August:

Week beginning August 3—Monday: 11 A.M., Giants of Long Ago, 3 P.M., Chinese Exhibits; Tuesday: 11 A.M. and 3 P.M., General Tours; Wednesday: 11 A.M., American Animal Life, 3 P.M., Gems and Jewelry; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Rocks and Their Origins, 3 P.M., The Komodo and Its Relatives.

Week beginning August 10—Monday: 11 A.M., Skeletons, Past and Present, 3 P.M., Life of the Ancient Egyptians; Tuesday: 11 A.M. and 3 P.M., General Tours; Wednesday: 11 A.M., Workers in Metals, 3 P.M., Horses; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., American Archaeology, 3 P.M., Burial Customs.

Week beginning August 17—Monday: 11 A.M., Indian Ceremonies, 3 P.M., Marine Life; Tuesday: 11 A.M. and 3 P.M., General Tours; Wednesday: 11 A.M., Games and Toys, 3 P.M., Plants of Marshes, Bogs and Streams; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Music in Primitive Lands, 3 P.M., Prehistoric Man.

Week beginning August 24—Monday: 11 A.M., The Story of Coal, 3 P.M., Chinese Art; Tuesday: 11 A.M. and 3 P.M., General Tours; Wednesday: 11 A.M., Polynesia and Micronesia, 3 P.M., Birds at Home; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Masks and Their Uses, 3 P.M., South American Mammals.

Monday, August 31—11 A.M., Low Forms of Plant Life, 3 P.M., Mexico.

Persons wishing to participate should apply at North Entrance. Tours are free and no gratuities are to be proffered. A new schedule will appear each month in *FIELD MUSEUM NEWS*. Guide-lecturers' services for special tours by parties of ten or more are available free of charge by arrangement with the Director a week in advance.

Radio Stations Cooperate

Four important radio stations—WMAQ, WGN, WLS, and WCFL—are cooperating with Field Museum by broadcasting weekly announcements of the summer programs for children offered under the provisions of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures. Indications are that this helpful cooperation is drawing additional attendance.

NEW MEMBERS

The following persons were elected to membership in Field Museum during the period from June 17 to July 13:

Associate Members

John N. Bantsolas, A. J. Boynton, Isaac Horton Johnson, Mrs. Frances B. Sands, Otto C. Staack.

Sustaining Members

Mrs. Milton F. Goodman

Annual Members

John J. English, Mrs. G. E. Frazer, Mrs. Remi J. Gits, Miss Serena Hepp, Hon. Henry Horner, Mrs. Walter H. Johnson, Lealey Kennedy, Mrs. C. Hobart Kirkland, Miss Clara L. Lange, Mrs. Samuel N. Leitzell, Richard F. Locke, Ellery Norton, John F. O'Toole, Mrs. Willett B. Ranney, Werner Schueller, Henry Justin Smith, Mrs. Haddon Hubbard Sundblom, Charles L. Wilkins.

MEMBERSHIP IN FIELD MUSEUM

Field Museum has several classes of Members. Benefactors give or devise \$100,000 or more. Contributors give or devise \$1,000 to \$100,000. Life Members give \$500. Non-Resident (Life) and Associate Members pay \$100. Non-Resident Associate Members pay \$50. All the above classes are exempt from dues. Sustaining Members contribute \$25 annually. After six years they become Associate Members. Annual Members contribute \$10 annually. Other memberships are Corporate, Honorary, Patron, and Corresponding, additions under these classifications being made by special action of the Board of Trustees.

Each Member, in all classes, is entitled to free admission to the Museum for himself, his family and house guests, and to two reserved seats for Museum lectures provided for Members. Subscription to *FIELD MUSEUM NEWS* is included with all memberships. The courtesies of every museum of note in the United States and Canada are extended to all Members of Field Museum. A Member may give his personal card to non-residents of Chicago, upon presentation of which they will be admitted to the Museum without charge. Further information about memberships will be sent on request.

Field Museum News

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No. 9

GRAVE OF AN ILLINOIS MOUND-BUILDER REPRODUCED IN MUSEUM EXHIBIT

A full-size reproduction of the grave of a prehistoric mound-builder of Illinois, with an actual skeleton and various artifacts brought from the original mound near Lewistown in Fulton County, was installed last month in Mary D. Sturges Hall (Hall 3), devoted to North American archaeology. It shows a mound of the type found in southern central Illinois, representing the "Dickson culture," so named for Dr. Don F. Dickson, who discovered the type mound, excavated it, and preserved its contents. The skeleton and the various burial objects in the exhibit were presented to Field Museum by Dr. Dickson.

In the exhibit the mound is shown with the earth partly cut away so as to expose fully a complete skeleton of a man about 35 years old, while a skull and other parts of two more burials are seen projecting from the walls of the excavation. A water bottle lies on the right side of the head of the complete skeleton, and a small jar on the left. Another jar containing a finely shaped spoon of mussel shell, lies between the knees. Around the neck is a string of shell beads with a pendant made from a small conch shell. Near the right hand lies a flint knife. Other objects included in the burial are a stone celt, various unfinished flint implements with an antler flaking tool used in

shaping them, and also a piece of sandstone used for sharpening the flaking tool.

The group was planned by Curator Berthold Laufer and Assistant Curator Paul S. Martin. The reproduction of the mound

The mounds of the Mississippi Valley were built by ancestors of the present American Indians, and not, as is sometimes believed, by an extinct race of "mound-builders."

The skeletons found in the mounds are readily identified as those of Indians. While the Dickson culture shown in the Museum exhibit certainly dates back before the white man's arrival, it is probably not more than 500 to 1,000 years old. This is indicated by the excellent condition of the skeletons and artifacts.

There are a number of historical records of the building of mounds by various Indian tribes. Most of the Illinois mounds were constructed in prehistoric times, but it is unlikely that any of them are more than 2,000 years old. While the majority of them are burial mounds, a few may have served as raised foundations for houses.

Mounds of the Dickson culture usually contain a large number of burials laid at various levels, indicating that they were built up gradually. In sharp contrast with the culture represented by the well-known Hopewell mounds in Ohio, the Dickson culture con-

tains almost no copper, no platform pipes, few perforated teeth, and no cut jaws.

Also in Mary D. Sturges Hall are objects from the Hopewell mounds, a miniature model of one of them, and two mound altars.



Illinois Mound-builder's Grave

Reproduction of burial illustrating "Dickson culture," on exhibition in Mary D. Sturges Hall (Hall 3).

is the work of John G. Prasuhn. The exhibit is completed by a background in colors representing the country where the mound is located, which was painted by Charles A. Corwin, staff artist of the Museum.

MUSEUM IS IDEAL PLACE FOR HAY FEVER VICTIMS

Field Museum has been pronounced an unusually attractive place for hay fever sufferers by Dr. Siegfried Maurer, Chicago physician who has been conducting research and experiments to assist in the work of eliminating this common summer and autumn affliction.

Of several public buildings in which Dr. Maurer made a count of ragweed pollen in the air over a period of time, Field Museum showed the lowest count, according to a letter received from the physician by Director Stephen C. Simms. The pollen counts were taken on specially prepared slides during the hay fever seasons of 1929 and 1930, and are believed to indicate approximately the conditions which prevail again this year.

The Museum's system of ventilation probably has much to do with the small quantity of pollen present in the air, Dr. Maurer states, declaring that on the days when observations were made the count seldom exceeded the remarkably low figure of ten

granules of pollen per cubic yard of air, whereas on these days in certain other Chicago buildings the count was from ten to twenty times as many. Dr. Maurer added that the Museum's count was only about one-half of that found at several northern resorts to which hay fever sufferers go.

"I would recommend the Museum as a safe place for hay fever sufferers to spend the day in order that they may be in an atmosphere relatively free of pollen, and one in which most hay fever victims should become completely free of symptoms," Dr. Maurer writes.

Dr. Maurer reports a total pollen count of 156 granules per cubic yard in 20 days in Field Museum. This compares with a count of 2,961 in 29 days in another large Chicago public building, and 8,445 in 37 days at an outdoors observation station.

On exhibition in the Museum's Hall of Plant Life (Hall 29) are models of the two most common ragweeds of the Chicago region, whose pollen is believed to be responsible largely for the prevalence of hay fever.

Museum Receives Persian Mammals

Two excellent specimens of Persian wild ass, and four of Persian wild goat have been received at Field Museum as a result of the recent expedition conducted by James E. Baum, Jr. One of the goats is an extraordinarily fine male with horns about forty inches long, which is near the record size. These animals inhabit an extremely arid region, and are very shy. Because of the open desert which provides no cover for hunters they are extremely difficult to obtain. One or more of the animals will be mounted for exhibition in the near future.

Japanese Peer Visits Museum

Count Hirotarō Hayashi, member of the House of Peers of Japan, and professor of pedagogy in the Imperial University of Tokyo, visited Field Museum on August 12. He was especially interested in the Neanderthal family restoration and the other exhibits in Ernest R. Graham Hall, and also in the Egyptian and Chinese archaeological collections.

Field Museum of Natural History

Founded by Marshall Field, 1893

Roosevelt Road and Lake Michigan, Chicago

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FIELD MUSEUM NEWS

STEPHEN C. SIMMS, *Director of the Museum*..... Editor

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Field Museum is open every day of the year during the hours indicated below:

November, December, January	9 A.M. to 4:30 P.M.
February, March, April, October	9 A.M. to 5:00 P.M.
May, June, July, August, September	9 A.M. to 6:00 P.M.

Admission is free to Members on all days. Other adults are admitted free on Thursdays, Saturdays and Sundays; non-members pay 25 cents on other days. Children are admitted free on all days. Students and faculty members of educational institutions are admitted free any day upon presentation of credentials.

The Library of the Museum, containing some 92,000 volumes on natural history subjects, is open for reference daily except Sunday.

Traveling exhibits are circulated in the schools of Chicago by the Museum's Department of the N. W. Harris Public School Extension.

Lectures for school classrooms and assemblies, and special entertainments and lecture tours for children at the Museum, are provided by the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures.

Announcements of courses of free illustrated lectures on science and travel for the public, and special lectures for Members of the Museum, will appear in FIELD MUSEUM NEWS.

There is a cafeteria in the Museum where luncheon is served for visitors. Other rooms are provided for those bringing their lunches.

Members are requested to inform the Museum promptly of changes of address.

THE DEPARTMENT OF BOTANY

—ITS SCOPE AND FUNCTIONS

Formerly it was not unusual for natural history museums to concern themselves only with the mineral kingdom, with animals, and with man, and to ignore the plant world entirely. It apparently did not occur to those in authority that without vegetation there could be no animal life.

Field Museum recognized from the beginning that the science of botany is one of the principal divisions of natural history, and developed its Department of Botany with a staff of competent scientists and technical assistants, a large library, laboratories, and extensive study collections and exhibits. It was the first general natural history museum to devote to botany attention comparable to that given other subjects.

The botanical exhibits now occupy five large halls. They are designed to present a synoptic view of the entire plant kingdom in a sufficiently comprehensive manner to give the visitor or student a general idea of its various main divisions from bacteria to the many orders of flowering plants. This

is a matter which is far from simple because of the impossibility of preserving the natural appearance of plants. The problem has been solved by the use of accurate reproductions of living plants, in place of the perishable parts of the natural material. These are provided through the munificence of President Stanley Field, who maintains for the purpose special laboratories in the Department.

Two halls are devoted to plant products which play a large part in furnishing mankind with food and raw materials for his industries. Special halls illustrate the principal trees of North America and of foreign countries.

Great pains are taken to make the labels accompanying all the exhibits as informative and accurate as possible without undue technicalities. The exhibits of the Department are growing and are being improved constantly.

Besides the collections seen by the casual visitor, the Department of Botany has reserve or study collections which are the basis of research by members of the staff, and are available for reference by others seeking botanical information. Most extensive of these is the Herbarium, consisting of 640,000 mounted sheets of plant specimens assembled from every part of the world. The Herbarium is especially rich in plants of tropical America. A special herbarium of Illinois plants is also maintained. These collections have been the basis of many volumes of botanical studies published by Field Museum and also by other institutions.

Non-technical leaflets are published to explain for the layman some of the exhibits and activities of the Department. Leaflets describing the wild flowers and trees of the Chicago region have had a large circulation, as has also an illustrated handbook of the plants of the Lake Michigan sand dunes.

Some of the plant material in the Museum's exhibits and study collections has been obtained through gifts, by purchases, and by exchanges with other museums, but often to obtain required material it is necessary to send expeditions into the field. These have been carried on chiefly in Central and South America and the West Indies. Through them much material that is unique has been acquired.

In order to increase its own facilities, and those of other American institutions as well, the Department has undertaken, with the aid of a special grant of funds from the Rockefeller Foundation, the important task of obtaining in European herbaria photographs of the earliest named specimens of thousands of tropical American plants collected by European botanists but unrepresented in American collections.

That the residents of the Chicago area rely upon Field Museum for scientific information is proved by the constant queries on botanical subjects which are received. Every year several thousand plant specimens are named for correspondents in lots ranging from a single specimen to many hundred different plants. Rarely does a day pass without requests by telephone, letters or visitors for data regarding plants or their products. These are of bewildering variety, and cover almost every phase of botanical science. They come from educational institutions, business houses, other organizations of various kinds, and individuals, and range from the identification of mushrooms for amateur collectors, and inquiries about hay fever pollen, to industrial problems involving plant products, and questions concerning the establishment of plantations in the tropics.

Requests for assistance in botanical matters come also from every part of the United States, and from Europe and other parts of the world as well.

—B. E. DAHLGREN

(An article on the purposes and functions of the Department of Geology will appear next month, and a similar article on the Department of Zoology in the following month.)

ALL GRAHAM HALL MURALS ARE NOW COMPLETED

The series of twenty-eight large mural paintings depicting life in prehistoric ages, presented to Field Museum by Ernest R. Graham, has been completed by the artist, Charles R. Knight, and all are now installed on the walls of Ernest R. Graham Hall of Historical Geology (Hall 38).

The final three were hung last month. One of them depicts primitive hoofed mammals (*Uintathere*) and the four-toed horse (*Orohippus*) which lived approximately 55,000,000 years ago. Another shows flying reptiles, primitive birds and small dinosaurs of 175,000,000 years ago. The third illustrates primitive reptiles of the Permian age, some 215,000,000 years back. More detailed descriptions of these paintings, and possibly photographs of them, will appear in future issues of FIELD MUSEUM NEWS.

The project of restoring scenes of the primitive world in large mural paintings was undertaken in 1926, and six years were allotted for its completion. The work has progressed more rapidly than was expected, however, enabling this important educational series to be finished more than a year ahead of schedule. Mr. Graham provided a fund of \$125,000 for the execution of these paintings, and for several life size group restorations. The services of Mr. Knight, known as a foremost painter in this field due to his previous work in other institutions, were engaged for the series. In these twenty-eight pictures Mr. Knight has performed some of his most notable work.

Chinese Painting Presented

A rare Chinese painting of the Ming period (sixteenth century) was recently presented to Field Museum by Mr. and Mrs. Edward W. Everett of Hinsdale, Illinois, who had acquired it at Peking some years ago. The picture, 32 by 66 inches in dimensions, is painted in bright colors on silk. It represents a school of carp in a pond. The fish are life-like and drawn with great care for detail. This painting, with a number of others in the Museum's possession, will adorn the walls of the new Jade Room which is now in process of preparation.

BEQUESTS AND ENDOWMENTS

Bequests to Field Museum of Natural History may be made in securities, money, books or collections. They may, if desired, take the form of a memorial to a person or cause, named by the giver. For those desiring to make bequests, the following form is suggested:

FORM OF BEQUEST

I do hereby give and bequeath to Field Museum of Natural History of the City of Chicago, State of Illinois,

Cash contributions made within the taxable year to Field Museum not exceeding 15 per cent of the taxpayer's net income are allowable as deductions in computing net income under Article 251 of Regulation 69 relating to the income tax under the Revenue Act of 1926.

Endowments may be made to the Museum with the provision that an annuity be paid to the patron for life. These annuities are tax-free and are guaranteed against fluctuation in amount.

IMPORTANT DISCOVERIES MADE BY SOUTHWEST EXPEDITION

Discoveries of extraordinary interest, especially because there still remains much mystery as to their origin, are being made at the Lowry Ruin near Ackmen, Colorado, by the Field Museum Archaeological Expedition to the Southwest, according to reports received from its leader, Dr. Paul S. Martin, Assistant Curator of North American Archaeology.

Dr. Martin writes: "It would seem now as if this ruin is quite out of place geographically, since it is undoubtedly the work of Chaco Canyon people who lived hundreds of miles south and east of this spot, in what is now New Mexico. The pottery types found at this ruin are unlike anything here in the neighborhood, and belong also to the Chaco types. The other day we found in a small passageway a cache of seventeen pieces of pottery, most of them complete.

"A test trench through the great kiva has just been finished. The walls, floors, and other remains are highly interesting, although very puzzling. Despite the heat and drought the work has been pushed ahead."

Among noteworthy discoveries is a sacred spring which had been timbered and cribbed with cedar logs in prehistoric times. This seems to have served as a sort of sanctuary, for in the water at the bottom were found offerings of ten pieces of pottery and more than forty wooden prayer-sticks very similar to those used at present by the Hopi. These offerings had been perfectly preserved by the water.

So interesting have the excavations proved that Dr. Alfred V. Kidder of the Carnegie Institution of Washington, noted authority on Southwest archaeology, who recently came to the camp for a visit of only a few hours, remained instead for several days.

The expedition is in its second season of operations. It is financed from funds provided by Julius Rosenwald and the late Augusta N. Rosenwald.

THE SCORPION FISH

BY ALFRED C. WEED
Assistant Curator of Fishes

One of the most interesting fishes found in the crevices of coral reefs is the scorpion fish. It is not easily seen because the brilliant and varying colors of its body and fins harmonize so completely with its surroundings. As long as it remains quiet it will be mistaken for a piece of the mass of rocks.

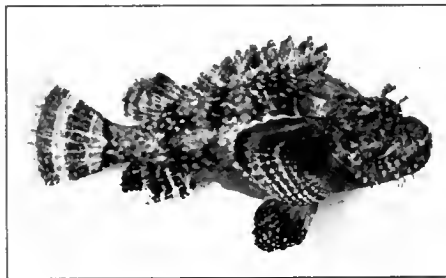
When the fish moves, however, the great pectoral (arm) fins are turned over and show a bold pattern of black spotted with white. Outside of this is a series of broad bands of red, yellow, purple or something equally striking. The ventral (leg) fins with their bold markings of red, black and white are brought up parallel with the pectorals and combine with them to produce an effect as striking as the wings of the most brilliant butterflies. As the fish comes to rest these brilliant parts are turned out of sight or are hidden under the body so that it appears to be simply a mass of rock of a more or less neutral color.

The apparently neutral color of the scorpion fish is formed by an exquisite blending of an infinite variety of colors. Reds, greens, yellows, oranges, purples, blacks and whites, blended, or scattered in clean-cut spots make up a pattern that is in appearance a hit-or-miss mixture. Nevertheless, it is a definite, though complex, pattern. There is a reason for each tiny spot and for every broad shading.

The color pattern of the scorpion fish is not at all constant. It is hardly ever the

same, even for a few seconds. A tiny patch of apple green on the shoulder may flow out to cover half the side and then disappear altogether. An orange spot on the side of the head may be only a tiny dot or it may cover half the face. It may remain constant for hours or it may come and go as rapidly as the fish breathes. While one watches, the whole color tone of the fish may change from black and white to russet brown, green, golden or creamy.

Whether or not the general color changes or remains constant there is always a flow of colors over the entire body. This is the one constant thing about the fish. One may watch a group of scorpion fishes in an aquarium for hours without seeing two that show



Scorpion Fish

Reproduction prepared at Field Museum for exhibition in the near future.

the same pattern or without seeing any one show the same pattern twice.

A very fine specimen of scorpion fish was recently presented to the Museum by Captain R. J. Walters of the Miami (Florida) Aquarium. From this specimen A. G. Rueckert of the taxidermy staff of the Museum has prepared a reproduction in celluloid that will soon be placed on exhibition.

3,000 Plants Determined

There have been returned to Europe recently more than 3,000 specimens of South American and other plants, submitted to Field Museum for study and determination. They came from the great herbaria of London, Paris, Stockholm, Geneva, and Berlin. They belong to the Rubiaceae or coffee family, and were identified by Associate Curator Paul C. Standley, who is engaged in monographic work upon the group. Many of the specimens represented species previously unknown to science, which will be described in the botanical publications of the Museum.

Nebraska Fossils Collected

Thirty-eight specimens of fossil mammals, two of fossil turtles, and six skeletons of modern mammals were collected by the recent paleontological expedition to Nebraska led by Associate Curator Elmer S. Riggs. Among these were several very desirable as additions to the Museum's previous collections. Mr. Riggs was accompanied by Assistant Bryan Patterson, James Quinn, and Sven Dorf. The expedition was financed by the Marshall Field Fund.

Articles on Roosevelt Expedition'

In the *Gardeners' Chronicle* of London, the leading horticultural magazine of the world, there appeared lately a long series of illustrated articles by F. Kingdon Ward, entitled "The Roosevelt Expedition in French Indo-China." Mr. Ward was for some time attached as botanist to that expedition of Field Museum, and a collection of plants that he obtained is now in the Museum Herbarium.

RADIUM-BEARING MINERALS ON EXHIBITION

An exhibit illustrating a quick method of testing minerals for radium as well as showing the relative radioactivity of different mineral species was recently installed in the hall of minerals (Hall 34) by Curator of Geology Oliver C. Farrington.

The test for radium was made by placing a small metallic object, such as a flat key; upon an unexposed photographic plate and laying the specimen to be tested upon the metallic object. The whole was kept in a dark place for twenty-four to forty-eight hours and the plate then developed. If the rock or mineral contained radium, the rays from the radium produced an image of the metallic object on the plate, this image being brought out through developing the plate by the usual photographic methods.

All the principal minerals which are used as commercial sources of radium are included in the exhibit. Of these, the most important are those from the Belgian Congo, Africa. These are so rich that at the present time they have superseded all other sources of radium. Two specimens of pitchblende, the mineral from which radium was first extracted, are shown: one from Bohemia, this being the ore which was used by Dr. and Mme Curie in their discovery of radium, the other from Colorado. Carnotite from Colorado, which was the chief source of radium until the discovery of the African ores, is also included in the series.

Other minerals on exhibition showing noticeable radioactivity are chiefly the rare earth minerals, samarskite, aeschynite, euxenite and fergusonite. These minerals are found in the United States chiefly in North Carolina and Texas. The greater richness of the African ores is shown by the fact that for them an exposure of only twenty-four hours was required to produce sharp images, while for most other minerals an exposure of two days to a week was necessary.

All these minerals owe their radioactivity chiefly to the uranium they contain. This element, as is well known, slowly disintegrates to form radium. As the element thorium decomposes to give off rays similar to those from radium, two thorium-bearing minerals, monazite and thorite, are included in the series. They are relatively less radioactive than the uranium-bearing minerals. That glass is relatively impervious to these rays was shown experimentally by the fact that the monazite sand used, when contained in a glass vial gave no effect, but when placed directly on the metal produced a sharp image.

The exposures and prints for the series were made in the Museum's Division of Roentgenology by Miss Anna Reginalda Bolan, Roentgenologist.

AUTUMN LECTURE COURSE

Field Museum's fifty-sixth free lecture course will begin on Saturday, October 3, when Dr. Thomas S. Arbutnot, head of the Medical School of the University of Pittsburgh, will speak in the James Simpson Theatre of the Museum. The title of his lecture is "An African Hunting Trip." It will be illustrated with both motion pictures and stereopticon slides, and will begin at 3 P.M.

Eight other lectures on science and travel will be given in this course on successive Saturday afternoons at the same hour. Details of the subjects and speakers will appear in later issues of FIELD MUSEUM NEWS. No tickets are necessary for admission to the lectures in this course.

THE RAYMOND FOUNDATION PROGRAMS FOR CHILDREN

On Saturday morning, September 26, the first of the autumn series of free motion picture entertainments for children, presented under the provisions of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures, will be given in the James Simpson Theatre of the Museum. There will be eleven programs in all, to be given on successive Saturdays. Each will be presented twice, at 10 and 11 o'clock.

Following are the titles of the films on the first two programs:

September 26—When Autumn Comes; Hiawatha's Hunting Ground; Feathered Braves; Naskapi Indians; Where the Red Trail Ends.

October 3—Elephant Seals; Shooting Rapids; The Woolly West; Cowboy Thrills.

Details of the remaining nine programs will be announced in succeeding issues of FIELD MUSEUM NEWS. Children from all parts of Chicago and suburbs are invited to attend these entertainments.

GOLD EARRINGS FROM KISH

BY HENRY FIELD

Assistant Curator of Physical Anthropology

During the past season of excavations conducted by the Field Museum-Oxford University Joint Expedition at Kish, Mesopotamia, three pairs of gold earrings were unearthed. These were found in Babylonian graves belonging to the period of Nebuchadnezzar who ruled over Kish and Babylon about 2,500 years ago. It can therefore be suggested with some degree of certainty that they were worn by ladies at the court of King Nebuchadnezzar.

Two pairs are made of wire gold, while the lower parts of the third pair are formed by larger, thin semicircular beads. Four of the earrings recently were received at Field Museum. Among these there is one pair, the upper portion of which is formed of thin wire gold which penetrated the ear lobe and from which hangs a triangular ornament covered with small beads and terminating in a larger golden pearl. There is also a single earring with a wire gold loop for insertion through the ear lobe from which hangs a large lunate golden ornament.

The most important is a large intricately designed gold earring an inch and three-quarters long. This is one of the most beautiful objects which has been found in Mesopotamia and bears eloquent witness to the artistic ability of the Babylonian craftsmen. The upper part is composed of a wire gold loop for attachment to the ear lobe. One end of the loop is attached to a lunate ornament decorated with three rows of tiny pearls. Below this is a fluted ball fastened to a plain collar decorated around the base with the small pearl motif; and beneath that is a larger fluted ball, from which hang two rows of six smaller round ornaments. At the base of each small ball is a triangular ornament of six round beads in the shape of an inverted pyramid. The central lower portion of the earring consists of two larger beads placed one above the other and terminated by an inverted pyramid consisting of ten small beads.

The artistic beauty of these objects which were designed twenty-five centuries ago, together with their romantic history, make them valuable acquisitions to the collections of Field Museum, where they will be placed on exhibition in the near future.

Iron Yield of Ore Illustrated

The relationship between quantities of iron ore and the amount of actual iron they

contain is illustrated in a revised collection just placed on display in Frederick J. V. Skiff Hall (Hall 37). A one-pound piece of each variety of ore is shown together with a piece of iron equal to its average iron content. In the case of the commonest ore, hematite, the iron weighs almost eleven and one-quarter ounces, or nearly three-quarters of the weight of the ore. The comparative scarcity of gold is emphasized by comparison of this with another exhibit in the same hall showing a cube of less than three-eighths inch diameter representing the entire gold content of a near-by specimen of gold ore which weighs 635 pounds and is regarded as a rich ore although this amount yields less than half an ounce of gold.

Vanity in Ancient Egypt

A case of objects illustrating the vanities of the ancient Egyptians was recently placed on exhibition in Hall J. Included are such articles as jars which held unground cosmetic materials, slate palettes and flint pebbles for grinding the cosmetics, sticks of bronze, wood and stone used for applying cosmetics, spoons for applying unguents, bronze mirrors, combs, tweezers for depilatory purposes, razors, and various personal ornaments. The objects range in date from the predynastic period to the Coptic or Christian period (4000 B.C. to A.D. 600).

The use of tweezers for plucking out superfluous hairs, and also for extracting thorns, and the practice of shaving with razors, appear to have begun as early as the first dynasty, according to Dr. T. George Allen, Assistant Curator of Egyptian Archaeology. The first razors embodied the scraping principle. Later during the eighteenth century a rotating saw type, of which examples are included in the Museum exhibit, became established.

Both long and short-toothed combs, made of wood, ivory and bone, were used. Personal ornaments in the exhibit include an ivory hairpin, earrings, ear-plugs, and many pins, finger rings and bracelets.

Unusual Form of Concretion

The Museum received recently an unusual form of concretion from R. C. Swank of Chicago. The specimen was formerly a prized possession of Mr. Swank's friend, John Klopper, of Denver, Colorado. Learning recently that Mr. Klopper had died, Mr. Swank called upon his widow and secured the specimen for Field Museum.

The concretion is circular in form, fifteen inches in diameter but less than two inches thick. It shows also what is known as cone-in-cone structure.

Gifts to the Museum

Following is a list of some of the principal gifts received during the last month:

From Mr. and Mrs. Edward W. Everett—a painting on silk representing a school of carp, sixteenth century, China; from Dr. Don F. Dickson—29 specimens of archaeological material from Dickson Mound, Lewistown, Illinois; from William J. Chalmers—8 specimens crystallized minerals, Maine and New Mexico; from Richard C. Swank—a specimen of clay concretion, fifteen inches in diameter, Kansas; from J. K. Hawkes—2 specimens transparent gypsum, Oklahoma; from E. W. John—7 specimens fossil invertebrates, Utah; from R. S. Bacon Veneer Company—10 veneered panels of foreign woods; from Paul Van Cleef—trunk of a rubber tree, Singapore; from Frank Schoble and Company—10 straw hats for exhibit; from A. S. Windsor—48 salamanders and 2 snakes, Tennessee; from J. E. Baum, Jr.—4 Persian goats (with skulls) and 2 wild ass (skins only), Persia; from Robert H. Everard—a scaly anteater, Tanganyika Territory, Africa; from Dr. Karl Alsolon—2 specimens of the Grottenolm, *Proteus anguineus*, the blind cave salamander of Europe; from General Biological Supply House—6 frogs, Minnesota; from Frank J. Berek—a rattlesnake (head only), Illinois.

SEPTEMBER GUIDE-LECTURE TOURS

Following is the schedule of conducted tours of the exhibits during September:

Week beginning August 31—Monday: 11 A.M., Low Forms of Plant Life, 3 P.M., Mexico; Tuesday: 11 A.M., and 3 P.M., General Tours; Wednesday: 11 A.M., Woodland Indians, 3 P.M., Bears and Their Relatives; Thursday: 11 A.M., and 3 P.M., General Tours; Friday: 11 A.M., Interesting Geological Exhibits, 3 P.M., Hall of Plant Life.

Week beginning September 7—Monday: Labor Day holiday—no tours; Tuesday: 11 A.M., and 3 P.M., General Tours; Wednesday: 11 A.M., Primitive Modes of Travel, 3 P.M., Asiatic Animals; Thursday: 11 A.M., and 3 P.M., General Tours; Friday: 11 A.M., Implements of Warfare, 3 P.M., Rodents.

Week beginning September 14—Monday: 11 A.M., Economic Minerals, 3 P.M., Oriental Theatricals; Tuesday: 11 A.M., and 3 P.M., General Tours; Wednesday: 11 A.M., Migratory Animals and Birds, 3 P.M., Economic Plants; Thursday: 11 A.M., and 3 P.M., General Tours; Friday: 11 A.M., Roman Archaeology, 3 P.M., Dinosaurs and Other Reptiles.

Week beginning September 21—Monday: 11 A.M., Food Dishes and Household Utensils, 3 P.M., Apes and Monkeys; Tuesday: 11 A.M., and 3 P.M., General Tours; Wednesday: 11 A.M., Toltecs, Aztecs and Mayas, 3 P.M., Fur-bearers; Thursday: 11 A.M., and 3 P.M., General Tours; Friday: 11 A.M., Egyptian Hall, 3 P.M., Crystals and Gems.

Week beginning September 28—Monday: 11 A.M., The Carl Akeley Hall, 3 P.M., Firemaking; Tuesday: 11 A.M., and 3 P.M., General Tours; Wednesday: 11 A.M., Home and Village Models, 3 P.M., The Grasses and Their Uses.

Persons wishing to participate should apply at North Entrance. Tours are free and no gratuities are to be proffered. A new schedule will appear each month in FIELD MUSEUM NEWS. Guide-lecturers' services for special tours by parties of ten or more are available free of charge by arrangement with the Director a week in advance.

A group of large relief maps of the region about Chicago, showing the distribution of land and water in this district during a number of stages following the glacial period, is available for study in Clarence Buckingham Hall.

NEW MEMBERS

The following persons were elected to membership in Field Museum during the period from July 13 to August 17:

Life Members

Newton Camp Farr

Associate Members

Carol W. Alton, Arthur A. Boettcher, Mrs. John Dolese, Mrs. Frank M. Elliot, Robert S. Kinsey, George F. Mitchell, Dr. Gaston C. Parker, Sparrow E. Purdy, David Skooglund, Fred J. Stebbins, Selden Freeman White.

Annual Members

Paul E. Arnold, Edward B. Dunigan, Mrs. Arthur T. Evans, Rollo Gullickson, Walter Davis Hardy, Gustave Hedding, Thomas H. Hoyer, Lloyd B. Huguenor, William H. Moore, John Thompson, II., Miss Elizabeth W. Towner, Walter N. Vance.

MEMBERSHIP IN FIELD MUSEUM

Field Museum has several classes of Members. Benefactors give or devise \$100,000 or more. Contributors give or devise \$1,000 to \$100,000. Life Members give \$500. Non-Resident (Life) and Associate Members pay \$100. Non-Resident Associate Members pay \$50. All the above classes are exempt from dues. Sustaining Members contribute \$25 annually. After six years they become Associate Members. Annual Members contribute \$10 annually. Other memberships are Corporate, Honorary, Patron, and Corresponding, additions under these classifications being made by special action of the Board of Trustees.

Each Member, in all classes, is entitled to free admission to the Museum for himself, his family and house guests, and to two reserved seats for Museum lectures provided for Members. Subscription to FIELD MUSEUM NEWS is included with all memberships. The courtesies of every museum of note in the United States and Canada are extended to all Members of Field Museum. A Member may give his personal card to non-residents of Chicago, upon presentation of which they will be admitted to the Museum without charge. Further information about membership will be sent on request.

Field Museum News

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No. 10

TREES OF THE COAL AGE, 250,000,000 YEARS AGO, RESTORED IN NEW EXHIBIT

By B. E. DAHLGREN
Acting Curator, Department of Botany

A scene in a swamp forest of the Coal Age is vividly represented in all its luxuriance, and in natural size, in a group recently completed in Ernest R. Graham Hall (Hall 38) of the Museum. Representing much intensive research and three years of exacting labor, this group is the most recent addition to the series of historical geology exhibits provided through the generosity of Ernest R. Graham, Trustee and Benefactor of the Museum.

The group shows a landscape of late Car-

and cover the coal beds. Thanks to the abundance of fossil remains and to the labors of many paleontologists, there is available a large amount of knowledge concerning the plants which gave origin to coal, as well as of the conditions under which they lived. This, together with the advanced type of museum technique developed in the Stanley Field Plant Reproduction Laboratories, has made possible the preparation of the present exhibit. Many of the most common plants of the Pennsylvanian flora, especially as this is represented at Mazon Creek, Illinois, have

bulk of the vegetation. Foremost among these were the great clubmosses of many species. With their columnar stems reaching as much as six feet in diameter and up to 100 feet in height, fluted or ornamented as if by a sculptured pattern, with their unbranched tops terminating in a single tuft or in a canopy of grasslike foliage, and their long horizontally extended and regularly forking roots, these big clubmosses must have set their somber stamp on the entire landscape.

The two principal and best known types of these are the *Lepidodendrons* and the



Copyright Field Museum of Natural History

Forest of the Coal Age

Restoration of Carboniferous vegetation which has been added to the exhibits in Ernest R. Graham Hall of Historical Geology.

boniferous time, in the so-called Pennsylvanian period, some 250,000,000 years ago. The land flora of the Paleozoic era was at that time reaching its culmination in the vast forests that covered much of the land then raised above the sea in the northern hemisphere. In Europe and in northern Asia, as well as in North America, these forests existed for millions of years, giving rise in the course of time to vast accumulations of plant material that now constitute our principal coal beds.

Various attempts have been made by paleobotanists to picture the appearance of the coal flora, but the present Museum exhibit probably represents the first serious effort to reconstruct in three-dimensional form a whole assemblage of plants of Carboniferous time.

Our knowledge of the botanical character of the Carboniferous vegetation is based on its fossil remains, present mostly in the form of casts and impressions in the layers of shale and sandstone that formed as silt during intervals of submergence, and that now separate

been reconstructed in natural size from the impressions and casts in rocks of the period. To restore to a semblance of its living condition enough of the coal forest vegetation and of the animal life of the time to reconstruct a typical section of the ancient swamp forest has been a long and often tedious task, involving the combined efforts of a half-dozen workers in the plant reproduction laboratories.

The group, which measures 28 x 15 x 19 feet, shows a scene in a dense swamp forest at the margin of a stretch of shallow and stagnant water as in a lagoon of a river estuary. The extensive bogs and marshes of the time were filled with dense formations of calamites, giant semiaquatic horsetails which probably also bordered all the watercourses. They resembled the present day equisetums or scouring rushes in form, but approached bamboos in height and rapidity of growth and rivaled the giants among bamboos in diameter.

The calamites were, however, greatly exceeded in size by the trees which formed the

Sigillarias. The former had a scaly armor of leaf cushions covering their trunks; the latter were marked by seal-like leafscars generally arranged in vertical rows. There were other forms such as the forking *Lepidophloios* shown near the center of the group. On the large branches of this are seen clumps of short leafy shoots, each terminating in a sporebearing cone. The pollen-like spores must have been extremely abundant, for masses of them constitute an important element of the material which has been converted into coal.

The remainder of the tall forest trees of the period consisted of early gymnosperms, called *Cordaites*, in honor of the famous paleontologist Corda. These have long since disappeared. They belonged to a line which probably gave origin to such conifers as the monkey puzzles and the Australian kauri pine, essentially Tertiary trees still existing in the southern hemisphere. The *Cordaites* were truly large-leaved. The species included in

(Continued on page 3)

Field Museum of Natural History

Founded by Marshall Field, 1893

Roosevelt Road and Lake Michigan, Chicago

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FIELD MUSEUM NEWS

STEPHEN C. SIMMS, *Director of the Museum*.....*Editor*

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Field Museum is open every day of the year during the hours indicated below:

November, December, January	9 A.M. to 4:30 P.M.
February, March, April, October	9 A.M. to 5:00 P.M.
May, June, July, August, September	9 A.M. to 6:00 P.M.

Admission is free to Members on all days. Other adults are admitted free on Thursdays, Saturdays and Sundays; non-members pay 25 cents on other days. Children are admitted free on all days. Students and faculty members of educational institutions are admitted free any day upon presentation of credentials.

The Library of the Museum, containing some 92,000 volumes on natural history subjects, is open for reference daily except Sunday.

Traveling exhibits are circulated in the schools of Chicago by the Museum's Department of the N. W. Harris Public School Extension.

Lectures for school classrooms and assemblies, and special entertainments and lecture tours for children at the Museum, are provided by the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures.

Announcements of courses of free illustrated lectures on science and travel for the public, and special lectures for Members of the Museum, will appear in FIELD MUSEUM NEWS.

There is a cafeteria in the Museum where luncheon is served for visitors. Other rooms are provided for those bringing their lunches.

Members are requested to inform the Museum promptly of changes of address.

AN EARLY THOUGHT FOR CHRISTMAS

A note made now concerning Christmas may save much time and effort during the last hectic weeks of shopping before the holiday. Jot this down on your calendar: *Field Museum memberships will again be available as Christmas gifts this year.*

Here is a form of gift, obtainable at a low price, which removes for the giver all of the burden of hunting in the shops and the preparation of packages. At the same time it is a gift of distinction, a singularly appropriate selection to represent the man or woman of culture seeking a holiday remembrance for another man or woman of similar cultural estate. When you give a Museum membership you are paying a compliment to the recipient of your gift, for it indicates you regard him or her as the type of person who appreciates the things which are of the intellect. Moreover, such a gift is not put aside and the giver forgotten within a short time; instead, it has a lasting effect as a reminder of the giver, for many times a year the person to whom it is given will receive copies of FIELD MUSEUM NEWS, invitations to special lectures

for Members, and the opportunity to avail himself of the various privileges extended to those on the Museum's membership rolls.

Application forms and full details will accompany the December issue of the NEWS, or they may be had earlier, if desired, by telephoning or writing the Museum. All you need do is furnish the names and addresses of the friends to whom you desire to present memberships, and a check for the membership fee, and the Museum will relieve you of all further details in connection with your gift. Those whom you thus favor will receive by Christmas Day an attractive card upon which the Museum will notify them of your gift, and inform them that privileges their membership confers. A wide choice is offered you in the cost of memberships as gifts, beginning with the \$10 Annual Membership.

THE DEPARTMENT OF GEOLOGY —ITS AIMS AND FUNCTIONS

The chief purpose of geological exhibits and collections may be said to be the representation in miniature of the materials of the earth and the history of its ancient life as shown by the remains found in rocks. While this objective can be simply stated, its complete accomplishment obviously involves a wide range and vast amount of effort. Such representation, to be complete, must include more than a thousand mineral species, several hundred varieties of rocks, a great variety of metallic ores, representatives of the non-metallic mineral deposits, such as coal, petroleum, clays and soils, and a full series of the fossils which record the plant and animal life of past ages. Not only should all species and varieties be represented, but also those from many localities, in order that variations resulting from local conditions may be illustrated.

Such collections should also include many specimens illustrating structural features of the earth and forms resulting from special conditions such as those existing in volcanoes, caves, springs, *et cetera*. It is also desirable to represent earth materials not only from the standpoint of scientific classification, but also from that of economic value.

In its attainments along these lines, the Department of Geology of Field Museum, while far from reaching completeness, has already acquired an impressive total. Mineral specimens are represented by 33,000 specimens, varieties of rocks by 9,000, ores and non-metallic products by 26,000, and fossils by 122,000 specimens. Special collections among the mineral species include those of gems and crystals. Meteorites, which by their fall continually add to the mass of the earth, are represented by the world's largest collection as regards the number of falls possessed. The moon, being a satellite of the earth, is represented by a large model. Models, relief maps and photographs also illustrate earth features too extensive to be shown in any other way. Other models illustrate the occurrence of ores and minerals and methods of extraction of valuable products from them. In addition to exhibits and collections of fossils in the forms in which they are found, life-size restorations of some of the animals of the past, of early Man, and of trees and plants of the Coal Period have been prepared, while typical scenes of past geological periods are represented by twenty-eight large mural paintings.

These exhibits occupy five halls of the Museum and a part of a sixth, the exhibit of gems sharing space with jewels chiefly of anthropological interest. While, as a rule, only the larger or more important specimens are shown in the exhibits, all are available in study collections for intensive and detailed investigations.

For acquiring such collections active search in diverse parts of the earth is necessary and for this purpose expeditions have been from time to time carried on, some of the expeditions remaining for long periods in remote and uninhabited regions.

Correct identification and classification of the individual specimens require much study along microscopic, chemical and physical lines, and for this purpose well-equipped laboratories have been provided. The combination of large collections with adequate laboratories, an extensive library and a competent scientific staff affords facilities for researches of a unique character, and permits results to be obtained which could not be gained otherwise. Those results which add to the body of geological knowledge are published from time to time in Museum publications and are distributed to scientists and libraries throughout the world. In addition, some researches have resulted in making notable advances in methods for the preservation and restoration of various Museum objects. Leaflets, sold at a low price, explaining in plain, non-technical language the geological principles underlying some of the exhibits, are also issued from time to time and serve to give information about the exhibits in addition to that afforded by the labels.

While the interest and information of visitors to the Museum itself is considered of primary importance, evidence that the influence of the Department extends far beyond the Museum walls is given by the large number of requests for information that is constantly being received by mail, telephone and personal call. Replies to more than 600 such requests were made during the year 1930 and the number increases yearly.

—OLIVER C. FARRINGTON

(An article on the purposes and functions of the Department of Zoology will appear next month.)

Two Corresponding Members Elected

In recognition of their eminent services rendered to Field Museum, Dr. Stephen H. Langdon, Professor of Assyriology, Jesus College, Oxford University, England, and Dr. Ludwig Diels, Director of the Botanical Garden and Museum of Berlin-Dahlem, have been elected Corresponding Members of the Museum by the institution's Board of Trustees. Professor Langdon is Director of the Field Museum-Oxford University Joint Expedition to Mesopotamia, and has conducted excavations at the ancient city of Kish for eight seasons. Dr. Diels has extended noteworthy cooperation in the botanical work of Field Museum, especially in its activities abroad conducted under the provisions of the Rockefeller Foundation fund for obtaining photographs of type specimens of plants of the American tropics.

BEQUESTS AND ENDOWMENTS

Bequests to Field Museum of Natural History may be made in securities, money, books or collections. They may, if desired, take the form of a memorial to a person or cause, named by the giver. For those desiring to make bequests, the following form is suggested:

FORM OF BEQUEST

I do hereby give and bequeath to Field Museum of Natural History of the City of Chicago, State of Illinois,

Cash contributions made within the taxable year to Field Museum not exceeding 15 per cent of the taxpayer's net income are allowable as deductions in computing net income under Article 251 of Regulation 69 relating to the income tax under the Revenue Act of 1926.

Endowments may be made to the Museum with the provision that an annuity be paid to the patron for life. These annuities are tax-free and are guaranteed against fluctuation in amount.

KISH EARRINGS EXHIBITED

The remarkable gold earrings from ancient Kish, obtained recently by the Field Museum-Oxford University Joint Expedition to Mesopotamia, and described in an article on page 4 of the September FIELD MUSEUM NEWS, are now on exhibition in Stanley Field Hall of the Museum (Case 11).



Kish Earring

The accompanying illustration shows the largest and most intricately designed of the four earrings. The picture is magnified to approximately twice actual size. The earrings were found in graves identified as belonging to the period of Nebuchadnezzar, who ruled over Kish and Babylon about 2,500 years ago. In design and workmanship they compare favorably with the work of the best goldsmiths and jewelers of later times in Europe and elsewhere.

The earrings are displayed with other representative archaeological material excavated from the ruins of Kish by the Museum expedition.

COAL AGE FOREST RESTORED

(Continued from page 1)

the exhibit has a sparsely branching trunk, and strapshaped leathery foliage massed on the branches as in some trees of the lily family. Although related to the conifer line, the Cordaites trees did not produce cones; instead, their seeds were borne on small shoots in the leaf axils, much as in the ginkgos to which they are distantly related.

The shade of the canopy of branches was not too dense to prevent the existence in the Carboniferous forest of a luxuriant vegetation of lesser size, and the fossil remains include an extraordinary variety of stems and foliage of fern-like aspect. So numerous are these that the Carboniferous age is often called the Age of Ferns. It is now known that these fern-like fossils are derived from two very distinct kinds of plants, true spore-bearing ferns, partly on the order of present-day tree-ferns, and a large variety of seed-bearing plants with fern-like foliage which at first led to their confusion with the ferns. These latter are often spoken of as seedferns, and their seeds resemble those of the cycads which appeared later.

Several seedferns are included in the group. One of these is the famous Lyginodendron, a climber or semiclimber. It is easily recognized by its proports, its delicate fern-like foliage borne by the slender forked stalk of its leaves, and by its special fruiting frond among its upper leaves. Ascending a small Lepidodendron tree on the right of the exhibit is a characteristically Carboniferous climber, *Mariopteris*, with stiff twice-branched fern-like leaves.

Stems of the tree-ferns are frequent among Carboniferous fossil remains. Several types are known, two of which are represented in the group. One of these does not differ greatly in appearance from its modern relatives; the other is distinctly peculiar, due to the fan-shaped arrangement of its fronds.

On the ground are small clumps of a common and characteristic plant of the Carboniferous swamp vegetation, *Sphenophyllum*,

with numerous slender jointed stems, whorls of delicate wedge-shaped leaves, and long fruiting catkin-shaped spikes, resembling closely the spore-bearing spikes.

The preservation of the prodigious amount of forest litter that was converted into coal is evidence of the prevalence of conditions such as a super-abundance of water and a sour swamp soil which prevented decomposition and decay on a large scale. Such conditions are also indicated by characteristics of the plants, especially the superficial and peculiar root system of the big clubmosses. With the general elevation of the land and establishment of drier conditions in the next period, the Permian, most of the Carboniferous flora disappeared. The great spore-bearing trees were unable to maintain themselves or to propagate their kind except in the presence of abundant moisture.

Not the least interesting feature of the Carboniferous forest is its animal life. Insects were very numerous. They were still in large part primitive, and much less varied than they have subsequently become. Many modern groups had not yet made their appearance, but together with the simplest forms embodying all primitive characteristics of winged insects there were others already specialized in directions pointing to modern orders such as grasshoppers, bugs, flies, ants, and wasps. Compared with recent forms they were large in size and rather clumsy. They had two pairs of equal wings but were adapted more for short flits and glides than for flight. The roaches were present in almost incredibly large numbers and were represented by many hundreds of species, some of large size.

Some of the primitive dragonflies were enormous, attaining dimensions that never since have been equaled in the insect world. One of these giant forms with a spread of wing of more than two feet may be seen in the exhibit, together with roaches up to three and one-half inches long, and several examples of the most primitive insects known.

The earliest remains of four-legged animals are from the Lower Carboniferous rocks of Europe. They are mostly salamander-like forms with abundant indication of their aquatic ancestry which is possibly to be sought among the lungfishes of the preceding period. In Upper Carboniferous time they became more numerous, and many species are known from both Europe and North America. They range in size and shape from tiny salamanders to eel-like forms six or more feet in length. The largest perhaps seldom or never emerged from the water of the lakes and pools of the forest. Most of the others, judging from their structure, were amphibious rather than purely terrestrial in their habits. They had feeble legs and retained the elongated body form adapted to swimming. From this early vertebrate stock there arose the early reptiles and from these in the course of time all the other higher vertebrates. In the history of life on earth there have been few more important periods than the Carboniferous.

With the work on this group concluded, acknowledgments are due to those who have directly or indirectly contributed to its execution. They should be made first of all to Ernest R. Graham of the Museum's Board of Trustees for his generosity in furnishing the funds; to President Stanley Field of the Museum for his permission to have the work carried out in the plant reproduction laboratories maintained by him for the Department of Botany; and to Dr. Oliver C. Farrington, Curator of Geology, for his valuable advice and support. It is a pleasure to record the cheerful cooperation of the laboratory staff: John R. Millar, Emil Sella, George Peterson, Isidor Ilekis, Milton Copulos, and John Wolcott, all of whom have contributed through

their skill and industry to the successful production of the group. Charles A. Corwin, Staff Artist of the Museum, executed the painting of the background.

Thanks are due to Samuel Chambers of the Redpath Museum of McGill University, Montreal, for permission to obtain impressions of valuable specimens in his collection and to Dr. R. C. Bassler, Curator of Invertebrate Paleontology of the United States National Museum, Washington, D.C., who permitted Field Museum to obtain a selection from the extensive duplicate material of Pennsylvanian fossils of the Lecoq collection in his care.

During the entire course of the work the writer has had the advice and generous cooperation of Professor A. C. Noé, the paleobotanist of the University of Chicago, whose intimate and extensive knowledge of the Carboniferous flora has made him a preeminent authority on this subject.

Valuable advice and material pertaining to details of structure of the vertebrates included in the group have been furnished by Professor W. K. Gregory of Columbia University and of the American Museum of Natural History, New York, and Professor A. S. Romer of the Walker Museum of the University of Chicago.

LIZARDS BY PARCEL POST

BY KARL P. SCHMIDT
Assistant Curator of Reptiles

The keeping of frogs and lizards in a small cage with earth and plants simulating natural conditions is a simple matter, quite as suitable to private homes as are the more familiar aquaria. Such dry cages or "terraria" are, in fact, very popular in Europe, and an extensive traffic in frogs, lizards, snakes, and turtles has grown up in connection with this hobby.

Since cold-blooded creatures do not require food for weeks on end, and even require very little air, it has proved possible to ship small and medium-sized amphibians and reptiles by mail. Snakes and lizards are usually sent enclosed in cloth sacks which are placed in light wooden boxes, with covers securely tacked down. Cardboard mailing tubes are especially suited to small shipments of this kind.

Frogs and salamanders cannot withstand drying, but even these delicate creatures may be shipped long distances packed in moss which is damp but not wet. Excess moisture proves as fatal to frogs as a deficiency. Sphagnum moss dipped in water and then thoroughly wrung out meets this requirement excellently.

Occasional specimens of amphibians and reptiles, intended for use in the preparation of exhibition models, are received alive in this way at Field Museum of Natural History. Such parcels are relatively unfamiliar in the United States, and a package from Spain, opened for customs inspection in the Chicago postoffice, caused no little excitement when a large ocellated lizard escaped. The mail clerks who had to move drawers and boxes to recapture the creatures were probably not very appreciative of the extraordinary beauty of this lizard, with its black and green back, and its sides brilliantly spotted with blue.

Compiling Book on Colombia

J. Alden Mason, former member of the staff of the Department of Anthropology of Field Museum, and leader of the Marshall Field Archaeological Expedition to Colombia, has been spending a month at the Museum compiling data for a publication on the results of his expedition. He is now connected with the Museum of the University of Pennsylvania.

AUTUMN LECTURE COURSE BEGINS OCTOBER 3

The fifty-sixth free lecture course presented by Field Museum will begin on Saturday, October 3. In all there will be nine lectures on science and travel. Eminent explorers and naturalists will appear, and their lectures will be illustrated with motion pictures and stereopticon slides. All the lectures will be on Saturday afternoons, and will begin at 3 P.M. They will be given in the James Simpson Theatre of the Museum.

Following is the complete schedule of dates, subjects and speakers:

- October 3**—An African Hunting Trip
Dr. Thomas S. Arbutnot, Pittsburgh
- October 10**—Burma
Louis H. Baker, Hamilton, Ontario
- October 17**—Bryce, Zion and Grand Canyons
(Illustrated with Lumiere Autochrome plates)
Dr. C. O. Schneider, Chicago
- October 24**—Pioneering in the Canadian Peace River Country
Professor Charles C. Colby, Professor of Geography, University of Chicago
- October 31**—East of Suez
H. C. Ostrander, Yonkers, New York
- November 7**—Mexico
Fred Payne Clatworthy, Estes Park, Colorado
- November 14**—Explorations in the Old Maya Empire
Dr. Sylvanus G. Morley, Carnegie Institution, Washington, D.C.
- November 21**—On the Trail of the Viking
Captain Donald B. MacMillan
- November 28**—Camera Shooting in the Southern Marshes
Alfred M. Bailey, Director, Chicago Academy of Sciences

No tickets are necessary for admission to these lectures.

CHILDREN'S ENTERTAINMENTS —RAYMOND FOUNDATION

Ten more free motion picture programs of the autumn series for children, provided by the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures, remain to be given on Saturday mornings during October, November and December. The first, a special program of Indian films, was given on September 26.

Following is the schedule of the dates and the titles of the films to be shown on each:

- October 3**—Elephant Seals
Shooting Rapids
The Woolly West
Cowboy Thrills
- October 10**—Columbus*
Tricks or Weapons?
Secrets of the Sea
- October 17**—The Sacred Beetle
Wonder Book III
From Mountain to Cement Sack
The Dogville Theatre
- October 24**—Glimpses of India
People in White (Korea)
When Elk Come Down
How Rangers Fight a Fire
- October 31**—The Settlement of Jamestown*
A Trip to a Zoo
- November 7**—Maizok of the South Seas
Magic Gems

November 14—The Eve of the Revolution*
A Trip to Banana Land
Unselfish Shells

November 21—The Declaration of Independence*
The Hamster Family
A Jungle Roundup

November 28—The Pilgrims*
Animals Prepare for Winter
Children of the Sun

December 5—Winter Birds
Snowflakes
Mr. Groundhog Wakes Up
Skating in the Spreewald

*Yale Chronicles. Gift of Mr. Chauncey Keep to the Museum

Each program is given twice, at 10 A.M. and at 11. Children from all parts of Chicago and suburbs are invited to attend.

SPECIAL NOTICE

All Members of Field Museum who have changed their residences or are planning to do so are earnestly urged to notify the Museum at once of their new addresses, so that copies of FIELD MUSEUM NEWS and all other communications from the Museum may reach them promptly.

Sculptress' Work Progresses

Miss Malvina Hoffman, noted sculptress commissioned by Field Museum to execute more than 100 life-size figures, busts and heads of the various living races of man which are to be exhibited in Chauncey Keep Memorial Hall, returned to America from Europe recently with the first completed figures, numbering about thirty. After a brief stay in this country, during which she visited the Museum for a conference with officials, she departed for Honolulu and the Far East to continue with her task.

Eskimo Collection Received

A new collection of Eskimo archaeological material from the Bering Straits region has been received by Field Museum through an exchange with the United States National Museum at Washington. Added to the collections of this kind which were presented to the Museum by Trustee John Borden as a result of the Borden-Field Museum Arctic Expedition, the new material builds up a comprehensive series of objects for preparation of an exhibit which will be installed in the near future.

Passenger pigeons, once common but now extinct, are preserved for posterity in an exhibit at Field Museum.

Gifts to the Museum

Following is a list of some of the principal gifts received during the last month:

From Florida-Louisiana Red Cypress Company—single and double "knee" of southern cypress specimens; from Robert B. Jones—a grooved stone ax and 10 flint spear-heads; from Mr. and Mrs. George W. Field—prehistoric arrow and spear points, rejects, fragments, etc.; from John T. Zimmer—a prehistoric stone pounder; from Roy Muhr—a Mastodon skull; from Robert B. Jones—3 specimens invertebrate fossils and 15 specimens minerals; from Albert O'Conner—a kingfisher; from John M. Schmidt—a soft-shelled turtle, a water snake, and 8 garter snakes; from General Biological Supply House—a pocket gopher skin; from Anton C. G. Kaempfer—a lower jaw of a four-tusked Mastodon.

OCTOBER GUIDE-LECTURE TOURS

Following is the schedule of conducted tours of the exhibits during October:

Thursday, October 1: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Industrial Models, 3 P.M., Africa and Madagascar.

Week beginning October 5—Monday: 11 A.M., Reptiles and Amphibians, 3 P.M., Crystals and Gems; Tuesday: 11 A.M., Plant-life, Past and Present, 3 P.M., Mummies; Wednesday: 11 A.M., Pewter, Bronze and Cloisonné, 3 P.M., South American Archaeology; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., The Totem-pole Makers, 3 P.M., Creatures of the Seas.

Week beginning October 12—Monday: 11 A.M., Useful Minerals and Metals, 3 P.M., Melanesia; Tuesday: 11 A.M., American Archaeology, 3 P.M., Looms and Textiles; Wednesday: 11 A.M., Mexico, 3 P.M., Building Materials; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., People of the Far North, 3 P.M., Useful Fibers and Resins.

Week beginning October 19—Monday: 11 A.M., The Young of Mammals and Birds, 3 P.M., Roman Home Life; Tuesday: 11 A.M., Crocodiles, Snakes and Turtles, 3 P.M., Musical Instruments; Wednesday: 11 A.M., Chinese Art, 3 P.M., North American Trees and Their Uses; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Comparative Anatomy, 3 P.M., Peoples of the South Seas.

Week beginning October 26—Monday: 11 A.M., Indians of Plains and Deserts, 3 P.M., Peat, Coal and Oil; Tuesday: 11 A.M., Man Through the Ages, 3 P.M., South American Animals; Wednesday: 11 A.M., Egyptian Art, 3 P.M., Prehistoric Animals; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Jewelry, 3 P.M., Habitat Groups.

Persons wishing to participate should apply at North Entrance. Tours are free and no gratuities are to be proffered. A new schedule will appear each month in FIELD MUSEUM NEWS. Guide-lecturers' services for special tours by parties of ten or more are available free of charge by arrangement with the Director a week in advance.

NEW MEMBERS

The following persons were elected to membership in Field Museum during the period from August 18 to September 17:

Corresponding Members

Professor Stephen Langdon, Dr. Ludwig Diels.

Associate Members

Mrs. Julian Armstrong, Kingman Douglass, Sol Eickenstein, Mrs. Sidney H. Gettelman, Miss Margaret H. Graham, Fowler McCormick, S. A. Tucker, James Z. VanWinkle.

Sustaining Members

Mrs. Caryl B. Young

Annual Members

Dr. J. B. Anderson, Mrs. Fred A. Bartman, Frederick W. Bunts, Mrs. T. W. Burrows, Mrs. Griffith Chadwick, John J. Coburn, Harley O. Gable, Willis S. Hilpert, W. Kelso Hunter, Donald Kirkpatrick, F. H. Kullman, Jr., Martin J. Murray, Robert W. Nessler, J. F. O'Neil, Mrs. Charles H. Pajeau, Miss Erna M. Pohlmann, Mrs. Joseph E. Rhodes, Herbert Sieck, Albert A. Sprague, Jr., Mrs. Wilmer M. States, D. F. Sweeney, W. W. Watkins, L. C. Welch, Ray A. Whidden, Mrs. Jason F. Whitney.

MEMBERSHIP IN FIELD MUSEUM

Field Museum has several classes of Members. Benefactors give or devise \$100,000 or more. Contributors give or devise \$1,000 to \$100,000. Life Members give \$500. Non-Resident (Life) and Associate Members pay \$100. Non-Resident Associate Members pay \$50. All the above classes are exempt from dues. Sustaining Members contribute \$25 annually. After six years they become Associate Members. Annual Members contribute \$10 annually. Other memberships are Corporate, Honorary, Patron, and Corresponding, additions under these classifications being made by special action of the Board of Trustees.

Each Member, in all classes, is entitled to free admission to the Museum for himself, his family and house guests, and to two reserved seats for Museum lectures provided for Members. Subscription to FIELD MUSEUM NEWS is included with all memberships. The courtesies of every museum of note in the United States and Canada are extended to all Members of Field Museum. A Member may give his personal card to non-residents of Chicago, upon presentation of which they will be admitted to the Museum without charge. Further information about memberships will be sent on request.

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GROUP OF SOUTH AMERICAN TAPIRS IS ADDED TO MAMMAL HABITAT SERIES

BY WILFRED H. OSGOOD
Curator, Department of Zoology

Unlike Africa and tropical Asia, South America at the present time does not support a mammal fauna including many species of large size. Although its mammals are numerous and of great interest, they are mostly of small or medium size. Among the larger ones none is more peculiar or characteristic than the tapir. Therefore, this animal was chosen as the subject of the fifth South American group for the Hall of American Mammal Habitat Groups. Other animals now represented in this series include the guanaco, marsh deer, great anteater, jaguar, and capybara.

The group of American tapir, recently completed, shows three specimens—two adults and one partly grown young. They are represented in mid-day under the shade of a tree at the edge of a grassy swamp. Beyond them stretches a painted scene typical of southwestern Brazil—open marsh and scattered clumps of small trees from which here and there a palm sends up its slender but towering trunk.

Although there are at least two other species of tapirs found in tropical America, both of these are restricted to special regions, one in Central America and the other in the mountains of Ecuador, so the name American tapir is applied to the common and widespread species which ranges throughout the lowlands from

Panama to Paraguay. It is a shy, inoffensive animal, fond of wallowing in mud and water, but also resorting at times to relatively dry uplands. It is mainly nocturnal and for protection from its enemies depends upon concealment and watchfulness in which keen scent doubtless plays a large part. It can run at fair speed for a short distance, but this is but partial defence against such an enemy as the jaguar, and stealth, therefore, is its only recourse. Its short proboscis, which in structure is much

light spots and stripes which disappear in the adult. These serve to render it inconspicuous in the alternating light and shade of the jungle and may at times afford it some measure of protection.

Among present day animals, tapirs are most closely related to horses, and fossil remains of certain extinct mammals indicate quite clearly that tapirs and horses were derived from a common ancestor. The toes of tapirs are divided much as in some of the ancestral horses, and their teeth, although less complicated in structure, show basic resemblances to those of horses. Even superficially it is easily seen that the shape of a tapir's head is similar to that of a horse.

Besides the several tapirs of America, there is only one other living species, the Malay tapir, which is confined to a small area in southeastern Asia and the East Indies. Since many fossil tapirs have been found in various parts of the world, it is evident that the living species, although now so widely separated, were formerly connected. They are remnants probably saved from extinction by the vastness and almost impenetrable nature of the jungles in which they live.

The specimens for the Museum's group were collected by Assistant Curator Colin C. Sanborn during the Marshall Field South American Expedition of 1926. The taxidermy is by Julius Friesser, and the painted background by Charles A. Corwin.



South American Tapirs

New exhibit in Hall 16. The specimens were obtained by the Marshall Field South American Expedition of 1926.

like the trunk of an elephant, is probably too small for more than limited use as an organ of prehension and perhaps should be regarded principally as an outward evidence of a very highly developed sense of smell. The young tapir is sharply marked with

MODERN ARABS OF THE KISH AREA

BY HENRY FIELD
Assistant Curator of Physical Anthropology

At the conclusion of the season of excavations in 1927-28 by the Field Museum-Oxford University Joint Expedition at Kish, Mesopotamia (Iraq), I devoted some time to a detailed anthropometric study of the modern Arabs who live in the Kish area.

The statistics thereby obtained show that there has been little if any change in the physical characteristics of the population of that area during the past 5,500 years. The long-headed (dolichocephalic) element appears to have been dominant in the earliest cultural levels, and also to predominate among the modern Arabs. Broad-headed (brachycephalic) peoples appear to have been present, but in smaller numbers, and they probably represent the aristocratic or ruling group, in ancient Kish. The modern Arabs are predominantly dolichocephalic with a slight admixture of brachycephaly, which from skeletal evidence appears to have been superimposed on the population at an early date.

A small group of Bedouins was also studied. The Bedouins belong to the same racial stock as the other Arab inhabitants of the area, but for many hundreds of years their tribes have wandered over the desert, and have mixed very little with agricultural groups which live in and around the towns. The results of the anthropometric work done among the Bedouins would suggest that they are more consistently dolichocephalic. The incursions of brachycephalic peoples into Mesopotamia did not have as marked an effect on them as upon the other Arabs of the area. The nomadic life of the Bedouins has undoubtedly kept their dominant racial characters little changed, while people of new racial strains were attracted to the fertile region between the rivers Tigris and Euphrates where they mingled with the Arab population and thereby slightly affected the purity of the stock.

The manufacture of cement, from the mining of the constituent limestone and clay to the storing of the completed product, is illustrated by a large model of a cement plant in the Department of Geology.

EXHIBIT OF DYES AND TANNINS

Recently added to the economic exhibits of the Department of Botany are collections of vegetable dyes, and of tanning materials, which have been placed on view in Hall 28. The dyestuffs include many which have been in common use throughout historic time. Among these are henna, indigo, madder, saffron, turmeric, catechu, and Persian berries. Also displayed are such materials as brazilwood, logwood, fustic, cochineal and arnatto, used for centuries by American Indians, who introduced them to Europeans.

While the use of artificial dyes, especially from coal tar, has reduced the importance of natural dyestuffs, many of them still find application, according to James B. McNair, Assistant Curator of Economic Botany. The employment of harmless plant dyes for coloring foods, oils, and other such products is becoming more widespread.

The exhibit of tanning materials includes hemlock bark, quebracho wood, gambier, mangrove bark, sumach, myrobalan nuts, valonia acorns, and other plant products.

Field Museum of Natural History

Founded by Marshall Field, 1893

Roosevelt Road and Lake Michigan, Chicago

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FIELD MUSEUM NEWS

STEPHEN C. SIMMS, *Director of the Museum*.....*Editor*

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WILFRED H. OSGOOD	Curator of Zoology
H. B. HARTE	Managing Editor

Field Museum is open every day of the year during the hours indicated below:

November, December, January	9 A.M. to 4:30 P.M.
February, March, April, October	9 A.M. to 5:00 P.M.
May, June, July, August, September	9 A.M. to 6:00 P.M.

Admission is free to Members on all days. Other adults are admitted free on Thursdays, Saturdays and Sundays; non-members pay 25 cents on other days. Children are admitted free on all days. Students and faculty members of educational institutions are admitted free any day upon presentation of credentials.

The Library of the Museum, containing some 92,000 volumes on natural history subjects, is open for reference daily except Sunday.

Traveling exhibits are circulated in the schools of Chicago by the Museum's Department of the N. W. Harris Public School Extension.

Lectures for school classrooms and assemblies, and special entertainments and lecture tours for children at the Museum, are provided by the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures.

Announcements of courses of free illustrated lectures on science and travel for the public, and special lectures for Members of the Museum, will appear in FIELD MUSEUM NEWS.

There is a cafeteria in the Museum where luncheon is served for visitors. Other rooms are provided for those bringing their lunches.

Members are requested to inform the Museum promptly of changes of address.

REMINDER FOR CHRISTMAS

Attention was directed in the October FIELD MUSEUM NEWS to the advantages Field Museum memberships offer as Christmas gifts for your friends. The shopping season will be on in full force shortly, so a second reminder seems timely.

Summarized briefly, Museum memberships are worthy of your consideration for some of the people on your Christmas lists for the following reasons:

They will save you much thought and physical effort in making selections of gifts, hunting for them in the shops, and preparing packages.

All you have to do is send in the name and address of the person to receive the membership. All details of presenting it at the proper time, with an attractive card bearing your name, are taken care of for you by the Museum.

It is a gift of distinction, especially appropriate for a man or woman of culture, and in presenting such a gift you are paying a compliment to the recipient.

Through the monthly issues of FIELD MUSEUM NEWS, invitations to special lec-

tures, and other features of Museum membership, it will serve to remind the recipient of your thoughtfulness many times a year.

Both giver and receiver may derive satisfaction from their identification with the body of better citizens who are supporting an important cultural institution performing great public services.

The cost is reasonable, various classes of membership being available, beginning with the \$10 Annual Membership.

Application forms and full details will accompany the December issue of the NEWS, or they may be had earlier by telephoning or writing the Museum.

THE DEPARTMENT OF ZOOLOGY —ITS AIMS AND ACTIVITIES

Zoology is the science of animals. The objects of a museum department of zoology, therefore, are to master and to advance this science and to present it to the public attractively, instructively, and authoritatively. The study of animals, however, is such a large subject that no museum ever has fully encompassed it. From microscopic disease germs and the tiniest insects to huge elephants and whales, the range of interest conceivably may include every living thing outside the realm of botany.

In order to carry out the objects successfully many things are involved, but the fundamental requirements are only two—specimens of animals or parts of animals, and knowledge about animals. For this reason the men who compose a good zoological staff are divided rather definitely into two classes, those who are expert in the preparation of animal material and those who are specialists in the study of animals. Results of the highest quality are obtained only by the cooperative effort of the technician or artist on the one hand and the scientist on the other.

Unfortunately, zoological specimens do not come ready-prepared for exhibition. Moreover, wild animals do not offer themselves to be caught nor do they stand waiting to be killed. A prime requisite for a department of zoology, therefore, is like that of the famous recipe for the dish called jugged hare, which begins with the direction, "First catch your hare." Hence expeditions to far countries are an important part of the work. Many interesting animals are now approaching extinction and others are confined to remote parts of the earth. These must be obtained soon or not at all.

The zoological exhibits of Field Museum are in three principal series: habitat groups of animals; classified collections of the most important kinds of animals; and subjective zoology or special preparations designed to illustrate and explain what the science of zoology has learned about animals.

A love of animals is well nigh universal, and one of man's needs, like that for music and art, is the pure enjoyment of contemplating them. The habitat groups, although not uninteresting, serve largely to meet this need. In their preparation effort is directed to the production of effects that are beautiful as well as accurate and natural. The classified or systematic exhibits, although often of great beauty, have a somewhat different purpose. In a sense they form an objective index or dictionary of the animal kingdom. Theoretically, at least, the different species stand in proper sequence, each in its place among its relatives, ready to be examined when needed. Practically, the number of species is so vast that no museum can attempt to show all of them, so they are carefully selected to include the most important ones according to limitations of

space and resources. The subjective or biological exhibits illustrate facts, ideas, and theories about animals. In other words, they present the evidence in simplified, graphic form in such subjects as evolution, variation, distribution, heredity, coloration, animal locomotion, animal psychology, and economic zoology.

Unknown to the general public and even unsuspected by many are the study or reference collections, the laboratories, and the staff of specialists who preside over them. As someone has said in another connection, "The exhibit is the electric light and the study collection is the dynamo that makes it glow." The quality of the study collections and the scientific staff determines to a large extent the instructiveness of the exhibits and the labels that go with them. It also governs the amount and accuracy of the information given to the community in response to requests by letter, by telephone and in person. The number of such requests is very large and the Department thus serves as a bureau of zoological information not only for Chicago but for the whole middle west. Coupled with this is cooperation with higher educational institutions both local and national.

The zoological staff carries the responsibility of keeping abreast of its subject and of contributing to any advances in knowledge of it that are made. By force of circumstances, this responsibility now rests wholly on the museum zoologist, since universities and colleges are no longer able to carry it. Their effort is directed mainly to history and theory, to physiology, and to experimental zoology, leaving the broad field which centers in classification to the museum zoologist. In other words, the museum cannot go to the university for its zoological knowledge but must produce its own, not only for itself but for the world at large. Therefore, research is an important feature of the Department's work, and, so far as other duties permit, the zoological staff of Field Museum engages in studies the results of which are published by the Museum and distributed to other institutions and specialists throughout the world.

—WILFRED H. OSGOOD

Ornithologist Joins Staff

W. Rudyerd Boulton, formerly a member of the staff of the Carnegie Museum in Pittsburgh, has been appointed Assistant Curator of Birds at Field Museum. He will begin his duties here on November 2. Mr. Boulton is a graduate of the University of Pittsburgh, and has carried on special studies at Columbia University. He has also had wide field experience, having been a member of various expeditions, especially in Africa.

BEQUESTS AND ENDOWMENTS

Bequests to Field Museum of Natural History may be made in securities, money, books or collections. They may, if desired, take the form of a memorial to a person or cause, named by the giver. For those desiring to make bequests, the following form is suggested:

FORM OF BEQUEST

I do hereby give and bequeath to Field Museum of Natural History of the City of Chicago, State of Illinois,

.....
.....
Cash contributions made within the taxable year to Field Museum not exceeding 15 per cent of the taxpayer's net income are allowable as deductions in computing net income under Article 251 of Regulation 69 relating to the income tax under the Revenue Act of 1926.

Endowments may be made to the Museum with the provision that an annuity be paid to the patron for life. These annuities are tax-free and are guaranteed against fluctuation in amount.

EXPEDITION TO THE SOUTHWEST RETURNS WITH COLLECTIONS

BY PAUL S. MARTIN

Assistant Curator of North American Archaeology;
Leader, Field Museum Archaeological Expedition
to the Southwest

From June to October this year, excavations on the Lowry ruin, begun in the summer of 1930, were continued. Probably the most interesting single fact ascertained this season was that the culture of the Lowry ruin is an offshoot of one known as that of Chaco Canyon. The locale of the parent culture is nearly 300 miles southeast of the Lowry ruin. Thus this extension northward and westward is greater than ever supposed.

The question may arise: How is it ascertained that the Lowry ruin is a Chaco Canyon type?

First, from the ground plan or layout of the village. The Lowry ruin belongs not to the cliff-house type, but rather to the mesa type; that is, it is built on a mesa top between two canyons. All the rooms are clustered about the central row of chambers. If this ruin were of the Mesa Verde type, which was to have been expected in this region, the living quarters would be grouped around numerous kivas.

Second, the style of architecture classifies it as of the Chaco Canyon type. The construction of the stone walls consists of tabular, well-cut slabs of sandstone, chinked with many sandstone spalls. The doors and ceilings, instead of being squat and low, as in the Mesa Verde type, are high, a distinctly Chaco feature.

Third, the pottery, although manifesting many local variations, comes nearer to Chaco than to any other group.

The beginnings of the Lowry pueblo were humble and unpretentious, but as the centuries passed the occupants conceived greater building plans. Thus it is that there are distinguishable five separate building periods and probably seven occupations. The final result was a terraced pueblo, in stages one, two, and three stories high, which contained approximately 80 rooms and was able to house 200 to 400 people.

What the reasons were for the various withdrawals is not clear. The time between each varied probably from 50 to 100 years. The Chaco people were ultimately driven out, and the rooms were reoccupied by Mesa Verde people, who made certain changes and additions. The earliest date is not at present known, but the middle period of the pueblo was probably somewhere between A.D. 800 and 1000.

The most startling discovery was that of mural decorations on the kiva walls. These paintings are well preserved and represent symbolical ideas of either the origin of man, or rain and lightning.

Most puzzling was the failure to find any burial grounds. In the centuries of occupation many people must have died; but where and how the dead were disposed of is still unknown. This is tantalizing, for it is from graves that archaeologists usually obtain the maximum information regarding the past history of any people. It is possible, though not probable,

that there is a burial ground undiscovered as yet; that cremation was practised and that the crematories are yet to be found; or that the dead were placed in crevices along the canyon rim, and that the rains which have fallen during the ten or more intervening centuries, have washed into the canyon and finally into the rivers all evidences of burials.

As a result of the expedition, which was financed from funds provided by Julius Rosenwald and the late Augusta N. Rosenwald, the Museum received 70 pieces of pottery; 400 potsherds, bone tools, and fragments of prayer sticks; 100 photographs; ink drawings of every potsherd; ground plans, cross sections, drawings of restorations, and 1,200 feet of motion picture film.

FOSSIL RHINOCEROS SKULL

A splendid skull of the great woolly rhinoceros, *Coelodonta antiquitatus*, has recently been received at the Museum from the Royal Museum of Brussels, Belgium, and has been placed on exhibition in Ernest R. Graham Hall (Hall 38).

The woolly rhinoceros was common in Europe and in Siberia as a member of the fauna of the third glacial period. It was related to the white rhinoceros of Africa and was of similar size. It is characterized by a thickening of the bones of the nose to support a long horn which was directed forward. A second lesser horn arose from the face closely behind the first. The body was covered with a heavy coat of woolly hair which enabled the animal to endure the extreme cold of the glacial period.

A remarkable specimen preserved at the Museum of Leningrad has the side of the face still covered with golden brown wool. These rhinoceroses became extinct before the close of the glacial period.

Selected examples of birds of Paradise, the most curiously and gorgeously plumaged group of birds from New Guinea, are on exhibition at the Museum.

CHILDREN'S ENTERTAINMENTS —RAYMOND FOUNDATION

Five more free motion picture programs of the autumn series for children, provided by the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures, remain to be given on Saturday mornings during November and December.

Following is the schedule of the dates and the titles of the films to be shown on each:

- November 7—Maizok of the South Seas
Magic Gems
- November 14—The Eve of the Revolution*
A Trip to Banana Land
Unselfish Shells
- November 21—The Declaration of Independence*
The Hamster Family
A Jungle Roundup
- November 28—The Pilgrims*
Animals Prepare for Winter
Children of the Sun
- December 5—Winter Birds
Snowflakes
Mr. Groundhog Wakes Up
Skating in the Spreewald

*Yale Chronicles. Gift of Mr. Chauncey Keep to the Museum

Each program is given twice, at 10 A.M. and at 11. Children from all parts of Chicago and suburbs are invited to attend.

BASKETRY MATERIALS EXHIBITED

An exhibit of the principal materials used in basket making has been added to the economic botany collections in Hall 28. In world importance, four materials stand out above all others, according to James B. McNair, Assistant Curator of Economic Botany. They are the willows and rattan, which furnish the most used materials in Europe and North America; mucroo, a material peculiar to South America; and bamboos, which are the most popular basket material of the Orient.

However, nearly all parts of native plants—roots, stems, bark, leaves, fruits, seeds and gums—have been used by North American Indians, and by the aborigines of other lands, in basket making, and a large collection of such materials is also included in the exhibit.

Photographs of African Plants

A collection of forty excellent photographs of remarkable plants of South Africa has been presented to Field Museum by Herbert Lang, who, with Arthur S. Vernay, led the Vernay-Lang Kalahari Expedition for the Museum.

The famous Natural Bridge of Virginia is represented by a faithful miniature model in the Department of Geology.

Mummies in the Egyptian hall (Hall J) range in date from about 2300 B.C. to A.D. 200.

EXCAVATIONS ON THE LOWRY RUIN IN COLORADO



View of kivas, one above the other, opened by Field Museum Archaeological Expedition to the Southwest. In the upper left corner of photograph are seen some of the symbolical mural paintings representing lightning. (See article in first column of this page.)

FOUR MORE LECTURES IN AUTUMN COURSE

Four more lectures in the fifty-sixth free course presented by Field Museum remain to be given during November. The lectures are given on Saturday afternoons in the James Simpson Theatre of the Museum, and all begin at 3 P.M. They are illustrated with motion pictures and stereopticon slides. Eminent explorers and naturalists have been engaged as lecturers.

Following is the schedule of dates, subjects and speakers:

November 7—Mexico

Fred Payne Clatworthy, Estes Park, Colorado

November 14—Explorations in the Old Maya Empire

Dr. Sylvanus G. Morley, Carnegie Institution, Washington, D.C.

November 21—On the Trail of the Viking

Captain Donald B. MacMillan

November 28—Camera Shooting in the Southern Marshes

Alfred M. Bailey, Director, Chicago Academy of Sciences

No tickets are necessary for admission to these lectures.

THE PELICAN FLOUNDER

BY ALFRED C. WEED
Assistant Curator of Fishes

Conditions in the cold depths of the ocean seem to force all creatures living there to take on strange shapes. Some of the fish are long and slender. Others are short and thick. Still others are broad, flat and almost as thin as a wafer. Many of them have very elastic stomachs so that they can swallow creatures actually larger than themselves.

Something more than thirty-five years ago the United States Bureau of Fisheries steamer *Albatross* was sent to study the ocean and its inhabitants in the vicinity of the Hawaiian Islands. During the course of dredging in one of the deep channels between the islands, a very strange flounder was caught. This fish was almost as transparent as glass and hardly thicker than a sheet of cardboard although it was about eleven inches long and nearly three inches wide, across the fins. Its stomach seemed to be very small, the whole body cavity being scarcely larger than a twenty-five cent piece. The bones seemed to be united so firmly that the stomach could not expand, except a little in thickness.

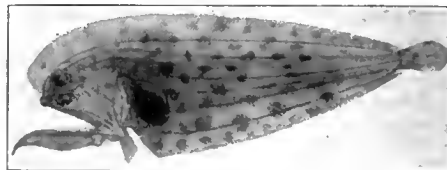
The most surprising thing about this fish was its mouth. The jaws were long, slender and slightly curved at the tips. Instead of the meaty structures that we see on the floor of the mouth of a bass, this fish had a thin, tough membrane that could be stretched almost indefinitely to form a pouch like the one a pelican uses to carry home a fish dinner. When, later, some of these fish were caught with deep-sea shrimps in the pouch, it seemed even more certain that the slender, flexible jaws and the elastic membrane were actually used, first, as a dipnet to catch food and, second, as a purse to hold it until there was room for it in the stomach or until it could be made small enough to be swallowed.

Very few fishes use their jaw teeth for biting or crushing their food after it is safely inside the mouth. They are used to catch or hold the food or to cut or crush it loose from the place where it grows. Back in the throat, behind the gills and just at the entrance to the gullet is a set of bones that usually bear teeth. They are hard and heavy and used like millstones by the fish

that pick up hard-shelled creatures for food. Some vegetable feeders have them fitted for cutting the food into small bits. Those that catch large, slippery prey have the throat teeth sharp and directed backward, to help in holding the victims and forcing them into the stomach.

Thus the pelican flounder can catch a big shrimp in the dipnet and hold it there while nibbling at it with the throat teeth until it has been made small enough to be swallowed. The food will keep, for the temperature of the water and of the fish is only just above the freezing point of fresh water and colder than most refrigerators.

Like all its relatives, the pelican flounder has both its eyes on the same side of the head. The eyeballs are larger than the thickness of the head and stand on the surface, ordinarily. When they must be



Pelican Flounder

Strange deep-sea fish that stores its prey in a pouch. A reproduction now on exhibition in Albert W. Harris Hall (Hall 18).

drawn in they project into the mouth, which spreads a little to give room for them.

A celluloid reproduction of one of these strange fishes has been made by Staff Taxidermist A. G. Rueckert and is now on exhibition in Albert W. Harris Hall (Hall 18).

UNIQUE RACING TROPHY

An ancient Chinese bronze vase, now on exhibition in Stanley Field Hall, was reproduced in solid gold and used as the trophy in the Hawthorne Gold Cup race of the Chicago Business Men's Racing Association which was run on October 8.

The original vase represents the art of the Han Dynasty, and was made about 1,800 years ago, according to Dr. Berthold Laufer, Curator of Anthropology, who at the request of the racing association selected the subject to be reproduced. It is a technical masterpiece of casting.

The use of a replica of this vase is a demonstration of the applicability of many of the objects in the anthropological collections for adaptation to modern arts and industries, either in reproductions or, by their suggestive values, in design.

Gifts to the Museum

Following is a list of some of the principal gifts received during the last month:

From B. Knoblock—5 ethnological and 2 archaeological specimens, Wisconsin, Missouri and Illinois; from R. Bensabott, Inc.—22 inscribed oracle bones, Shang dynasty (about 1500 B.C.), China; from Ralph A. Bond—an ipil board, Philippine Islands; from James Zetek—361 herbarium specimens, Canal zone; from Companhia Ford Industrial do Brazil—28 fiber plants, Brazil; from The Williamson Veneer Company—2 panels of Santa Maria veneer, Panama; from Herbert C. Walther—17 specimens of rare metals; from E. A. Mueller—174 fulgurites, Wisconsin; from The Stauffer Chemical Company—3 specimens of sulphur, Texas; from Western Borax Company, Ltd.—a specimen of kermite (borax ore), California; from Hobart M. Smith—15 lizards, Oklahoma, Texas and New Mexico; from G. F. Ryan and George E. Carey, Jr.—a seladang, French Indo-China; from Major Chapman Grant—21 frogs, Porto Rico; from Theron Wasson—a barbet skin, headwaters of Rio Napo, Ecuador; from Dr. Mary J. Guthrie—9 bats in alcohol, Missouri; from Cincinnati Society of Natural History—2 paratypes of salamander, North Carolina; from Thomas K. Birks—2 snakes, Wisconsin; from Mrs. W. P. Cronican—a fox snake, Illinois.

NOVEMBER GUIDE-LECTURE TOURS

Following is the schedule of conducted tours of the exhibits during November:

Week beginning November 2—Monday: 11 A.M., Eskimo Life, 3 P.M., Animals of Plains and Deserts; Tuesday: 11 A.M., Physical Geology, 3 P.M., Borneo and Sumatra; Wednesday: 11 A.M., Burial Customs, 3 P.M., Reptiles; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Animal Life in the Chicago Area, 3 P.M., Clothing of Primitive Peoples.

Week beginning November 9—Monday: 11 A.M., Giants of Long Ago, 3 P.M., Mound Builders; Tuesday: 11 A.M., Systematic Birds, 3 P.M., Weavers in Many Lands; Wednesday: 11 A.M., Chinese Exhibits, 3 P.M., Skeletons; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., American Indians, 3 P.M., Gems and Jewelry.

Week beginning November 16—Monday: 11 A.M., Pottery, 3 P.M., Fishes, Past and Present; Tuesday: 11 A.M., Animal Families, 3 P.M., Story of Early Man; Wednesday: 11 A.M., Egypt, 3 P.M., Trees and Wood Products; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Rodents, 3 P.M., Wood and Stone Carvings.

Week beginning November 23—Monday: 11 A.M., The Panda and Its Relatives, 3 P.M., Weapons and Armor; Tuesday: 11 A.M., Game Birds, 3 P.M., The Art of the Hopi and Navaho Tribes; Wednesday: 11 A.M., Roman Exhibits, 3 P.M., Prehistoric Life; Thursday: Thanksgiving holiday—no tours; Friday: 11 A.M., Marine Life, 3 P.M., Moon and Meteorites; Monday, November 30: 11 A.M., Homes in Many Lands, 3 P.M., Jade Exhibits.

Persons wishing to participate should apply at North Entrance. Tours are free and no gratuities are to be proffered. A new schedule will appear each month in FIELD MUSEUM NEWS. Guide-lecturers' services for special tours by parties of ten or more are available free of charge by arrangement with the Director a week in advance.

NEW MEMBERS

The following persons were elected to membership in Field Museum during the period from September 18 to October 15:

Associate Members

Mrs. J. Ogden Armour, Mrs. James E. Baum, William F. Bode, Miss Mary Brenza, Mitchell D. Follansbee, Miss Anne C. Hemple, Ross O. Hinkle, L. T. McMeney, Mrs. Francis C. Sherman, Sr., Mrs. Charles W. Ware.

Sustaining Members

Harry F. Vories, Jr.

Annual Members

Arch W. Anderson, H. A. Baker, Mrs. William F. Brown, Edmund Burke, Mrs. Gerald M. Butler, Mrs. Glen C. Carnahan, Dr. James T. Case, Mrs. Edward S. Clark, Eugene Feuchtinger, Mrs. Carl A. Hedblom, Mrs. Robert G. Hunt, Mrs. Grace L. Knautz, Henry J. Lalley, Mrs. James P. McManus, Asher Moment, George S. Monk, Clarence Morgan, James F. Oates, F. J. Pearson, Conrad E. Ronneberg, Charles W. Spooner, Miss Emily Staples, Dr. Yorke B. Sutch, Miss Pearl Torpe, William P. White, Mrs. Morris K. Wilson, Mrs. Leander L. Winters.

MEMBERSHIP IN FIELD MUSEUM

Field Museum has several classes of Members. Benefactors give or devise \$100,000 or more. Contributors give or devise \$1,000 to \$100,000. Life Members give \$500. Non-Resident (Life) and Associate Members pay \$100. Non-Resident Associate Members pay \$50. All the above classes are exempt from dues. Sustaining Members contribute \$25 annually. After six years they become Associate Members. Annual Members contribute \$10 annually. Other memberships are Corporate, Honorary, Patron, and Corresponding, additions under these classifications being made by special action of the Board of Trustees.

Each Member, in all classes, is entitled to free admission to the Museum for himself, his family and house guests, and to two reserved seats for Museum lectures provided for Members. Subscription to FIELD MUSEUM NEWS is included with all memberships. The courtesies of every museum of note in the United States and Canada are extended to all Members of Field Museum. A Member may give his personal card to non-residents of Chicago, upon presentation of which they will be admitted to the Museum without charge. Further information about memberships will be sent on request.

Field Museum News

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No. 12

NEW HALL OF CHINESE JADES IS OPENED; COLLECTION OF 1,200 DISPLAYED

One of the world's finest and most comprehensive collections of Chinese jades, valued at several hundred thousand dollars, and comprising more than 1,200 objects carved in a myriad variety of forms, was placed on exhibition at Field Museum with the opening last month of a new hall (Hall 30 on the second floor) devoted entirely to jades. The jades range from ancient pieces of the archaic period which began at an unknown time roughly estimated at 2000 B.C., down to the end of the eighteenth century—a span of nearly 4,000 years in the development of one of the most important of the fine arts of China.

In connection with the wealth and treasures of the Orient one naturally thinks first of all of King Solomon, and remembers Christ's saying, "Consider the lilies of the field, how they grow; they toil not, neither do they spin; yet I say unto you, that even Solomon in all his glory was not arrayed like one of these." It may now be assumed also that Solomon never beheld and never owned a single piece of jade, although he was a contemporary of the Chou dynasty when the carving of jade was a highly developed art in China, and when the Chinese sovereigns, as high priests of the nation, performed a function strikingly similar to that of the High Priest of Jerusalem. Like the latter, the ruler of the old Chinese empire had received his sacred mandate from Heaven, the supreme deity of the universe, and by his command ruled as the Son of Heaven.

The emperor was responsible to Heaven for his conduct and actions, being the mediator between Heaven and his nation. His virtues resulted in prosperity, his evil manners caused distress and calamities in the empire. The sovereign was believed to be able to commune and consult with Heaven through the medium of a perforated disk of jade; for this stone was endowed with supernatural qualities, supposed to be engendered by solar light and capable of transmitting messages to transcendental powers. When the great Emperor K'ang-hi in 1688 conferred a posthumous honor on his deceased grandmother and had a document to this effect carved on slabs of jade (shown in the Museum's jade collection), he was actuated by the belief that his ancestress in heaven would actually take notice of this encomium.

Jade was to the Chinese the most precious substance produced by nature, and the favorite material for placing in graves. It was believed to preserve the body and to aid in its resurrection. Many of the

archaic pieces (which are well represented in the Museum collection) are carved from a kind of jade no longer obtainable, as the supply was scarce and soon became exhausted. Owing to long burial and chemical action of the soil, most ancient jades have undergone alterations in composition and color. In many instances these color changes have enhanced the beauty of the objects.

The popular saying that dead men tell no tales is a fallacy. Dead men do tell tales. Every detective knows it, and every

jade was a material of particular and superior virtues, however, it was set apart in a category of its own and was used exclusively for ceremonial and religious purposes. A stone chisel served for daily use, while a jade chisel was endowed with magical properties that would bring luck to its owner, who carefully kept it during his lifetime and had it buried with him. Axes, hammers, knives, daggers, and swords were likewise reproduced in the precious material and functioned in the grave as dispensers of

light, demon-killers and dispellers of nefarious influences. Large swords and knives were emblems of sovereign power and also played a part in religious rites. Examples of all these types of jade objects are included in the collection at Field Museum.

In ancient times it was customary to send to the funeral of a deceased relative or friend an ornament of jade which was placed on the tongue of the corpse. This was the last tribute paid by the mourner to his departed friend. These ornaments were usually carved in the shape of a cicada. In the same manner as the larva creeps into the ground and rises again in the state of the pupa, until finally the cicada emerges, so the dead were believed to awaken to a new life. The cicada amulet therefore was an emblem of resurrection, an expression of faith and hope. The mourner's last

gift signified that he desired to hear again some day the voice of his dear one. Many such amulets are exhibited in the jade hall.

Various novel uses of jade are illustrated in the Museum collection. The ancient Chinese notion of the shape of the earth, flat and square outside, and rounded in the interior, is illustrated by many emblems of the earth deity carved from jade in that shape. Of interest is a pair of sandals made of jade, and worn by ancient sovereigns during the imperial sacrifice to the deity of heaven. Jade handles for walking sticks, in the shape of pigeons, are included in the collection. The pigeon was believed to have special powers for digesting food, and gifts of these sticks to old men implied wishes of continued good health.

Many objects have historic interest. There is an imperial seal of jade, weighing six pounds, which was conferred upon the Empress Jui, consort of Emperor Kia-k'ing of the Manchu dynasty on February 12, 1796, when she received her first official appointment as empress of China.

Among pieces outstanding in novelty are jade chopsticks to please the vanity of an



White Jade Incense Burner

Carved all over in open work comparable with most exquisite lace. Ming period (fifteenth-sixteenth century), China. About one-third actual size.

archaeologist who has learned to profit from the detective's methods knows it as well. The dead man tells us a vivid tale through the testimony of the objects interred with him in his grave. The jades unearthed from Chinese tombs are not dead and dumb stones, but speak an eloquent language to him who is eager to listen with sympathy to their voices. They reveal to us amazing stories, the earliest mythological concepts, man's intimate associations with the great cosmic powers, his love of nature, the content and meaning of his worship, his family bonds, his joys and sorrows, his yearning for immortal life, his constant solicitude about the hereafter. They are hymns to nature and the creator. The interpretation of the significance of all the manifold symbolism connected with these jades, their peculiar forms, and colors, is the result of many years of hard study and research, and the 2,000 labels of the eight cases in the Museum's jade hall offer a liberal education in Chinese art, religious thought, and symbolism.

Jade implements were fashioned as early as the neolithic age of China, and at first were on a par with common stone implements. When the belief gained ground that

(Continued on page 4)

Field Museum of Natural History

Founded by Marshall Field, 1893

Roosevelt Road and Lake Michigan, Chicago

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FIELD MUSEUM NEWS

STEPHEN C. SIMMS, Director of the Museum..... Editor

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H. B. HARTE Managing Editor

Field Museum is open every day of the year during the hours indicated below:

November, December, January	9 A.M. to 4:30 P.M.
February, March, April, October	9 A.M. to 5:00 P.M.
May, June, July, August, September	9 A.M. to 6:00 P.M.

Admission is free to Members on all days. Other adults are admitted free on Thursdays, Saturdays and Sundays; non-members pay 25 cents on other days. Children are admitted free on all days. Students and faculty members of educational institutions are admitted free any day upon presentation of credentials.

The Library of the Museum, containing some 92,000 volumes on natural history subjects, is open for reference daily except Sunday.

Traveling exhibits are circulated in the schools of Chicago by the Museum's Department of the N. W. Harris Public School Extension.

Lectures for school classrooms and assemblies, and special entertainments and lecture tours for children at the Museum, are provided by the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures.

Announcements of courses of free illustrated lectures on science and travel for the public, and special lectures for Members of the Museum, will appear in FIELD MUSEUM NEWS.

There is a cafeteria in the Museum where luncheon is served for visitors. Other rooms are provided for those bringing their lunches.

Members are requested to inform the Museum promptly of changes of address.

FIELD MUSEUM MEMBERSHIPS AS CHRISTMAS GIFTS

Probably every Member of Field Museum has a friend who is the type of person who ought to be a fellow Member. The opportunity is now presented to bring these people into the membership, and at the same time solve a number of Christmas gift problems.

Give your friends Field Museum Memberships as Christmas gifts.

Enclosed with this issue of FIELD MUSEUM NEWS will be found a folder describing the Museum's Christmas gift membership plan, a handy application form for your convenience, and a postage-prepaid envelope for mailing application to the Museum. All you have to do is write the name and address of a friend, your own name and address, and a small check, and your Christmas shopping list is shortened by one item. All other details will be taken care of for you by the Museum, which will send an attractive Christmas card notifying any friends you thus favor that, through your generosity, they have been elected to membership in

this institution. It will also inform them as to what their privileges are as Members.

Additional Christmas Membership application forms may be obtained by telephoning or writing the Museum. In order that the Museum may have ample time to deliver notification cards to the recipients of your gifts by Christmas Day, it is advisable to send in applications before December 18.

Museum Memberships as Christmas gifts have the following advantages:

They save you thought and physical effort required in making selections of gifts, hunting for them in the shops, and preparing packages.

They are exceptionally appropriate gifts for men or women of culture.

Through the monthly issues of FIELD MUSEUM NEWS, invitations to special lectures, and other features of Museum membership, they serve to remind the recipient of your thoughtfulness many times throughout the year, instead of only during the Christmas holidays.

Both giver and receiver will derive satisfaction from being thus identified with the body of citizens who are supporting an important institution performing great public educational services, and promoting scientific advancement.

The cost is reasonable, various classes of membership being available, beginning with the \$10 Annual Membership.

DEATH OF RICHARD T. CRANE, JR. MOURNED AT MUSEUM

Field Museum suffered a great loss in the recent death of Richard T. Crane, Jr., one of its Trustees. Mr. Crane had rendered the institution incalculable services both as a Trustee and as a Benefactor. He was the donor of munificent gifts totaling more than \$100,000 in value.

What Mr. Crane stood for, and what he represented to the Museum, is perhaps best told in the following appreciative resolution adopted by his fellow Trustees following his sudden death:

"With profound sorrow and a keenly felt sense of great loss, the Board of Trustees of Field Museum of Natural History records the death, on November 7, 1931, of Richard T. Crane, Jr., long one of the most active of its members. Great homage is due this man who in the fifty-eight years of his life had become an outstanding leader in both industrial and civic affairs. Endowed with capacities which made him a brilliant success, he was well-known also for his sympathetic interest in the welfare of all who were engaged in the enterprises he directed, and for his contributions to the welfare of the community as a whole. There was a charm, a gentleness, and simplicity about him, and a complete lack of affectation, which endeared him to all with whom he came in contact. The deepest loyalty was another quality with which he was imbued, and this was constantly manifest in his services to Field Museum, as in his other activities.

"Mr. Crane served as a Trustee of Field Museum during two periods: from 1908 to 1912, and again from 1921 until his death.

His fellow members of the Board had a high regard for his counsel, and he was ever ready to give freely of his time and energy to assist in the best solution of all problems presented before the Board. That the Museum was at all times close to his heart is evidenced not only by his labors for it, but by his many generous gifts to the institution, in consequence of which his name will be perpetuated among the Benefactors of the Museum. He had also been elected an Honorary Member of the Museum, in recognition of other eminent services.

"Therefore, be it resolved that this expression of our admiration and esteem for Mr. Crane, and our grief at his passing from our midst, be permanently preserved on the records of the Board.

"And be it further resolved that our deep sympathy be conveyed to the members of his family in their bereavement, and that a copy of this resolution be sent to his widow."

Collection from C. Suydam Cutting

Approximately 350 birds and 80 mammal specimens, collected in Sikkim, India, on the Tibetan border, have arrived at Field Museum, representing the final results of the expedition conducted there for the Museum by C. Suydam Cutting of New York. From a scientist's standpoint this shipment contains the choicest material received because it includes numerous birds and animals either previously unknown or very rare, according to Dr. Wilfred H. Osgood, Curator of Zoology. Many of the animals were collected in the upper heights of the Himalayas, at altitudes exceeding 16,000 feet.

Bronzes Presented by President Field

Twenty-three bronze figures, busts, and heads of peoples of various races, most of them reduced from life-size, valued at more than \$12,000, were presented to the Museum last month by Stanley Field, President of the institution. The sculptures were made by Miss Malvina Hoffman in connection with her work of preparing exhibits for Chauncey Keep Memorial Hall (the hall of the races of mankind), which is now under way.

Harris Extension Cases Displayed

Twenty traveling exhibition cases of the type circulated in the schools of Chicago by the N. W. Harris Public School Extension of Field Museum are on display in a special booth at the International Live Stock Exposition held in the Union Stock Yards (November 28-December 5). Thousands of out-of-town people here for the exposition are expected to visit the Museum during their stay in Chicago.

BEQUESTS AND ENDOWMENTS

Bequests to Field Museum of Natural History may be made in securities, money, books or collections. They may, if desired, take the form of a memorial to a person or cause, named by the giver. For those desiring to make bequests, the following form is suggested:

FORM OF BEQUEST

I do hereby give and bequeath to Field Museum of Natural History of the City of Chicago, State of Illinois,

Cash contributions made within the taxable year to Field Museum not exceeding 15 per cent of the taxpayer's net income are allowable as deductions in computing net income under Article 251 of Regulation 69 relating to the income tax under the Revenue Act of 1926.

Endowments may be made to the Museum with the provision that an annuity be paid to the patron for life. These annuities are tax-free and are guaranteed against fluctuation in amount.



Richard T. Crane, Jr.

THE PROJECTED HALL OF THE RACES OF MANKIND (CHAUNCEY KEEP MEMORIAL HALL)

By BERTHOLD LAUFER

Curator, Department of Anthropology

In 1935 or thereabout a convention of impressive magnitude is to take place in Field Museum. On this occasion the most perfect representatives of all living races will be assembled here. In order to facilitate study of their characteristic features and preserve them permanently, they will have been transformed from life into bronze, and will thus be presented to the public as durable monuments.

The hall selected for this unique convention is named Chauncey Keep Memorial Hall in honor of the late Chauncey Keep, a highly esteemed member of the Museum's Board of Trustees from 1915 until his death on August 12, 1929. A legacy of \$50,000 left to the Museum by Mr. Keep will be applied to the cost of the exhibits in this hall. Added to this is a gift of \$18,000 from Mrs. Charles Schweppe for the creation of a large central group in the hall. The balance of the cost of this hall, exceeding \$100,000, is generously contributed by Marshall Field, whose continued interest in the work of the institution has been manifested in so many ways. Mr. Field's gift for this project is made in token of his affection and esteem for his friend, Mr. Keep.

The center of Chauncey Keep Memorial Hall will be occupied by a monumental bronze group—a triad representing in life size a white, a yellow, and a black man grouped in a circle. The group is surmounted by a globe, upon which are outlined the five continents as the habitat of the human species. The object of this monument is to emphasize the unity of mankind—man as a well-defined, fundamentally uniform species, which has spread all over the surface of the earth and conquered almost every habitable spot. While to some degree this triumvirate is symbolic, each figure in it is an outstanding type embodying the highest qualities of his race and worthy of minute study. This is the group presented by Mrs. Schweppe.

Radiating from this imposing central monument will be an avenue of primitive man, lined with twenty-seven life-size bronze figures of American Indians, Eskimos, Malaysians, Africans, and Asiatics. These will not be standing at attention, but each will appear in lively action befitting the behavior of his particular group. To cite a few examples: the primitive Vedda of Ceylon is to be equipped with a bow, the native of Australia will be shown in the act of throwing a spear, the Bushman of the Kalahari steppe will display his prowess in archery while his spouse and offspring admiringly look on. A Solomon Islander will be seen about to climb a coconut palm, while natives of Java will be setting cocks to fight. Daboa of the African Sara tribe, in graceful movements of her slender body, will perform a coquettish dance, while an old Negro pounds an accompaniment on a drum. All these figures and groups, modeled from live subjects after years of painstaking study, will be absolutely correct in every detail of their anatomical structure and their accoutrements. Besides the life-size figures there will be numerous bronze busts and heads to illustrate the numerous variations of human types within the principal races.

The creator of all these bronzes is Miss Malvina Hoffman, an artist and sculptor of extraordinary ability and international reputation. Miss Hoffman studied painting under John Alexander, and sculpture under Herbert Adams and Gutzon Borglum of New York, as well as under the great master, Auguste Rodin of Paris. She has received numerous prizes and gold medals at exhibitions in Paris, New York, Philadelphia, and San Francisco, and many of her sculptures are on permanent exhibition in the Metropolitan Museum of Art in New York, American Museum of Natural History in New York, Academy of Rome, Art Museum of Stockholm, and Luxembourg Musée of Paris. Field Museum, however, will be the repository not merely of the largest number

of her works, but of her finest and maturest creations. All her statuary is dramatically conceived and intense with life and motion. It is far removed from the ordinary plaster busts of racial types. Miss Hoffman is at present journeying in the Far East, stopping in Hawaii, Japan, China, Indo-China, Java, and India, to complete her task for the Museum.

The contents of Chauncey Keep Memorial Hall will include other material in addition to the work of Miss Hoffman. While her sculptures will dominate the hall, giving a clear and vivid impression of the appearance of man, special exhibits are required to illustrate many physical characteristics of mankind in greater detail. Exhibits of this class will include complete normal human skeletons, both male and female; a comparative series of skeletons of the principal races; and a human skeleton in comparison with the anthropoid apes, man's closest relatives in the animal world. Another exhibit will illustrate the capacity of the cranium, the size and characteristics of the brain, and its variations in apes and humans. Instructive charts will give information on the extensive variation of skin and eye color, and hair samples will demonstrate the structure, color, and differentiation of hair in the various races. Bodily proportions, as exemplified by the two extremes of giants and dwarfs, will receive due attention, as will bodily disfigurements such as artificial deformation and molding of the head.

Another section of this hall will be devoted to demography—charts and tables of vital statistics conveying information on birth and death rates, frequency of plural births, infant mortality, relative fertility of races, effects of disease and epidemics on the population, growth of population, longevity, effects of intermarriage and heredity, and other problems of general interest. A special feature will be made of the racial problems of the United States, with particular reference to our Negro population.

EXPEDITION AT KISH RESUMES OPERATIONS

The ninth season of excavations on the site of the ancient city of Kish by the Field Museum-Oxford University Joint Expedition to Mesopotamia has begun. Professor Stephen Langdon of Oxford continues as director of the expedition, but he will remain in England where he will conduct research upon the antiquities unearthed at Kish, as they are shipped to him. L. C. Watelin, in charge of operations in the field for several years past, will again head the party at work on the excavations.

Kish is believed to be the seat of the world's earliest civilization. To date the expedition has uncovered temples and palaces identified with Sargon I and Nebuchadnezzar; has found traces of the great flood recorded in the Bible; and has collected a vast amount of pottery, inscribed tablets, gold, silver and jewelry, remains of ancient chariots, and skeletal remains of human beings and domestic animals. As a result of studies of these things made by Professor Langdon much has been learned of the history and cultures of Babylonia back to about 5,500 years ago. Further revelations, as well as additional treasures for the Museum, are expected to result from the continuance of this work.

The expedition is financed on behalf of Field Museum by Marshall Field, and on behalf of Oxford by Herbert Weld and other British philanthropists.

Museum Luncheon for 600 Children

Six hundred children, members of the Four-H Clubs, an organization for farm youth, will attend a luncheon in the children's dining room at Field Museum on December 3, following a tour of the Museum's exhibition halls. The tour and luncheon have been arranged by G. H. Noble, Chairman of the National Committee for Boys' and Girls' Club Work. The children will be conducted on the tour by guide-lecturers of the staff of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures. They are coming to Chicago to attend the International Live Stock Exposition (November 28-December 5), and several other groups of children are also expected at the Museum during the exposition week.

New Exhibit of Geese

An exhibit of representative North American geese and swans has been installed in one of the bird halls at Field Museum. Fourteen species of geese and two of swans are shown. Those which have at any time been recorded in Illinois are marked with red stars, and of these there are nine.

Among the species shown are Canada goose, Richardson's goose, brant, black brant, Ross's goose, greater snow goose, blue goose, white fronted goose, pink footed goose, emperor goose, trumpeter swan, and whistling swan. The birds were mounted by Taxidermist Ashley Hine of the Museum staff.

CAREY-RYAN EXPEDITION SENDS SPECIMENS

Excellent specimens of the seladang (gaur ox or Indian bison) and of Indian water buffalo have been received at Field Museum, as a result of the Carey-Ryan Expedition to Indo-China, which recently returned. This expedition was financed by G. F. Ryan of Lutherville, Maryland, and was led by George E. Carey, Jr., of Baltimore, jointly with Mr. Ryan.

The Museum has received also collections of tree trunks, bark, leaves and other such materials from the forests in which these animals live, which will be used to construct scenic reproductions of natural backgrounds for the groups of animals when they are mounted. The exhibits will form part of the series of Asiatic mammal habitat groups in William V. Kelley Hall.

Messrs. Ryan and Carey had many adventures, the most thrilling of which was when a man-eating tiger attacked their hunting camp one night. The tiger dragged a coolie who belonged to the hunters' caravan from the camp, and later the unfortunate native's dead body was found. During the night the tiger revisited the camp several times, and, although the hunters opened fire with their rifles each time, the animal escaped.

A 400-pound lodestone, with unusually strong magnetism, is exhibited in the Department of Geology.

TWO PROGRAMS FOR CHILDREN —RAYMOND FOUNDATION

A special additional program, as well as the final entertainment of the regular autumn series for children, will be given at the Museum during December. Both programs are provided by the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures.

The final program in the autumn series will be given on Saturday morning, December 5. Four films will be shown: "Winter Birds," "Snowflakes," "Mr. Groundhog Wakes Up," and "Skating in the Spreewald."

The special program will be given on Saturday morning, December 19. Two films chosen for their extraordinary interest and appeal have been chosen: "I Am from Siam," and "The Beaver People."

Both programs will be given twice, at 10 A.M. and 11 A.M., in the James Simpson Theatre of the Museum. Children from all parts of Chicago and suburbs are invited to attend.

17,000 PLANTS PHOTOGRAPHED

The joint project of the Rockefeller Foundation and Field Museum of Natural History to provide for botanists of the United States a complete reference collection of photographs of historic specimens of tropical plants of the western hemisphere has resulted to date in an assemblage of more than 17,000 such photographs.

J. Francis Macbride, Assistant Curator of Taxonomy, is still in Europe, where he has been since 1929, supervising the work of making these pictures. The original type specimens of famous botanists sent from Europe in America's early days, whose collections are now in European museums and herbaria, are being photographed. These include the first collections of plants made in America, chiefly by botanists sent by Spanish kings to investigate the resources of their then new territories. This work reached its climax about 1785 when Charles III of Spain ordered a scientific survey of all Spanish dominions in America.

The specimens being photographed include those from which scientists obtained their earliest accurate knowledge of the important plants which yield quinine, cocaine, rubber and other valuable products of commerce. Many of the plants photographed have never before been represented in botanical collections in the United States. The present project will give American botanists and students access to these without the former necessity of a trip to Europe. Copies of the photographs made by Field Museum and the Rockefeller Foundation will be available at cost to institutions and individuals all over the world.

HALL OF JADES OPENED

(Continued from page 1)

epicure, several sets of chimes made from jade, a pair of jade flutes of full size carved in imitation of bamboo, and intricately designed jade trees of chrysanthemums and pomegranates. There is a "longevity mountain," a landscape carved from a solid block of jade, with clusters of fungi representing immortality, and two cranes which were symbols of longevity. Large pieces in the collection include a jade incense burner delicately carved in an open work floral design as intricate and exquisite as fine lace; a bell of jade; a square green jade box used by officials of the Manchu dynasty for keeping seals; and "scepters of good

augury" which were considered to be magical wands.

Scores of figures of animals and birds carved from jade are shown, some in conventionalized and some in naturalistic art forms. Many kinds of jewelry, and many charms are included. Two lizards carved on a loving cup are emblematic of marital love.

In addition to jade, one case in the new hall contains Chinese art objects of rock-crystal, quartz, agate, tourmaline, turquois, amber and ancient glass.



Green Jade Monster

Used as an offering in a grave. Han period (about first century A.D.), China. About one-third actual size.

The foundation of the collection displayed in this hall was laid by the Blackstone Expedition to China, 1908-10, under the leadership of the Curator of Anthropology. Many additions were made during a subsequent expedition in 1923, known as the Marshall Field Expedition to China, also led by the Curator. In 1927 the Bahr collection of Chinese jades was acquired by the Museum with a fund contributed jointly by Mrs. George T. Smith, Mrs. John J. Borland, Miss Kate S. Buckingham, Martin A. Ryerson, Julius Rosenwald, Otto C. Doering, and Martin C. Schwab. Other objects were presented by individuals, chiefly John J. Abbott, American Friends of China, R. Bensabott, Inc., the late Richard T. Crane, Jr., Dr. I. W. Drummond, Fritz von Frantzius (deceased), Charles B. Goodspeed, H. N. Higinbotham (deceased), Linus Long, J. A. L. Moeller, Mrs. William H. Moore and Mrs. George T. Smith.

—BERTHOLD LAUFER

Many metals known to few people, with collections of objects illustrating their uses, are on exhibition in the Department of Geology.

Gifts to the Museum

Following is a list of some of the principal gifts received during the last month:

From Abbé Henri Breuil—41 prehistoric flint implements, France; from Stanley Field—23 figures, busts and heads of types of various races; from Harper Kelley—parts of a Magdalenian skeleton, France; from Dr. G. von Bonin—an ink stone, China; from Edmond I. Woodbury—10 woolen articles, Peru Indians; from Professor L. H. Bailey—250 herbarium specimens, Canal Zone; from C. H. Lankester—81 herbarium specimens, Costa Rica; from T. R. Williams—8 mahogany panels, Africa, Cuba, India and Mexico; from James Zetek—317 herbarium specimens, Barro Colorado Island and Canal Zone; from John Bigane and Sons—3 specimens fossil plants, Pennsylvania; from Walter Anthony Rancez—4 photographs of pillars produced by erosion, California; from S. R. Sweet—7 specimens skulls and jaws of fossil vertebrates, Nebraska; from E. A. Mueller—127 specimens fulgurites, Michigan; from Frank von Drasek—13 specimens acicular apatite and brookite, Arkansas; from Mrs. William H. Hess—wreaver-bird's nest, India; from D. C. Lowrie—345 salamanders, Tennessee; from Count Degenhard Wurmbrand—a mounted birdskin, Austria; from C. Irving Wright—a large tarpon, Florida; from Thomas Abbott—35 crickets, China.

DECEMBER GUIDE-LECTURE TOURS

Following is the schedule of conducted tours of the exhibits during December:

Week beginning November 30—Monday: 11 A.M., Homes in Many Lands, 3 P.M., Jade Exhibits; Tuesday: 11 A.M., Archaeology of South America, 3 P.M., Interesting Sea Life; Wednesday: 11 A.M., Fibers and Their Uses, 3 P.M., Mad Through the Ages; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Uses of Bark, Sap and Resin, 3 P.M., Life in the Far North.

Week beginning December 7—Monday: 11 A.M., Fishes, Past and Present, 3 P.M., Egypt and Kish; Tuesday: 11 A.M., Birds at Home, 3 P.M., Mexico; Wednesday: 11 A.M., Mummies, 3 P.M., Beads and Their Uses; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Animal Habitat Groups, 3 P.M., Primitive Musical Instruments.

Week beginning December 14—Monday: 11 A.M., Roman Home Life, 3 P.M., The Horse Family; Tuesday: 11 A.M., Ivory and its Uses, 3 P.M., Industrial Models; Wednesday: 11 A.M., Fire-making and Household Utensils, 3 P.M., Chinese Exhibits; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: 11 A.M., Minerals of Economic Value, 3 P.M., Rare and Unusual Plants.

Week beginning December 21—Monday: 11 A.M., North American Archaeology, 3 P.M., Osteology; Tuesday: 11 A.M., Snakes and Their Relatives, 3 P.M., Philippine Exhibits; Wednesday: 11 A.M., The Art of Madagascar, 3 P.M., Looms and Textiles; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: Christmas Holiday—no tours.

Week beginning December 28—Monday: 11 A.M., African Animals, 3 P.M., Crystals and Gems; Tuesday: 11 A.M., Winter Birds, 3 P.M., Animal Life of the Past; Wednesday: 11 A.M., Jade Collections, 3 P.M., Woodland Indians; Thursday: 11 A.M. and 3 P.M., General Tours; Friday: New Year's Holiday—no tours.

Persons wishing to participate should apply at North Entrance. Tours are free and no gratuities are to be proffered. A new schedule will appear each month in FIELD MUSEUM NEWS. Guide-lecturers' services for special tours by parties of ten or more are available free of charge by arrangement with the Director a week in advance.

NEW MEMBERS

The following persons were elected to membership in Field Museum during the period from October 16 to November 15:

Associate Members

Mrs. Enos M. Barton, Beryl B. Collins, Mrs. Josiah Cratty, C. Colton Daughaday, Mrs. Rowland T. Goode, Charles E. Herrick, Mrs. Rosa V. Jennings, Mrs. Karl S. Lashley, Mrs. Frank W. Manegold, Rev. Herbert W. Prince, George A. Richardson.

Annual Members

Mrs. Otto C. Braese, Charles E. Carey, Professor Charles Joseph Chamberlain, Mrs. Frank P. Collins, John A. Ek, Davis Ewing, Joseph Godfrey, Jr., C. Groot, A. S. Hansen, Mrs. Charles J. Harpel, Florian John J. Hatstaedt, Mrs. Caroline H. Kohn, Florian Eugene Laramore, Mrs. Alex C. Lindgren, Harry H. Lobdell, Mrs. Leslie E. Lowry, Mrs. Isabel Mackworth, H. I. Markham, H. B. Mead, Miss Frances A. Mellon, Leonard E. Murphy, Mrs. Joseph K. Nelson, Miss Louise M. Purrucker, James T. Quinlan, Edward N. Roth, Mason Slade, Mrs. Olaf N. Tevander, Mrs. Siason Thompson, H. J. Wurzburg.

MEMBERSHIP IN FIELD MUSEUM

Field Museum has several classes of Members. Benefactors give or devise \$100,000 or more. Contributors give or devise \$1,000 to \$100,000. Life Members give \$500. Non-Resident (Life) and Associate Members pay \$100. Non-Resident Associate Members pay \$50. All the above classes are exempt from dues. Sustaining Members contribute \$25 annually. After six years they become Associate Members. Annual Members contribute \$10 annually. Other memberships are Corporate, Honorary, Patron, and Corresponding, additions under these classifications being made by special action of the Board of Trustees.

Each Member, in all classes, is entitled to free admission to the Museum for himself, his family and house guests, and to two reserved seats for Museum lectures provided for Members. Subscription to FIELD MUSEUM NEWS is included with all memberships. The courtesies of every museum of note in the United States and Canada are extended to all Members of Field Museum. A Member may give his personal card to non-residents of Chicago, upon presentation of which they will be admitted to the Museum without charge. Further information about memberships will be sent on request.