Field Museum News

Published Monthly by Field Museum of Natural History, Chicago

Vol. 10 JANUARY, 1939 No. 1

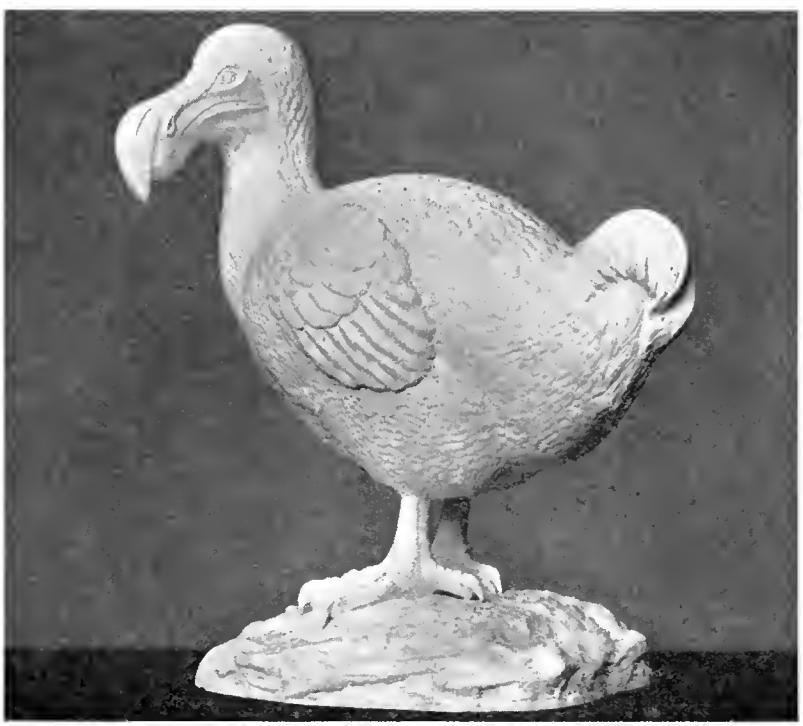
THE DODO, EXTINCT SINCE THE YEAR 1681, IS RESTORED IN LIFE-SIZE MODEL

By Rudyerd Boulton
Curator of Birds

Perhaps no bird is so universally known, by name at least, as the dodo, symbol to the modern world of obsolescence and grotesqueness. Few people, however, realize that the dodo is anything but fictitious, and fewer still know that there were two species of dodos, and also a dodo-like bird, the solitaire, which flourished in a limited way in the seventeenth century.

A restoration of the Mauritius dodo has been completed by the writer and recently was installed in Hall 21. Mr. Frank Gino has ably modeled and constructed the restoration, and Miss Laura Brey has executed drawings and paintings to supplement the exhibit.

There are no complete specimens of dodos in existence. In addition to one or two incomplete skeletons and miscellaneous bones in European museums, there is a head in the Copenhagen Museum, a foot in the British Museum, and a head and a foot in the Ashmolean Museum at Oxford. The reason for the lack of specimens is not hard to find since, during the seventeenth century and even the first part of the eighteenth, there were no museums as we know them today.



No Myth, as Many Have Thought, the Dodo Looked Like This

Restoration, now on exhibition in Hall 21, of the extinct bird whose name has become a part of our language as a symbol of obsolescence. In many ways the most famous bird that ever lived, no complete specimen of the dodo, or even of its skeleton, remains in existence.

At least two dodos are known to have been brought alive to Europe, and one of them was shown in London in 1638. The remnants of this bird, a head and a foot only, are undoubtedly those preserved at Oxford, having first been exhibited in Tradescant's Museum in 1656. The specimen has suffered grievously from the ravages of time, a misfortune that will scarcely happen to objects now preserved in present-day museums with their modern techniques.

Our knowledge of dodos comes to us in a most interesting way. Descriptions of their habits and appearance are contained in the journals of navigators who sailed the Indian Ocean in the sixteenth century. The most accurate information, however, comes through the school of Flemish painting that reached its peak in the early part of the seventeenth century. In order to judge the accuracy of this information, it is profitable to examine the life and career of the artist, Roelant Savery, who painted the dodo several times. He was born in Courtrai (now in Belgium), in 1576, of an artistic family, his father and brother having also been painters. The two boys were pupils of Hans Bol, genre painter, contemporary and colleague of Pieter Brueghel, the Elder, who was the most illustrious Flemish painter of the sixteenth century. In the early part of Roelant Savery's career he traveled in the Tyrol and painted for some time at the courts of Rodolphe II and of Mathias, emperors of the German Empire, in Prague and Vienna. In 1619 he returned to Holland and settled in Utrecht where, until his death in 1639, he painted landscapes with animals principally, and became one of the outstanding animal painters of the Flemish school. About 187 paintings and 90 drawings by Savery are extant, most of them in European collections.

At least eight paintings attributed to Savery contain figures of dodos, and it is highly probable that he had as a model one of the living specimens that was brought to Europe during his life time. The compositions in his paintings are fanciful, as may be judged from the titles of some of them: "Orpheus charming the beasts," "Fable of the stags and cattle," "Slaughter of the Turks," "The Garden of Eden," and "Noah's Ark."

The figures of the birds and animals, however, are far from fanciful. They are definitely literal, executed with the finesse and attention to detail that is so characteristic of the Flemish school. Among the birds that he painted are faithful figures of turkeys, pelicans, swans, ostriches, cassowaries, bitterns, herons, storks, crested cranes, peacocks, macaws, cockatoos and geese. In the small reproductions of Savery's paintings available for examination the smaller birds are naturally unidentifiable, but they undoubtedly could be identified in the originals. Several of his pencil drawings of monkeys would do credit to our best modern animal portrayors from the point of view of literalness and accuracy, while Savery's figures of domestic animals are the equal of Bonheur's.

Roelant Savery, then, was an artist with an accurate, meticulous and careful brush, and it is from his data that the restoration of the dodo in Field Museum has been made. To the Ryerson Library of the Art Institute of Chicago, and especially to Mr. Daniel Catton Rich, Director of Fine Arts, and to Miss Dorothy Odenheimer, I am deeply indebted for assistance in examining data relating to Savery's work.

The dodos belonged to an extinct family of birds related to the pigeons, constituting with them the order Columbiformes. There were two genera—the dodos proper and the solitaires. They were all large birds, about the size of turkeys, and they were found only on three of the Mascarene Islands, southeast of Madagascar. The gray dodo lived on Mauritius, the white dodo on Réunion (or Bourbon as it is sometimes called), and the solitaire, which was

more slenderly built, inhabited Rodriguez. All three were flightless, their wings being no longer functional. Their ancestors, of course, were undoubtedly capable of flight. The date of their extinction was about 1681.

This group of birds illustrates perfectly the fact that insular isolation and freedom from predatory enemies bring about flightlessness through mutation pressure and the absence of the need for adaptation. Originally there were no predatory mammals in this group of islands, but pigs and monkeys were introduced by the early explorers. Within a hundred years the pigs and monkeys completely destroyed the dodos and their kin. This illustrates the danger of the promiscuous introduction of animals foreign to a natural environment.

There is an interesting contemporary account of dodos published in 1601, from the pen of the Dutch Admiral Neck, who wrested the island of Mauritius from the Portuguese. Another, that appeared in 1625, says: "There is a store of great fowle of the bignesse of a Turkie, very fat, and so short winged that they can not fly, being white, and in a manner tame; and so be all other fowles as having not been troubled nor feared with shot."

Of the Rodriguez solitaire, F. Legaut wrote in 1708: "They are taller than turkeys, the eye black and lively and the head without comb on cop (*sic*). They never fly, their wings are too little to support their bodies, they serve only to beat themselves and flutter when they call on one another. From March to September they are very fat and taste admirably well, especially while they are young; some of the males weigh 45 pounds. The females are wonderfully beautiful and no one feather is straggling from the other all over their bodies. The feathers on their craws are whiter there than the rest, which livelily represents the fine neck of a beautiful woman."

Distinguished Visitors

Among distinguished visitors recently welcomed at Field Museum are the Countess Gisèle de Diesbach, Attachée to the Louvre, Paris, as head of the lecture department; Mr. A. S. Arguelles, Director, Bureau of Science, Manila, Philippine Islands; Dr. Alexander Wetmore, Director, United States National Museum and Assistant Secretary of the Smithsonian Institution, Washington, D.C.; Dr. C. L. Lundell, of the Herbarium of the University of Michigan, Ann Arbor; Dr. Leon J. Cole, Professor of Zoology, University of Wisconsin, Madison; Mr. Stewart H. Perry, of Adrian, Michigan, an authority on meteorites; Mr. Bertrand Schultz, Assistant Director, Nebraska State Museum, Lincoln, and Dr. Gerald W. Prescott, Associate Professor in the department of botany, Albion College, Albion, Michigan, who is a well-known student of algae.

Economic Importance of Palms

In tropical countries, palms furnish many of the necessaries of life—food, clothing, construction material for dwellings, home furnishings, etc. An extensive display of palms and their economic products is to be seen in Hall 25.

George M. Pullman Hall (Hall 13) is entirely devoted to horned and hoofed animals from all parts of the world.

FIELD MUSEUM NEWS IN "NEW DRESS"

To provide better legibility, and to increase and improve its service to Members of the Museum, FIELD MUSEUM NEWS inaugurates with this issue a more easily read style of typographical "dress," and an increase in size to eight pages.

It is believed that all readers will welcome the increase by two "points," as printers' terminology expresses it, of the white space between the lines of type. This brings the NEWS into conformity with the typographical practice of most modern periodicals and newspapers.

The increase in the size of this monthly bulletin will make possible a more complete coverage of the activities of the Museum.

CLIFFORD C. GREGG, *Director*

RAINSTORM 250,000,000 YEARS AGO RECORDED IN FOSSIL IMPRINTS

By Sharat K. Roy
Curator of Geology

Fossil imprints of rain drops in sedimentary rocks (shale or sandstone) made by ordinary brief showers are not of uncommon occurrence, but such imprints resulting from rain accompanied by winds of high velocity are rare. A specimen believed to be of the latter type was found by the writer last summer while conducting the Sewell L. Avery Geological Expedition, and is now on exhibition among the physical geology collections in Clarence Buckingham Hall (Hall 35). It was found, about four and one-half miles northwest of Boulder, Colorado, in a fine-grained sandstone (Lyon's sandstone) of the Pennsylvanian age, estimated to be 250,000,000 years old.

Rain drops not accompanied by high winds produce circular pits margined by elevated rings, whereas, when driven by strong winds, they make elliptical pits with greater depths and higher margins on the sides toward which the rain drops and wind are directed. This is because the velocity of the wind drives the rain drops at a slant and with greater force. The Field Museum specimen shows these characteristic elliptical pits and rims elevated toward the direction of the wind, but the pits are not as deep nor are the rims as high as they might have been had they fallen on muddy sediments instead of on sands. Mud, due to its greater cohesiveness and because it can be more easily squeezed, retains the impressions formed on it better than sand, which tends to roll and spread.

Another interesting but somewhat perplexing feature of the Field Museum specimen is that it does not contain as numerous imprints as might be expected, indicating that the wind either blew hard and that the rainfall was light, or that the impressions were caused by hail stones, which are usually fewer numerically than rain drops, and which, when accompanied by high winds, also descend at a slant and produce similar elliptical pits and elevated rims. No convincing proof that the impressions were made by hail stones has yet been found, but the specimen is still being studied. If conclusive evidence that the impressions are hail imprints is found, they will be, to the knowledge of the writer, the first of their kind ever brought to light.

Preservation or "fossilization" of rain drop or hail imprints, like those of mud cracks and foot prints of animals, is simple in its nature if conditions are favorable. Rain drops falling on soft, but not fluid muddy or sandy flats, left exposed after the recession of floodwaters, leave their imprints. Exposure for a time to sun and air desiccates and hardens the flats and with them the imprints. These may later be covered with wind-blown sand or silt and once thus covered they are protected from destruction by further inundation of the mud flats. By continued deposition on the top, the imprints are buried deeper and deeper. Later, after the sediments have become hardened by pressure and cementation into rock, the beds of shale or sandstone, depending on the nature of the deposits, may be exposed by erosion, revealing a secret of the past as in this case.

Birds of Yucatan Presented by Melvin A. Traylor, Jr.

Representatives of more than eighty species of birds, native to the Yucatan peninsula of Mexico, have been presented to Field Museum by Mr. Melvin A. Traylor, Jr., of Chicago, who collected them last summer during a sojourn of several weeks in that region.

Mr. Traylor at present is also contributing his services to the Museum, as a volunteer worker in the Division of Birds, where he is engaged in classifying and studying the specimens in collaboration with Mr. Rudyerd Boulton, Curator of Birds. Included in the collection, which is notable for the varieties represented, are a number of important species of hawks which will make a valuable addition to the extensive series of birds of prey inaugurated by the late Mr. Leslie Wheeler, former Trustee of the Museum.

THINGS YOU MAY HAVE MISSED

Tibetan Prayer Wheels

The wheel goes round and round, and each time it spins represents a repetition of the prayer written on a paper attached to it—that is the idea of the Tibetans in designing the revolving aids to devotions known as prayer wheels, of which a collection is exhibited in Hall 32 (Case 3).

But not content even with the efficacy of this lazy way of saying prayers, they have developed a method which they believe increases its effectiveness a thousandfold. This is done by printing the prayer a thousand times on long strips of paper which resemble the tape used in stock market tickers, and inserting these strips into a hollow cylinder in the wheel. Then, each time it spins, the effect is regarded as equivalent to saying the prayer a thousand times. As most Lama priests and many laymen have these instruments, and keep them almost perpetually in motion during their waking hours, they are thus enabled to say their prayers millions of times in a day, a feat that would be physically impossible to the most fervent suppliant who confined himself to oral utterance.

Shown in the accompanying illustration is a typical prayer wheel included in the Field Museum collection. A further refinement of these hand-propelled wheels—one equipped with a tin propeller to be spun by the wind—is exemplified by one of the specimens in the exhibit. Temples and villages often have community prayer wheels, fifteen to twenty feet in diameter, operated by water power or windmills. The larger ones, because of their size, are usually called "prayer barrels."

Mr. Schuyler Cammann, who recently returned from Tibet, and visited Field Museum to study its Tibetan collections, adds the following information from his personal observation:

There are other Tibetan devices to aid praying. A traveler may walk clockwise around a *chorten* (a monument containing ashes of saints) or a *mani* pile (made of stone slabs carved with the prayer formula "*om mani padme hum*") and thus have prayers said for him. The extreme development of this seems to be the *mani* walls, sometimes three-quarters of a mile long with a *chorten* at each end, and with hundreds of flat rocks along the top of the wall, each carved with a prayer or charm words. In passing these to the left the prayers accrue to the traveler's benefit. But if he goes on the right of the wall, the prayers are "deducted." Tibetan horses automatically walk to the left of such walls. A combination of the wheel and wall method of praying is found in Likiang, in the borderland between Tibet and southwestern China. A monk walks clockwise around the wall of his temple, into which have been fixed leather-bound prayer wheels. As he walks along he brushes the wheels with his shoulder, setting them to spinning prayers for him.

"Mass Production" of Prayers

Tibetans believe they accomplish the effect of praying a thousand times with each twirl of one of these odd wheels containing a long strip of paper on which supplication may be printed a thousand times. Mr. C. Martin Wilbur, Curator of Chinese Archaeology and Ethnology, holds a complete instrument and a roll of prayer tape. On the table is a disassembled wheel showing opened cylinder into which roll is inserted. The metal weight attached to cylinder by a chain causes it to revolve when a swinging motion is applied to the handle by the person offering prayers.

FIELD WORK IN MISSISSIPPI

Collections of birds from the state of Mississippi are few and far between, and as a result the avifauna of that part of the South is relatively little known. This lack of knowledge is important because Mississippi lies in the area where birds typical of Florida and Texas come together.

Through the cordial co-operation of Mr. James Leavell and Mr. Carl Birdsall, of Chicago, Mr. Rudyerd Boulton, Curator of Birds, and Mr. Stephen S. Gregory, Jr., of Winnetka, had the opportunity recently of making a brief reconnaisance of the bird life of Jackson County.

In the space of five days, some sixty species were recorded. Specimens were obtained of about thirty species that will greatly aid in the solution of problems of speciation in birds of the Gulf Coast area. Among the interesting birds found were Brewer's black-birds which occurred in large flocks. It was not previously realized that this western species wintered so far to the east.

The field work, though brief, was so successful that hopes were aroused for a more extensive program of further work in this zoologically neglected area of the south. —R.B.

ANOTHER GIFT OF $4,000 RECEIVED FROM MRS. J. N. RAYMOND

To further the co-ordination of educational activities of Field Museum with those of the schools of Chicago, Mrs. James Nelson Raymond last month made an additional gift of $4,000 to the Museum. This, with previous gifts, makes a total of more than $63,000 received from Mrs. Raymond to supplement the $500,000 endowment she provided in 1925 wherewith the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures was established.

The year 1938 was one of the most active in the history of the Foundation, and the staff has been increased from five to six lecturers to meet the increasing demands for its services. Attendance at the free programs of motion pictures for children presented in the James Simpson Theatre has been larger, and several new types of activity have been carried on, such as the preparation of special exhibits, and the development of informational conferences for groups of children in connection with a new series of radio programs broadcast under the auspices of the Chicago Board of Education. More work has been undertaken also to supply natural history counsel for those in charge of children's camps, boys' and girls' clubs, and church organizations. Approximately 1,200 groups, aggregating tens of thousands of children, have been provided with guide services on visits to the Museum. Two new series of stories for children have been prepared, and thousands of copies distributed. Extension lecturers sent out into the schools have addressed approximately 185,000 children in their classrooms and assembly halls.

Museum Lecture Tours Attended by 1,585 "4-H" Boys and Girls

Groups of American farm boys and girls from forty-four states, Canada, and Hawaii, were brought to Field Museum during the International Live Stock Exposition held in Chicago in December. There were 1,585 of them—626 girls, and 959 boys—several hundred more than were in the groups of the previous year. They came under the auspices of the National Four-H Club Congress. The entire staff of the James Nelson and Anna Louise Raymond Foundation was assigned to conducting them on guide-lecture tours of Museum exhibits. In addition to these groups, the Museum received hundreds of other individual visitors, both adults and youths, in Chicago because of the live stock show.

Noteworthy fresco paintings of the first century A. D., excavated from the village of Boscoreale near Pompeii, are exhibited in Edward E. and Emma B. Ayer Hall (Hall 2).

MONUMENTS NOW MARK SITES WHERE FIELD MUSEUM EXPEDITION FOUND DINOSAURS

Through the interest of the Chamber of Commerce of Grand Junction, Colorado, as well as several service clubs of that city, and Mr. Al Look, an executive of the Grand Junction *Daily Sentinel*, bronze plaques have been placed on monuments constructed from native rock at sites where important fossil dinosaur skeletons were excavated by a Field Museum Expedition during 1900 and 1901.

Mr. Look, long an enthusiastic friend of the Museum's, who has assisted its expeditions in many ways, and has contributed many fine fossil specimens to the collections of the institution, reports that a movement is also under way to have these sites preserved as public parks under perpetual protection.

Both sites are on isolated buttes in the valley of the Colorado River, one west of Grand Junction, the other across the river from Fruita. The expedition commemorated was conducted under the leadership of Mr. Elmer S. Riggs, Curator of Paleontology. At one site the expedition obtained the huge skeleton of *Apatosaurus* (also known as *Brontosaurus*), one of the largest forms of dinosaur, which now occupies a central position in Ernest R. Graham Hall (Hall 38). At the second site the expedition unearthed a genus of dinosaur previously unknown to science, almost giraffe-like in form, to which was given the name *Brachiosaurus*. As the first example of this animal discovered, this is a type specimen, of importance to scientists as a criterion for comparison of any further specimens which may be found. Various parts of this creature are exhibited in a series of cases in Graham Hall.

DINOSAUR HUNTING IN COLORADO

By Elmer S. Riggs
Curator of Paleontology

(Mr. Riggs presents reminiscences of the Field Museum Expedition which has just been commemorated by the erection of monuments in Colorado.)

In the late '90's and early 1900's, the Rocky Mountain region was the scene of intense dinosaur hunting activity. Discovery in 1877 by Professor O. C. Marsh (Yale) of the first of these gigantic reptiles to be found on this continent, fired public imagination, and every museum wanted a dinosaur. The eastern slope of the Rockies and adjacent plains were scoured by a score of expeditions, and the search was carried northward into Canada.

The western slope of the mountains, however, was still virgin territory. The writer, after studying maps of western Colorado and eastern Utah, communicated with Dr. S. M. Bradbury, who was President of the Western Colorado Academy of Science. The dental office of this pioneer scientist had become a headquarters for amateur collectors. In answer to my letter, he described fossils that had been found in the Grand River Valley, and offered aid and information to any exploratory party Field Museum might send.

Early in June, 1900, Mr. H. W. Menke, my colleague at Field Museum, Victor Barnett, a young assistant, and I, arrived at Grand Junction and called at Dr. Bradbury's office where we examined his specimens. Among them were large vertebrae and a leg bone of a brownish color.

"They are from dinosaurs all right," said Menke as we recognized a caudal vertebra of *Diplodocus*.

Field Museum Expedition Commemorated

One of two monuments erected by citizens of Grand Junction, Colorado, to mark sites where paleontologists excavated huge dinosaur skeletons now on exhibition in Ernest R. Graham Hall. Efforts are being made to have the locality designated as a public park, to be preserved perpetually in its natural state.

"Can you take us to the place where these fossils came from?" I asked.

"Get saddle horses for tomorrow," was Dr. Bradbury's answer, "and I'll take you where you can see fossils in the rock."

Crossing the Grand River and the Gunnison next morning, we sighted the first "pay-dirt" in two buttes near the mouth of the No-thoroughfare Canyon. There Dr. Bradbury showed us fragments of dinosaur bones scattered on the surface and, higher up, pieces in undisturbed clay.

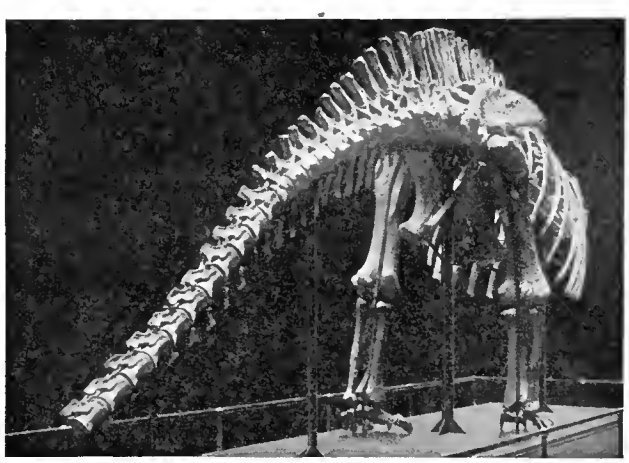
Convinced that the region would be fruitful, we chose a camp site. Riding back through the Gunnison Valley we saw a fossil turtle locked in a quartzite boulder that must have weighed a ton, and returned to town filled with anticipation of a successful "dig."

That evening wagons unloaded our tents and camp equipment at the Goat Ranch, near our site. We began our search for surface indications much like men in search of gold—we traced leads, dug dozens of prospecting holes, and then abandoned most of them as worthless.

Vertebrae, ribs, and the shoulder blade of a medium size dinosaur, *Camarasaurus*, were finally located and dug out. As weeks passed and summer heat came on, the sands drifted, and "dust-devils" danced down the valley. On the Fourth of July, Menke took his pick and canteen, and went prospecting alone. At dusk he returned, announcing he had found "the biggest thing yet!" It proved to be the skeleton of *Brachiosaurus*, indeed, and by far, "the largest known dinosaur."

The news spread to the town, and many parties were organized to visit our camp. Captain Lemon, Superintendent of the Indian School, ran an appraising eye over the huge pelvis lying upside down, and remarked, "He's broader across the back than a $200 mule!" At sunset people were still coming on horseback and bicycle. Members of our party stood by to explain the nature of the animal, and to make sure that no damage was done by the groups of enthusiastic sightseers.

The skeleton of *Brachiosaurus* was embedded in a layer of clay-sand cropping out of the side of a butte capped with a heavy ledge of Dakota sandstone. When found, it was being slowly washed out by rain and water from melting snows. The sacrum and one side of the pelvis were exposed. As the hard clay was removed from the upper side, a series of vertebrae were disclosed. A great femur, nearly seven feet long, lay crosswise underneath. Beside the vertebrae lay great flat bones shaped like ribs, some as much as eight inches in width, or nearly twice as wide as any ever seen before. As the rock was cleared away, and five, six, seven, eight and finally nine feet of these



Skeleton of Apatosaurus

This specimen, 32 feet long, provides an impressive representation of a prehistoric giant despite the lack of head and extremity of tail which gave it in life, according to estimates, a total length of 65 to 70 feet. The site where it was excavated in Colorado is one of those now marked by monuments.

great ribs were revealed, our amazement increased in proportion.

Further along appeared a great flat bone, broad at one end, and tapering away to a rounded shaft which was jagged and broken. More than four feet of it lay intact. It was too long for any dinosaur humerus known at that time from America. Soon we began picking up fragments scattered along the slope and fitting them together. Within half an hour, we had a second great bone quite as long as the thigh bone, but of different shape. Scarcely believing our senses, the conclusion was forced upon us that this bone was from an upper fore-leg—a humerus. That conclusion was revolutionary to our knowledge of dinosaurs. They had been known only as animals with short fore-legs and long hind legs. Here was a beast whose shoulders must have been carried much higher than the hips—a veritable giraffe in the dinosaur kingdom!

At the end of the summer of 1900, a further search for dinosaurs was made lower down in the Grand (now called *Colorado*) River Valley. Separate bones were seen in ledges of sandstone. A complete fore-leg, with shoulder blade, was found in a layer of soft sand. The big prize was a series of vertebrae with ribs attached, and pelvis and leg bones in position. These were found on a steep slope in a little gulch which enters the river near Fruita. The prospect was an excellent one, but there was no opportunity of doing more that year.

Next April our party returned to Grand Junction. Permission was secured to utilize an old cable, once used for operating a ferry-boat, which would give access to the railroad and supplies, and solve the problem of transporting the specimen. A large scow was constructed at Grand Junction, and camp equipment, including food supplies for men and horses, was loaded aboard. The boat, christened *Mary Ann*, was floated down the river and installed as a ferry-boat on the old cable.

The task of digging out this big skeleton involved quarrying methods. Rock was stripped off from above to reach the specimen. But as the series of vertebrae led further into the hill, the bank became too high for such operations, so a tunnel was driven in, and thus the animal was followed past its pelvis to the middle of its tail where the series of vertebrae was broken. Much blasting was required in this operation. The bones were taken out in blocks of matrix, bound up with plaster of paris and burlap, and thus made ready for shipment.

Packed in this way, the skeleton of *Apatosaurus* weighed ten tons. It was conveyed by wagon to the ferry and across the river. There, boxes were made and the bones were more securely packed for shipment to Field Museum.

Arrival at the Museum marked only the beginning of work on the skeleton. A year and a half was required for four men to chisel away the stone from the fossil bones and cement the pieces together. Another six months were needed to set the bones up on a steel frame as an assembled skeleton. It remains today one of the outstanding exhibits in Ernest R. Graham Hall (Hall 38).

The tablets now set up at the sites of the two principal excavations will be a constant reminder to residents of the region, and to travelers, that before the Rocky Mountains were uplifted, before the sagebrush and the sand existed, all this district was a vast swamp, inhabited by gigantic creatures totally different in habits and structure from any which live on the earth today.

Apatosaurus as It Is Believed to Have Appeared in Life

Restoration of the huge Colorado dinosaur, as conceived from skeletons and the results of scientific research. This large mural by Mr. Charles R. Knight is on exhibition in Ernest R. Graham Hall with twenty-seven other paintings of scenes showing prehistoric animals and plants beginning with the earliest known forms.

STAFF NOTES

Director Clifford C. Gregg was among the speakers on a program marking the opening of a new wing in the Museum of Science of the St. Paul Institute, December 1. His topic was "The Place of the Local Museum in Its Community." During his visit to St. Paul, Mr. Gregg was a guest speaker also at a luncheon of the Minnesota Club.

Mr. C. Martin Wilbur, Curator of Chinese Archaeology and Ethnology, last month visited museums in Kansas City, St. Louis, Milwaukee and Minneapolis to inspect and study important Oriental collections recently received in those cities.

Mr. Rudyerd Boulton, Field Museum's Curator of Birds, was recently honored by election as Treasurer of the American Ornithologists' Union, and Business Manager of its quarterly journal, *The Auk*.

Dr. Paul S. Martin, Chief Curator of Anthropology, presented a report on the 1938 excavations of the Field Museum Archaeological Expedition to Southwestern Colorado, before the meeting of the American Anthropological Association held in New York, December 27-31.

Dr. Henry Field, Curator of Physical Anthropology, gave an illustrated lecture on "Ancient and Modern Inhabitants of Southwestern Asia," before the joint meeting of the American Historical Association and the American Oriental Society held in Chicago, December 30.

Field Museum of Natural History

Founded by Marshall Field, 1893
Roosevelt Road and Field Drive, Chicago

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FIELD MUSEUM NEWS

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Field Museum is open every day of the year (except Christmas and New Year's Day) during the hours indicated below:

November, December, January, February	9 A.M. to 4 P.M.
March, April, September, October	9 A.M. to 5 P.M.
May, June, July, August	9 A.M. to 6 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 Museum's natural history Library is open for reference daily except Saturday afternoon and Sunday.

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

Lectures for schools, and special entertainments and 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 free illustrated lectures for the public, and special lectures for Members of the Museum, will appear in Field Museum News.

A cafeteria in the Museum serves visitors. Rooms are provided for those bringing their lunches.

Chicago Motor Coach Company No. 26 buses go direct to the Museum.

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

WILLIAM J. CHALMERS

July 10, 1852—December 10, 1938

Field Museum suffered an acute loss by the death, on December 10, of Mr. William J. Chalmers, who had ably served as a member of its Board of Trustees since 1894, shortly after the founding of the institution. Mr. Chalmers, noted in Chicago also for his many other civic interests and philanthropies, was in his eighty-sixth year.

Concurrently with his election as a Trustee of the Museum, Mr. Chalmers was chosen as a member of the Building Committee, and for many years he served as Chairman of that important committee, and also as a member of the Executive Committee. For his eminent services to science, Mr. Chalmers was elected an Honorary Member of the Museum, while his generous gifts to the institution placed his name high on the roll of the Museum's Contributors. He was also a Corporate Member and a Life Member.

In the Museum's Department of Geology, Mr. Chalmers founded a noteworthy series of exhibits which his fellow Trustees designated as the William J. Chalmers Crystal Collection. By means of carefully selected mineral specimens, this collection illustrates the systems by which minerals crystallize, and the varying development of crystal form in each system, thus providing an educational feature of immense value, which has been much used by students and teachers. Year after year, Mr. Chalmers made further contributions to expand and improve this collection. Many types of twin crystals and other crystal groupings are illustrated, as well as various features of crystal growth, such as zone structure, inclusions and phantoms. Among the crystals are many of gem quality, which would have been cut for gems had they not been preserved in natural form for this collection. Especially noteworthy is a series of tourmalines exhibiting an extraordinary variety of colors and forms. He made notable contributions also to the collections of gems and of invertebrate fossils.

William J. Chalmers

Mr. Chalmers, a native of Chicago, was born on July 10, 1852. He rose to a prominent place in the city's business life, but in recent years had retired from active direction of the enterprises with which he was associated. He was a director of the World's Columbian Exposition of 1893, and a member of the Chicago school board under Mayor Washburne. He also served on the track elevation commission which made possible the elevation of the Illinois Central railroad in 1892.

Because of his extensive interests as a manufacturer of mining machinery, Mr. Chalmers traveled widely, and had visited practically every important area where mining is carried on. During the world war, he directed campaigns to obtain relief funds for Belgian children, contributing lavishly from his own pocket. Later he was decorated by the Belgian government in recognition of this work.

JOHN E. GLYNN

October 13, 1869–December 14, 1938

Mr. John E. Glynn, a veteran member of the staff of Field Museum, died December 14, after a protracted period of illness. Mr. Glynn, who was 69 years old, had been an employe of the Museum since 1894, when he joined the staff as Assistant Superintendent. Since 1920 he had been Superintendent of Maintenance.

Mr. Glynn was largely responsible for supervising the gigantic task of moving the Museum's exhibits, study collections, and other possessions from the building originally occupied in Jackson Park, and reinstalling them in the present building which was opened to the public in 1921. This immense moving operation, including hundreds of thousands of items, many of them extremely fragile, was conducted with practically no losses or damage.

Mr. Glynn designed many of the best types of cases used in the Museum, including the built-in cases which are architecturally integrated with the interior of the building itself, and which are used for the installation of habitat groups and other dioramas. He also made other improvements in methods of installation of exhibits, lighting, etc. A notable accomplishment was his reconstruction in the Hall of Egyptian Archaeology (Hall J) of two complete mastaba tomb chapels of Egypt's Old Kingdom period. These were assembled using chiefly original stone blocks brought from Egypt.

Stone Age Hall Sculptor Dies in Accident

News of the death of Mr. Frederick Blaschke, noted sculptor, came as a profound shock to members of the scientific and administrative staff of Field Museum, with whom he had been associated for a number of years. Mr. Blaschke was the creator of the restorations of various types of prehistoric men and animals in Field Museum's Hall of the Stone Age of the Old World, and Ernest R. Graham Hall. This work ranked among his most important accomplishments, and won him great acclaim for its excellence.

Mr. Blaschke died December 4, due to injuries suffered in an accidental fall in his home at Cold Spring-on-Hudson, New York. He was 57 years old.

MUSEUM STAFF APPOINTMENTS

The following appointments, effective January 1, 1939, are announced by the Director:

Mr. William H. Corning—Superintendent of Maintenance. Mr. Corning joined the staff of Field Museum late in 1920 as Chief Engineer, and has served in that capacity since that time.

Mr. William E. Lake—Chief Engineer. Mr. Lake came to the Museum July 1, 1922, as an engineer, becoming Assistant Chief Engineer in 1926.

Mr. Arthur G. Rueckert—Staff Artist. Mr. Rueckert joined the staff in November, 1923, as a taxidermist. In addition to a general experience in taxidermy and the making of accessories for exhibits, Mr. Rueckert assisted the late Charles Abel Corwin in the painting of many of his more recent backgrounds, and has carried on this work since Mr. Corwin's death.

Mr. Robert L. Yule—a Preparator, in the Department of Anthropology, where he has been employed in various capacities since February 1, 1932.

Mr. W. E. Eigsti—a Taxidermist. Mr. Eigsti came to Field Museum in February, 1931, as an assistant taxidermist, since which time he has mounted many splendid specimens for the Museum collections.

Mr. Robert E. Bruce—Purchasing Agent. Mr. Bruce joined the staff in October, 1927, and served in various clerical capacities until August, 1938, when he became Acting Purchasing Agent.

Mr. Noble Stephens—Manager of the Book Shop. Mr. Stephens has been on the staff of the Museum during the past year and has been in charge of the Book Shop since it was opened in April. He is largely responsible for the splendid showing made by this new venture.

Mr. Warren E. Raymond—Assistant Registrar. Mr. Raymond joined the staff October 1, 1938, as a clerk, and is now appointed to a new position created because of the increasing volume of business in the Registrar's office.

Mr. Joseph D. Todd—Carpenter Foreman. Mr. Todd came to the Museum as a carpenter in November, 1927, after a wide experience in both exterior and interior construction, and in his new position will be of great value to the Superintendent of Maintenance.

Mr. E. S. Abbey—Captain of the Guard. Mr. Abbey joined the guard force in 1905, and became Sergeant in May, 1924. A reorganization of the guard force at the beginning of 1939 retains Mr. Abbey as the senior member of the organization with the new title of Captain.

Mr. Patrick Walsh—Sergeant of the Guard. Mr. Walsh came to Field Museum in February, 1894, in the Maintenance Division. He is one of the oldest employes in point of service. In August, 1905, he became a guard, and since January, 1930, has been Acting Sergeant on one of the night shifts.

Mr. David Conwill—Sergeant of the Guard. Mr. Conwill became a Museum guard April 1, 1931, immediately after his retirement from the United States Army.

ANIMAL LIFE IN AIR PLANTS

By Karl P. Schmidt
Curator of Amphibians and Reptiles

The environment in which animals are found is referred to as their "habitat." Within the more general types of habitat, such as hardwood forest, we distinguish restrictions to special environments as "niches." The red-backed salamander, for example, is found in the fallen-log niche in a forest habitat. When whole assemblages of animals are found in such a habitat niche, their inter-relations, extent and mode of dependence on their special environment, as well as their mode of dispersal, and the correlation of their geographic distribution with that of their habitat, become problems of more than usual interest to the naturalist.

One of the most remarkable of such habitat niches in the American tropics is that afforded by the "bromeliads," the epiphytic plants of the pineapple family Bromeleaceae, which perch upon the limbs and trunks of trees, and together with orchids and other air-plants, form a characteristic feature of the tropical forest. The bromeliads have their leaves arranged in whorls, and in the rainy season retain water at the bases of these leaf-whorls. In the cloud-forests above 4,000 feet on tropical mountains, this water may be essentially permanent, and as there is little standing water on steep slopes, animals dependent on moisture are attracted to this situation.

The salamanders, whose soft skins require a constant moist atmosphere, are represented in Central America only by the genus *Oedipus*, which has undergone evolution into a remarkable number of species. These salamanders are found under logs, within rotten logs, under stones, in the coiled leaves of many plants, under the leaf sheaths of banana plants, and most notably in the whorls of leaves of the bromeliads. The bromeliad habitat is especially characteristic in the cloud-forest zone where the constant moisture is ideal for amphibians.

The bromeliads yield a veritable harvest to the collector. Felling a small tree loaded with promising plants, he cuts through the base of each plant with the machete, and then removes the leaves one by one. Earthworms and nematodes are abundant in the moist detritus in the outer leaves; the aquatic larvae of damsel flies are almost invariably present; flattened bugs and beetles inhabit the leaves above the water level; and various arachnids are found in the drier tops of the plants.

In addition to the salamanders (of which there may be two or even three species in a single plant) the bromeliad niche is a favorite refuge for tree frogs of the genus *Hyla*. The hylas frequently make use of the standing water at the bases of the leaves for egg-laying, and frequently exhibit great modification from the normal body form and dentition. It is evident that long-continued evolution has given rise to special adjustments of the tadpole stage to the conditions of life in the bromeliad environment.

Systematic search of these plants in the cloud-forest zone in the mountains of Honduras and Guatemala has yielded a surprising number of new species of salamanders and hylas, described in technical papers embodying results of the Marshall Field Central American Expedition of 1923, and of the Mandel Guatemalan Expedition of 1933–34. This environmental complex affords a little worked and fascinating problem for ecological study.

THE CANNON BALL TREE

One of the outstanding exhibits in the Hall of Plant Life (Hall 29) is this cannon ball tree of the forest regions of northern South America, as reproduced from nature in full flower and fruit, in the laboratories of the Department of Botany. The original material upon which the reproduction is based was collected by the Stanley Field Botanical Expedition to British Guiana. The cannon ball tree is a showy large tree of the monkey pot or Brazil nut family and derives its common name from its large, round, dark brown fruits, which are seen in the above picture.

Field Museum is unique among institutions of its kind for the extent of its exhibits illustrating various phases of the plant world. Five large exhibition halls are devoted to botany, in both its scientific and economic phases. The main divisions are plant life, food plants, palms, plant raw materials and products, North American woods, and foreign woods.

RACES OF MAN FORM SUBJECT OF JANUARY SUNDAY TOURS

An imaginary trip around the world, visiting the principal races of mankind, is the offering of Mr. Paul G. Dallwig, the Layman Lecturer of Field Museum, for four Sunday afternoons in January (January 8, 15, 22 and 29—*the Museum will be closed for the New Year's holiday on Sunday, January 1*).

The tour, presented under the title "Parade of the Races," will be devoted to studies of the extensive series of racial sculptures by Malvina Hoffman in Chauncey Keep Memorial Hall. Mr. Dallwig, in the popular dramatic style which characterizes his lectures, will imbue the bronze figures with life by his exposition of human interest "angles" associated with each of the races.

Because of increasing public demands, the limit on the number of persons accommodated on each Sunday lecture tour has been raised from 100 to 125. Despite this, it is still essential to make reservations in advance by mail or telephone (Wabash 9410). Parties are restricted to adults.

The Sunday lectures begin promptly at 2 P.M., and end at 4:30. Midway there is a half-hour intermission during which members of the party may obtain refreshments in the Cafeteria, where they may smoke. Special tables are reserved for the group.

GIFTS TO THE MUSEUM

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

Department of Anthropology:

From Mrs. E. B. Simonson, Franklin Park, Ill.—a birchbark covered basket, with porcupine quill decorations, Illinois.

Department of Botany:

From Dr. John R. Johnston, Chimaltenango, Guatemala—90 herbarium specimens, Guatemala; from Museo Argentino de Ciencias Naturales, Buenos Aires—11 algal specimens, Argentina; from Philip W. Wolle, Princess Anne, Maryland—27 algal specimens, Maryland; from Evan R. Guest, Kuala Lumpur, Federated Malay States—formalin-preserved material of durian and cloves, Federated Malay States; from B. A. Krukoff, New York City—131 herbarium specimens, Puerto Rico; from Bernardo Rosengurtt, Montevideo, Uruguay—35 herbarium specimens, Uruguay.

Department of Geology:

From Elmer S. Riggs, Chicago—11 skulls and an incomplete skeleton of modern animals, western Kansas, Wyoming, and Colorado; from Alfred A. Look, Grand Junction, Colo.—a fossil vertebrate specimen and 2 fossil teeth, Colorado; from C. W. McLeod, Michigan City, Ind.—30 clay concretions, Indiana; from Standard Oil Company (Indiana), Chicago—14 specimens of petroleum products; from William B. Pitts, Sunnyvale, Calif.—42 specimens of orbicular jasper, California; from H. V. Schiefer, Cleveland Heights, Ohio—a specimen of jasper, Ohio; from William C. McKinley, Peoria, Ill.—12 specimens of "glacial gems," Illinois; from Paul Weiss, Denver, Colo.—a polished specimen of fossil wood and one of red chalcedony, Colorado; from William F. Menzel, Chicago—23 geological and mineral specimens, United States; from Benedict Gresky, Chicago—38 economic geology specimens; from Lloyd B. Curtis, Lander, Wyo.—11 specimens of sapphire with damourite and 3 of nephrite jade, Wyoming.

Department of Zoology:

From Chicago Zoological Society, Brookfield, Ill.—62 zoological specimens; from Bryan Patterson, Chicago—65 sets of birds' eggs, England; from Mrs. Charles Corwin, Chicago—15 sets of birds' eggs, Hawaii; from James Baley, Chicago—a rattlesnake, Indiana; from W. Frank Blair, Ann Arbor, Mich.—3 white mice, New Mexico; from Mrs. B. J. Thorp, Chicago—a ruby-crowned kinglet, Illinois; from H. E. Woodcock, Chicago—28 butterflies and a moth, France; from Rudyerd Boulton, Chicago—18 bird skins, Mississippi; from United States National Museum, Washington, D. C.—410 fish specimens, Panama and Canal Zone.

The Library:

From Dr. Albert B. Lewis, Chicago—10 valuable books.

An Artistic Calendar for 1939 Published by the Museum

Field Museum has published an attractive calendar for the New Year, containing a natural color picture of the Quetzal group. The photograph was made by Mr. Clarence B. Mitchell, Research Associate in Photography. The calendars are designed to stand on a desk or dresser, or to hang on a wall. On sale at The BOOK SHOP of FIELD MUSEUM—10 cents.

NEW MEMBERS

The following persons were elected to membership in Field Museum during the period from November 16 to December 15:

Associate Members

David Arthur Lee, Edwin J. Ward.

Annual Members

Mrs. Lloyd G. Albert, Clarence Avildsen, Lewis I. Birdsall, Miss Agnes Colby, John W. Denison, George A. Johnson, Joseph M. Johnson, Thomas E. Maddock, Mrs. E. M. McDonnell, Mrs. E. L. Millard, Charles H. Newman, William C. Reavis, M. A. Rosenthal, Harry S. Sandberg, Alfred Smart, Dr. Milton L. Smith, Eugene V. Zahringer.

Intriguing Names

Intriguing are such names as *Homalodotherium, Eosclaerocalyptus, Scelidodon, Leptomeryx, Elasmosaurus,* and *Bathyopsoides.* The prehistoric animals to which they are applied were as strange as their names. To satisfy your curiosity, visit Ernest R. Graham Hall and see fossil specimens of them.

JANUARY GUIDE-LECTURE TOURS

Conducted tours of exhibits, under the guidance of staff lecturers, are made every afternoon at 3 o'clock except Saturdays, Sundays, and certain holidays. Following is the schedule of subjects and dates for January:

Week beginning January 2: Monday—New Year's Holiday, *no tour*; Tuesday—Horned and Hoofed Animals; Wednesday—Native Life in the Philippines; Thursday—General Tour; Friday—Native American Fruits and Vegetables.

Week beginning January 9: Monday—Egypt and Its Art; Tuesday—Plant and Animal Life of Long Ago; Wednesday—Races of Mankind; Thursday—General Tour; Friday—Su-Lin and Her Neighbors.

Week beginning January 16: Monday—North American Indians; Tuesday—Fibers and Their Uses by Primitive Peoples; Wednesday—Moon, Meteorites and Minerals; Thursday—General Tour; Friday—Ancient Burial Customs.

Week beginning January 23: Monday—Systematic and Habitat Bird Exhibits; Tuesday—Clothing; Wednesday—Gems and Jewelry; Thursday—General Tour; Friday—Peoples of the South Seas.

Monday, January 30—African Animals; Tuesday—The Cavemen and Their Arts.

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 of more are available free of charge by arrangement with the Director a week in advance.

Most of the principal varieties of crude rubber are displayed in Hall 28.

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.

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.

Contributions made within the taxable year not exceeding 15 per cent of the taxpayer's net income are allowable as deductions in computing net income for federal income tax purposes.

Endowments may be made to the Museum with the provision that an annuity be paid to the patron for life. These annuities are guaranteed against fluctuation in amount, and may reduce federal income taxes.

PRINTED BY FIELD MUSEUM PRESS

Field Museum News

Published Monthly by Field Museum of Natural History, Chicago

Vol. 10 FEBRUARY, 1939 No. 2

ILLINOIS METEORITE THAT RECENTLY DAMAGED GARAGE AND CAR IS EXHIBITED

By Henry W. Nichols
Chief Curator, Department of Geology

Illinois has been singularly immune from falls of meteorites. There are records of only two having fallen within this state, although there have been numbers of falls recorded in adjoining states. Not only has Illinois lacked meteorites which observers have actually *seen* falling, but until recently no specimen has ever been found that has upon investigation proved to be a meteorite. In other states, however, meteorites actually *seen* falling are few in comparison with the number later found in the ground and recognized as such by their physical features and chemical composition.

Field Museum is therefore extremely fortunate in having acquired, through the co-operation of Messrs. Ben Hur Wilson and Frank M. Preucil, Jr., of the Joliet Astronomical Society, the complete specimen of the second recorded meteorite to fall in Illinois. This good fortune is augmented by the fact that Illinois Meteorite No. 2 is one of only eleven (out of a total of approximately 1,300 recorded meteorites) to strike and damage buildings or other property.

This meteorite fell in the little mining town of Benld (Macoupin County), near Carlinville, Illinois, on September 29, 1938, at about 9 o'clock in the morning. It crashed through the roof of a garage owned by Mr. Ed McCain, penetrated the top of his automobile, and passed through the seat cushion and floor board, striking and denting the muffler, whence it rebounded into the cushion and finally came to rest entangled in the springs.

The meteorite is now on exhibition in Hall 34 of Field Museum, together with the damaged sections of garage roof and car top, the perforated cushion, and muffler. Messrs. Wilson and Preucil, acting as agents for the Museum, not only obtained this material, but made a very thorough investigation, collecting unusually complete and competent records of the fall, and making numerous photographs of all important features pertinent to the data.

From the reports made by Messrs. Wilson and Preucil, and published in the periodical *Popular Astronomy*, it is learned that when the Benld meteorite struck Mr. McCain's garage last September, Mrs. Carl C. Crum, a neighbor, was working in her yard, across an alley from the McCain place, at a point about 50 feet from the garage. While neither she nor anyone else witnessed its passage through the air, Mrs. Crum was startled by the celestial visitor's great roar, which she described as sounding like an airplane going into a power dive. This was followed by a sharp cracking sound as the meteorite broke through the boards of the wooden garage roof and crashed into the automobile. Mrs. Crum was surprised subsequently to find no smashed-up airplane, and not even a plane in sight in the sky.

Mrs. McCain, wife of the garage and car owner, was pumping water in her yard, but was at a greater distance from the garage than Mrs. Crum. She also heard the roar but, accustomed to hearing and seeing passing mail airplanes, thought nothing of it. A few other neighbors, indoors, heard the sounds less sharply.

Mr. McCain, working at the town's coal mine, did not know that anything had happened until he returned home late in the afternoon and went to the garage to take the car out. At first he noticed only the large hole in the seat cushion, and thought it was due to rats until he observed the holes also in car top and garage roof.

Stone from the Sky

Mr. Henry W. Nichols, Chief Curator of Geology, and Miss Caroline Ryder, examine the Benld meteorite, which fell in September, 1938, and is only the second such visitor from outer space on record in Illinois. It is now on exhibition at the Museum, as shown above, together with section of a garage roof, automobile top and seat cushion which it penetrated. Of approximately 1,300 recorded meteorites the world over, only ten others are known to have hit buildings, and this is the first authenticated instance in which one has struck a vehicle.

The meteorite is roughly rectangular in shape. It measures about 4½ by 3½ by 3¼ inches, and weighs some four pounds. It is a stony meteorite, gray in color, crusted with a black fused coating which it acquired by heat from the friction of passing through the atmosphere of the earth.

It is of interest to trace the changes this meteorite probably underwent during its journey towards the earth through millions of miles of outer space. Hurtling through the sky, it was a light gray body, of unknown shape, lacking the dark crust it now has. No doubt it was larger, but wastage during its passage through the earth's atmosphere accounts for loss of volume. Its velocity of approach was enormously greater than the speed with which it struck the garage. Meteorites which reach the earth during the morning hours, as did the Benld meteorite, are moving in a direction opposed to that of the earth in its orbit, and collide with this planet head-on. Therefore, the speed of this meteorite relative to the earth was the sum of the speeds of the meteorite and the earth in their orbits—a velocity which is computed at about 44 miles per second. But,

Where the Meteorite Struck*

Mr. Ben Hur Wilson is seen here holding the Benld meteorite beside the hole it made in the roof of garage. The superimposed arrow shows the direction at which the meteorite came to earth.

at this staggering speed, a body passing through even the extremely attenuated upper atmosphere of the earth develops enormous friction. This so rapidly moderates its speed that, before it strikes, it is falling only as fast as would a similar body dropping from a height of only a few miles under the influence of gravity alone.

The Benld meteorite was not picked up until several hours after it fell, so there is no direct evidence of how hot it was beyond the fact that the cotton filling of the upholstered car cushion was not charred. As the passage of the meteorite through the air was only a matter of a few seconds, there was not time enough for the heat to penetrate far into its cold interior, so it should not be a matter of surprise that it was not hot enough to burn the cushion. Except in four or five instances, the numerous meteorites which have been handled within a few minutes of their fall were found to be only lukewarm.

As two points in the passage of the meteorite—the places of penetration of the garage roof, and of the seat covering—were accurately known, Mr. Wilson was able, by the use of surveying instruments, to determine the direction and inclination of the meteorite's path with far more accuracy than has ever been possible of attainment in the case of any other meteorite.

The other ten meteorite falls which are known certainly to have penetrated or struck buildings, fell in the following years, and at the places indicated below:

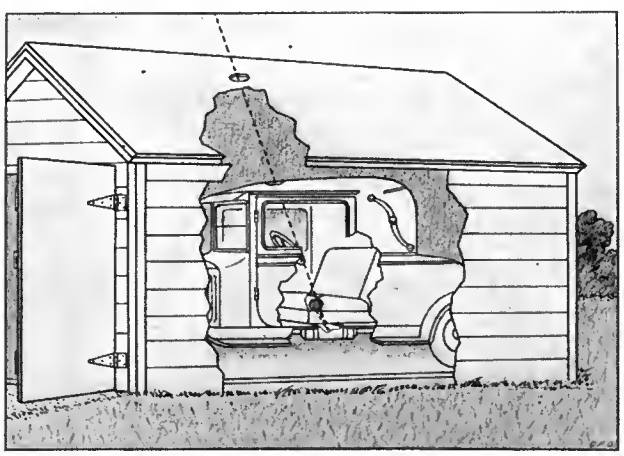
1790—Barbotan, France.
1798—Benares, India.
1803—Mässing, Germany (*Bavaria*).
1847—Braunau, now Germany (*then Bohemia, and recently Czechoslovakia*)
1858—Aussun, France.
1863—Pillistfer, Latvia (*then Russia*).
1911—Kilbourn, Wisconsin.
1916—Baxter, Missouri.
1930—Kurumi, Japan.
1936—Yurtuk, Ukraine, U.S.S.R.

Fragments from seven of these are included in the Field Museum collection, which, in point of number of falls represented, is the largest meteorite assemblage in the world, containing specimens from approximately two-thirds of all recorded falls. (The Museum collection includes a board penetrated by the Kilbourn, Wisconsin, meteorite which, in its fall on June 16, 1911, struck a barn, penetrated three thicknesses of shingles, a hemlock roof board, and a plank floor in the hay loft. It then glanced against the side of a manger and finally buried itself two and a half inches deep in the clay floor of the barn. Also exhibited is the damaged section of a tree branch which was struck by a meteorite which fell at Andover, Maine, on August, 5, 1898. A fragment of the meteorite is shown with it.)

Although some danger of damage from meteorite falls exists, as is apparent from the few known instances, perils from this source are so small as to be negligible. There is not a single authenticated record of a meteorite striking or injuring a human being. The late Dr. Oliver C. Farrington, former Curator of Geology at Field Museum, and one of the world's leading authorities on this subject, wrote in his book *Meteorites*:

"No meteorite fall has ever positively been known to have been destructive to human life. Accounts purporting to describe such catastrophes prove on investigation to have come either from times or countries so remote that they cannot be verified .... No well authenticated occurrence of the sort is known. Perhaps the most narrow escape which has ever been experienced was that of three children in Braunau at the time of the fall of that meteorite in 1847. This meteorite, an iron weighing nearly 40 pounds, fell in a room where these children were sleeping and covered them with debris, but they suffered no serious injury. Other meteorites have fallen near human beings but never have struck them so far as credible information goes. That personal injury or death might be caused by the fall of a meteorite is entirely possible, in fact is likely to occur at some time. It is remarkable that some falls, such for instance as the showers in Iowa which occurred in fairly thickly settled communities, should not have caused serious injury to the inhabitants."

How exceedingly slight is the danger of injury by meteorites is shown in a calculation made by Dr. H. H. Nininger, who is well-known for his work on meteorites and who lectured at Field Museum last October. In the 125 years ending in 1923, when his calculations were made, there were 287 falls recorded in twelve European and American countries in which there exist fairly reliable records. As many of these 287 falls were multiple, and some consisted of showers of hundreds of small stones, it is estimated that in these falls more than 12,000 stones



The Meteorite's Course

Diagram showing path of the Benld meteorite through the roof of garage, and top, seat and floor-board of automobile to muffler. From there it bounced back into the cushion and came to rest, entangled in the wire springs.

The Damaged Automobile*

This is the coupé whose top and seat cushion were pierced by meteorite. It is the first motor car in the world known to have been struck by a stone from the heavens. At left is Mrs. Carl Crum, who was working about 50 feet away when meteorite landed. Mrs. Ed McCain, wife of the owner of car and garage, is in center, holding the meteorite. At right is Mr. F. A. Bertetti, principal of the Benld Township High School, who was of assistance to agents investigating the meteorite fall for Field Museum.

*Illustrations marked with asterisk are published by courtesy of the Editors of *Popular Astronomy*, and Messrs. Ben Hur Wilson and Frank M. Preucil, Jr. Mr. Preucil was the photographer.

FOOD FOR THOUGHT IN METEORITES

"Three reasons may be assigned for ascribing peculiar interest to the study of meteorites:

"First. They are our only tangible sources of knowledge regarding the universe beyond us.

"Second. They are portions of extra-terrestrial bodies.

"Third. They are a part of the economy of Nature. No survey of Nature can be considered complete which does not include an account of them."

From the book *Meteorites* by the late Dr. Oliver C. Farrington, former Curator of Geology at Field Museum, who was one of the foremost authorities on the subject.

were included. From these numbers, and the areas of the countries considered, Dr. Nininger has estimated that one meteorite fell during the 125 years for each 55½ square miles. It is not known how many meteorites have fallen unobserved, but assuming arbitrarily that ten may have fallen for each observed one, the figures become one meteorite to each 5½ square miles of territory in the 125 years. When it is considered how small a part of the earth's surface is covered by living human beings, it is not strange that no one has yet been injured. The area covered by buildings is, of course, much larger, yet even here the proportion is so small that the wonder is not how few but how many buildings have been damaged.

As has been pointed out, the Benld meteorite is only the second one recorded in Illinois. The first was a meteorite that fell July 13, 1927, near Tilden, about 40 miles southeast of St. Louis. It imbedded itself in the ground. The larger part of Illinois Meteorite No. 1 is preserved in the Illinois State Museum, Springfield. A fragment of it, presented by that institution, is on exhibition in Field Museum's collection.

Close-up View of Benld Meteorite*

The size of the celestial stone may be gauged from the scale furnished by section of foot-rule. This photograph shows the black fused coating caused by friction during passage through the earth's atmosphere.

FIELD MUSEUM EXHIBITS AT TWO EXPOSITIONS

Field Museum will be represented in exhibits at two great expositions this year—the Golden Gate International Exposition at San Francisco, and the New York World's Fair.

The material loaned to the San Francisco exposition consists of a collection of ethnological objects from Borneo, Java, New Guinea, Sumatra, Cook Islands, Celebes, and other south Pacific islands. These objects will be displayed in an exhibit illustrating the cultures of the Pacific, and will be located in the exposition's Department of Fine Arts.

To the New York Fair the Museum is sending an Egyptian mummy which will be used in the exhibit of the General Electric X-ray Corporation to demonstrate the application of the fluoroscope in scientific research. An elaborate installation has been arranged whereby visitors will be enabled alternately to view the mummy's exterior and then, through the fluoroscope, its interior. This will be a central feature of the X-ray Corporation's exhibit.

The mummy to be used is that of a man who lived about 900 years before the beginning of the Christian Era. In Egyptian history, the period was that of the Twenty-first Dynasty. From inscriptions on the coffin lid, it is learned that the man's name was "Harwa," and that he was the Overseer of the Magazine (or storage houses) on the great farming estate of one of the temples of Amon, chief god of the empire. This was an important position, comparable to that today of superintendent of an extensive agricultural or ranching enterprise. As at this time the priests in the temples had political power superior to that of the king, the farm-estate was probably similar to a state-controlled industry. Harwa probably had charge of granaries, fruits and vegetables, stocks of wool and other animal products, and wine cellars. No doubt, he had an army of subordinates and slaves at his command.

Pathological study of the mummy by means of the X-ray indicates that Harwa was probably about 40 years old at the time of his death. It is interesting to note that he had a most uncommon name—Egyptian archaeologists have never before encountered the name Harwa. The inscriptions on the coffin lid reveal very little about Harwa other than his name and occupation. The rest of the hieroglyphics with which it is covered constitute a common form of incantation or prayer for the welfare of the deceased in the after life.

Field Museum was invited to participate because of the pioneer work conducted at this institution, over a period of several years beginning in 1925, in developing, and successfully applying, a technique for x-ray photography on mummies and other types of specimens not previously studied in this manner. The results of these experiments are reported in the book, *Roentgenologic Studies of Egyptian and Peruvian Mummies*, by Professor Roy L. Moodie, Paleopathologist to the Wellcome Historical Museum, London (Field Museum Anthropological Memoirs Series, Vol. III, 1931).

As full credit will be given Field Museum in the exhibits at both expositions, many persons, who later may be visitors to Chicago, will thus become acquainted with phases of the work of this institution.

A Historic Collection of Algae

Mr. Philip W. Wolle of Princess Anne, Maryland, has placed on file in the Herbarium of Field Museum a considerable portion of the algal herbarium of his late grandfather, the Rev. Francis Wolle. Some 2,000 specimens of algae, including most of the material received by the Rev. Mr. Wolle in his exchanges with European workers during the years 1875-92, are thus being made available for study at the Museum. The remainder of Rev. Wolle's collection is in the Herbarium of the University of Pennsylvania.—F. D.

Complicated Curry

Curry powders, used so extensively in the East Indies for seasoning rice and various other foods, are made of a combination of spices. There are approximately forty recipes for preparing curry powder, all of which contain at least the following ingredients: fenugreek, garlic, ginger, peppers, tumeric, coconut, and nutmeg. One form, popular in Ceylon and parts of India, contains as many as forty different spices, and specimens of these are to be seen in the section devoted to exhibits of food products in Hall 25.—L. W.

Feather masks, fourteen and nineteen feet tall, from New Guinea, are displayed on life-size figures in Stanley Field Hall.

EXPEDITION LEADER TELLS STORY OF EXPLORATION IN THE JUNGLES OF BRITISH GUIANA

(Editor's Note:—The December issue of FIELD MUSEUM NEWS *carried a brief story of the unfortunate accident at King William Rapids in British Guiana which resulted in the loss of a boat and many of the specimens of the Sewell Avery Zoological Expedition. Recently Mr. Blake, the leader, returned to Chicago with more than 60 per cent of his collection, which in itself is sufficient to enable the Museum to pronounce the expedition a success. The salvaging of his collections was accomplished under extremely difficult circumstances, which might easily have dissuaded one of less experience and determination. Mr. Blake's own story follows.)*

By EMMET R. BLAKE
Assistant Curator of Birds

One of the most inaccessible as well as scientifically little-known areas in all South America is the Brazilian frontier of British Guiana, recently visited and explored by the Sewell Avery Zoological Expedition of Field Museum. It is a region of rugged mountains, rushing streams, and inviolate solitude. A trackless and almost impenetrable jungle blankets many thousands of square miles, much of it unexplored and avoided even by aboriginal Indians.

Access to most of the area can be gained only by ascending the rapid-strewn Courantyne River, which forms the boundary between Dutch and British Guiana, and its turbulent tributary, the New River. This is a dangerous small boat journey of approximately 600 miles. The mechanical difficulties of river transport are so formidable that no scientific expedition had ever succeeded in penetrating to the frontier, and thus a large area remained entirely unknown to biologists.

With the advent of the recent Brazilian-British Guiana boundary survey, however, the frontier became temporarily accessible to properly organized independent organizations. The discovery of mountains on the boundary, greater than any yet mapped in this region, and the realization that the hinterland would again become inaccessible with the withdrawal of the Boundary Commission, led to the organization of the Field Museum expedition which accomplished the first zoological reconnaisance of the region. The undertaking was made possible by the generosity and interest of Mr. Sewell Avery, a Trustee of the Museum, who in 1938 sponsored this and three other expeditions.

BY AIRPLANE TO THE INTERIOR

Preliminary arrangements were made by cable for the deposit of supplies, boats and equipment at strategic points along the river by attachés of the Boundary Commission as they descended to the coast. Mr. Richard Baldwin, an experienced Commission aide, was retained as assistant for the Museum expedition, and with twelve Indian and negro boatmen, he awaited the writer's arrival at King Frederick William IV Falls.

On August 12 the writer disembarked at Georgetown, capitol of British Guiana, with six hundred pounds of carefully selected collecting and field equipment. Mr. Habib Rasool, a capable young East Indian native collector trained by the 1937 Stanley Field British Guiana Expedition, was signed on as taxidermist and did notable work throughout. A small hydroplane, owned and piloted by Mr. Arthur Williams, an American aviator formerly employed by the Boundary Commission, was chartered, and on August 15 the party was flown into the interior.

The route of our flight first led almost due south, following closely the erratic course of the Demerara River for about 100 miles, then southeastward over the unbroken jungle to the desolate Berbice savannahs and on to the Courantyne itself. The well-ordered coastal rice and sugar plantations quickly gave way to second growth bush and finally to a primeval forest which extended without a break as far as the eye could reach in every direction. During the course of our cross-country flight, a rainstorm was encountered which forced the plane low, and for many miles the tiny seaplane skimmed the tree-tops.

"WHITE WATER" AHEAD

A brief pause for refueling was made at Wonatobo Falls, 150 miles up the Courantyne River. A single native boat crew, the last of the Boundary Commission force remaining in the interior, was on hand to assist. Once more in the air and speeding southward, I saw that the river was becoming increasingly turbulent. Literally hundreds of islands studded its course. White water indicated the presence of countless rapids which had to be run later by boat when the river was at a lower and more dangerous stage.

The flight from Wonatobo to King Frederick William IV Falls, where the expedition boat crew awaited us, required forty-five minutes, but saved three weeks of travel by river. We landed on the river half a mile above the falls and were soon comfortably installed in a bush camp on the Dutch shore. With the departure of the plane at noon, our last means of communication or assistance from the outside world was irrevocably lost until we reached the coast more than three months later.

In order to reach the frontier and maintain the expedition there, supplies and equipment sufficient for fifteen men for possibly four months had to be relayed up the river. The expedition's 32-foot boat, *Oronoque*, was of "greenheart" plank construction, with a capacity of 4,000 pounds. She was propelled by an outboard motor, supplemented by native paddlers. The crew made a preliminary trip to Oronoque Base Camp with gasoline and supplies, while Rasool and I remained at King Frederick William IV Falls nine days to obtain a representative lowland collection for comparative purposes.

COLLECTING BY DAY AND NIGHT

Subsequent similar relays transferred all necessary supplies to the head of boat navigation on Itabu Creek, a tributary of the upper New River. There a base camp was established and all expedition personnel, with the exception of the boat captain and bowman, proceeded in dugout canoes to the headwaters. Canoes were abandoned at this point, and the expedition proceeded overland some ten miles by tortuous trail to the watershed which marked the international boundary, our objective. A camp was established at the highest source of water, and collecting began September 20, approximately five weeks after joining the boat crew at King Frederick William IV Falls.

With three collecting guns in daily use, extensive trap lines set for small mammals each night, and several men scouring the forests for specimens of all kinds, the collections grew very rapidly. The camp was always astir at dawn, and rarely were the lanterns dimmed in the taxidermy tent before midnight. Among the notable birds collected were two specimens of the famed harpy eagle, later unfortunately destroyed due to disaster on the river. A number of specimens of cock-of-the-rock, a brilliant orange species regarded as one of the loveliest birds in tropical America, were also taken. Many other birds not previously represented in the Field Museum collections by Guiana specimens were collected, and several species appear to be additions to the fauna of the colony.

Approximately 500 insects, and a representation of vertebrates totaling more than 2,000 specimens of birds, mammals, reptiles and fish, were collected by the expedition before the boundary camp was evacuated. By the middle of October the expedition was in momentary danger of becoming stranded in the hinterland, because Itabu Creek was falling with the advancement of the dry season. Collecting ceased, and the boundary camp was abandoned October 19. The party began the arduous journey to the coast with its collections. Surplus stores and equipment were discarded to facilitate transport over the portages which we faced.

SHOALS PRESAGE DANGER

Creeks and rivers had dropped approximately fifteen feet during the month of our sojourn in the mountains. Portions of the streams which were relatively placid during our ascent were now boiling whirlpools and seething rapids. Channels which had been difficult before were now death traps which

required extreme care in navigation, or had to be avoided by strenuous portages. Day by day sudden disaster was an imminent possibility as the boats were run or "streaked" through interminable rapids.

King Frederick William IV Falls is impassable at all seasons. Boats and supplies must be transported overland by way of a mile long portage. Our dug-out canoes were abandoned above the falls and all hands labored for three days with block and tackle, hardwood skids, rollers and levers to inch the heavy *Oronoque* over the hilly terrain. Another day was required to repair, caulk and launch her.

Museum Explorers in Small Boat Brave Rapids in a "Lost World"

Photograph made in wilds of British Guiana by Mr. Emmet R. Blake, leader of the Sewell Avery Zoological Expedition, showing the type of dense jungle, and the turbulent water of the Courantyne River, which the expedition had to combat. At one point an expedition boat capsized on a rock in an uncharted channel through the rapids, but all lives were saved, and even the larger part of the collection of specimens was salvaged.

DISASTER—AND ESCAPE

On November 1 the *Oronoque*, loaded with specimens, equipment, fifteen men, and supplies for three weeks, once more got under way. About the middle of the afternoon the boat struck a submerged rock while running King William Rapids, and capsized. All of the personnel were miraculously saved by swimming to a rock island in mid-river, but most of the equipment and supplies, and almost half of the specimens were lost.

Two days were spent attempting to find and salvage the boat and stores, but without success. Finally nine men were chosen and sent up river through the jungle to obtain the canoes abandoned above King Frederick William IV Falls. They returned a week later with three dug-outs. Meanwhile, the marooned party, which included Mr. Baldwin and the writer, had dried the specimens salvaged from the rapids, and fabricated a serviceable canvas canoe from an old tarpaulin. We also had prepared considerable dried fish for provisions on the journey out. Although we now had four craft, they proved inadequate for men and specimens, so bark was stripped from a large "purpleheart" tree and an Indian "woodskin" was prepared.

Three days below King William Rapids we reached the head of Wonatobo Falls, which necessitated a three-mile portage. The woodskin fell apart there, but finally a *bateau* was made with planks obtained from an abandoned Boundary Commission camp. Several days and nights of paddling brought us to La Tropica, a Dutch police outpost and farthest interior point of civilization on the river. Arrangements were made with police officials to tow our canoes to the coast, some eighty miles distant, and on November 20 the expedition returned to Georgetown. There the salvaged specimens were packed for shipment to Chicago, and the expedition personnel was disbanded.

PROGRAMS FOR CHILDREN TO BEGIN THIS MONTH

The James Nelson and Anna Louise Raymond Foundation will present two free programs of motion pictures for children during February. The first, a special program in commemoration of George Washington's birthday, will be given on Wednesday, February 22. The films will portray the life of Washington as a boy and as a man.

On February 25, a week earlier than usual, the Raymond Foundation will begin its spring series of Saturday morning programs. Four films will be shown on this initial program, as follows: "The Grasshopper and the Ant" (musical cartoon in colors, by Walt Disney), "Cartoonland Mystery," "The Plow That Broke the Plain," and "Neptune's Mysteries."

Nine other programs, upon which will be included thirty-seven other films, are to be given on Saturdays during March and April. The complete schedule of these will appear in the March issue of FIELD MUSEUM NEWS.

All programs, including the special one for Washington's birthday, will be given in the James Simpson Theatre, with two showings of each, one beginning at 10 A.M., and one at 11. Children from all parts of Chicago and suburbs are invited, and no tickets are required for admission. The Museum is prepared to receive large groups from schools and other centers, as well as individual children coming either alone or accompanied by parents or other adults. Teachers are urged to bring their classes.

Botanical Project in Europe Makes Notable Progress

Mr. J. Francis Macbride, Associate Curator of the Herbarium, who has been in Europe since 1929 obtaining photographs of type specimens of plants in herbaria of various countries, has returned to his headquarters at the Paris Jardin des Plantes, after several months of work in Geneva and Florence. The Museum recently received from him about 1,500 additional negatives, bringing the total to date in this important collection to 36,000. Prints from these are made available, at cost, to botanists and institutions all over the world, and have proved to be of immense value in connection with various scientific problems.

Field Museum of Natural History
FOUNDED BY MARSHALL FIELD, 1893
Roosevelt Road and Field Drive, Chicago

FIELD MUSEUM NEWS
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H. B. HARTE.....*Managing Editor*

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

FROM THE DIRECTOR'S DESK—

Mr. Stanley Field Completes 30th Year as President of Museum

On January 11, Mr. Stanley Field completed his thirtieth year as President of Field Museum, an office which he has held continuously since 1909.

On January 16, at the Annual Meeting of the Board of Trustees, Mr. Field was again accorded the complete confidence of his colleagues by re-election for his thirty-first term as President.

When Mr. Field first took the presidential helm on January 11, 1909, the Museum was still in its original home (the Fine Arts Building, now Museum of Science and Industry) in Jackson Park. His uncle, the first Marshall Field, had died some three years previously, leaving to the institution the large bequest which was to enable it to undertake the construction of a new and adequate edifice, and which provided a basic endowment to extend its activities. The major expansion has all occurred during the years of President Field's leadership, bringing the Museum to its present position among the world's four or five greatest in natural science.

Few institutions of this kind are privileged to have a president so intimately and directly connected with their activities and progress from day to day. Few have a president who can or would personally devote so much of his time, effort, and enthusiasm to working right along with the members of the staff—encouraging them, offering suggestions which are notable for their keenness and practicability, and frequently providing the means for carrying out plans which would otherwise be frustrated. Mr. Field maintains an office in the Museum building, and is there nearly every day when he is in the city, which is during the greater part of the year. He is keenly interested in every proposal which has for its object the advancement of the Museum's interests in any way, or the betterment of its services to the public or to science. His generosity has been without stint. He has paid large sums to meet requirements of the building deficit fund. He has "kept the wolf from the door" in many a year when the Museum has ended with a large deficit on its operating expenses. He has made notable gifts of funds to finance expeditions, to make physical improvements in the building, and to obtain outstanding desiderata for the exhibits, the study collections and the Library.

President Stanley Field
Re-elected for the thirty-first time. In the three decades of his administration the institution has risen from a comparatively small beginning to a place among the world's foremost museums. His leadership has been a major factor in its growth and development.

—CLIFFORD C. GREGG, *Director.*

All Museum Officers Re-elected

In addition to the re-election of President Field, all other Officers of the Museum who served in 1938 were re-elected for 1939. The others are: Colonel Albert A. Sprague, First Vice-President; Mr. James Simpson, Second Vice-President; Mr. Albert W. Harris, Third Vice-President; Mr. Clifford C. Gregg, Director and Secretary, and Mr. Solomon A. Smith, Treasurer and Assistant Secretary.

Staff Notes

Mr. Paul C. Standley, leader of the Sewell Avery Botanical Expedition to Guatemala, currently in the field, reports to the Museum that he has collected more than 2,500 plants to date. When heard from last month he was working in the Guatemalan highlands, at altitudes ranging from five to ten thousand feet, in the vicinity of Antigua.

Dr. Francis Drouet, Curator of Cryptogamic Botany, attended the meeting of the American Association for the Advancement of Science recently held at Richmond, Virginia. He presented a paper describing his studies of the specimens of blue-green algae treated by the Rev. Francis Wolle (1817–93), one of the first great American algologists.

Mr. Sharat K. Roy, Curator of Geology, and Mr. Paul McGrew, Assistant in Paleontology, attended the meetings of the Geological Society of America recently held at New York.

The staff of the James Nelson and Anna Louise Raymond Foundation entertained the personnel of the Museum as a whole at a Christmas tea and reception in the Foundation offices.

Mr. Emmet R. Blake, Assistant Curator of Birds, and leader of the Sewell Avery Zoological Expedition to British Guiana, was guest speaker on the Blue Network (60 stations coast to coast) of the National Broadcasting Company, Friday evening, January 13, a few days after his return from South America. The Chicago outlet was station WLS. Mr. Don McNeill, of the NBC staff, interviewed Mr. Blake. On January 21, Mr. Blake spoke on the Montparnasse program over station WIND.

Distinguished Visitors

Among distinguished visitors recently received at Field Museum are: Mr. Russell Plimpton, Director of the Institute of Art, Minneapolis; Mr. Paul Frank, of the National Park Service staff at Zion National Park, Utah; Dr. Philip Drucker, Department of Anthropology, University of California, who spent three days studying the Museum's Northwest Coast ethnology collection; Mr. Michael Lerner, sportsman of New York City; Dr. Paul Ganz, a professor at the University of Basel in Switzerland, and President of the International Commission on the History of Art; and Dr. William K. Gregory and Mr. Harry C. Raven, both of the American Museum of Natural History, New York.

A FEW FACTS ABOUT FIELD MUSEUM

Field Museum is open every day of the year (except Christmas and New Year's Day) during the hours indicated below:

November, December, January, February.....9 A.M. to 4 P.M.
March, April, and September, October.....9 A.M. to 5 P.M.
May, June, July, August....9 A.M. to 6 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 Museum's Library is open for reference daily except Saturday afternoon and Sunday.

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

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

Free courses of lectures for adults are presented in the James Simpson Theatre on Saturday afternoons (at 2:30 o'clock) in March, April, October, and November.

A Cafeteria serves visitors. Rooms are available also for those bringing their lunches.

Chicago Motor Coach Company No. 26 busses provide direct transportation to the Museum. Service is offered also by Surface Lines, Rapid Transit Lines (the "L"), interurban electric lines, and Illinois Central trains. There is ample free parking space for automobiles at the Museum.

A REVIEW OF 1938

(Editor's Note:—At an early date Field Museum, as usual, will publish in book form the Director's Annual Report. Meanwhile, FIELD MUSEUM NEWS *presents this brief summary of some of the outstanding activities of 1938.)*

The story that science has to tell of the world in which we live was brought directly to more than 2,000,000 Chicagoans, and visitors to the city, by Field Museum during 1938. Indirectly—through publication, radio, and other such media—additional numbers, which cannot be estimated, have been reached. From the standpoint of service to the public, the year was one of the most active and successful in the history of the institution.

ATTENDANCE

The number of visitors received at the Museum was 1,391,580. This is an increase of 101,557 over the 1937 attendance, which totaled 1,290,023 and was likewise more than 100,000 in excess of that in 1936.

The balance of the more than 2,000,000 brought directly within the sphere of the Museum's influence in 1938 consists of some 500,000 Chicago school children repeatedly reached by the 1,200 traveling natural history exhibits circulated by the N. W. Harris Public School Extension, and 182,608 children reached through lecturers sent into the schools by the James Nelson and Anna Louise Raymond Foundation.

Of the 1938 attendance, more than 93 per cent were admitted free of charge, coming on the free days (Thursdays, Saturdays and Sundays), or belonging to classifications such as children, teachers, students, and Members of the Museum, who are admitted free on all days. The 25-cent admission fee charged on other days was paid by less than 7 per cent.

The regular spring and autumn courses of illustrated lectures on science and travel for adults, and the Raymond Foundation series (spring, summer and autumn) of free motion pictures for children, were presented in the James Simpson Theatre before audiences aggregating more than 50,000 persons. In addition, parties totaling more than 48,000 children and adults were conducted on guide-lecture tours of the exhibits. Several thousand other persons participated in the Sunday afternoon lecture tours conducted by Mr. Paul G. Dallwig, the Layman Lecturer. The books and pamphlets on the shelves of the Museum's Library increased to 114,000 and were extensively used by the public as well as by students and scientists. A new service was inaugurated during the year by the opening of The Book Shop, which specializes in popular books on science that have been approved by qualified scientists on the Museum staff.

Field Museum Press issued thirty technical scientific publications, and seven leaflets for lay readers. The technical publications circulate internationally among scientists, and among libraries and other institutions.

The membership of the Museum at December 31 numbered 4,122, as compared with 4,266 on the same date of 1937. It is hoped that the small loss may be more than recovered in 1939. A word of appreciation is due to all who have continued their support by retaining their memberships.

All Departments of the Museum made important additions to their exhibits in 1938. These have been described, at the time of installation, in FIELD MUSEUM NEWS.

EXPEDITIONS

In view of the fact that in 1938, as in other recent years since depression has severely curtailed its budgets, it has been impossible for the Museum to make appropriations for expeditions from its own funds, the institution was singularly fortunate in being enabled to carry out an important expeditionary program with contributions from public-spirited Chicagoans. Mr. Sewell Avery, a Trustee, sponsored four—a zoological expedition to British Guiana, a geological expedition in western and eastern parts of the United States, and two botanical expeditions, one to Guatemala, and one to Nova Scotia. Mr. Stanley Field, President of the Museum, made available funds for continuation of the work, begun eight years ago, of archaeological excavations of extensive scope and importance in southwestern Colorado. Dr. Wilfred H. Osgood, Chief Curator of Zoology, personally financed and conducted an expedition concerned with biological research in New Mexico.

WPA PROJECT

The project conducted at Field Museum by the federal Works Progress Administration was continued throughout the year, giving employment to 218 men and women. These workers aggregated 337,756 hours, and the government paid them wages totaling $211,548. They displayed a variety of skills and talents, and were employed accordingly, the range of the tasks to which they were assigned embracing scientific research, preparation of exhibits, clerical work, and general labor. Work done by WPA employes is of a character that could not be undertaken by the Museum's regular staff because of the pressure of more urgent tasks. The regular employes on the Museum's own payroll continued with their usual duties. —C. C. G.

THINGS YOU MAY HAVE MISSED

The Swan Flower

The swan flower (*Aristolochia grandiflora*) is the largest member of the Dutchman's pipe family, and also the largest flower of the western hemisphere. Unfortunately this remarkable native of Central America and the West Indies is one of the most malodorous of tropical plants. The unpleasant scent of its great flowers has been described as resembling that of decaying tobacco. This odor, and possibly also the blotched colors, attracts insects, particularly flies, which act as pollinating agents.

The plant often is also called pelican or goose flower. In Jamaica it has been given the name "poison hog-meat," and the well-known botanist, John Lunan, in "an account of its virulent nature," wrote: "The plant is so abominably fetid that it is detested and shunned by most animals, yet when hogs venture, through necessity, to eat of it, it destroys them." One report tells of a whole herd of swine perishing from eating the roots and young stems. In some localities native children are said to adorn their heads with the flowers in lieu of hats.

The flowers, like those of other plants in this family, are typically tubular. In the swan flower the tube is S-shaped, and its free margin is enormously expanded. In the throat of the tube is a diaphragm with an opening which makes the flower an effective insect trap, luring many small creatures of the air to their deaths.

In the illustration is shown a reproduction from nature, made at the Museum on the basis of a specimen collected in Guatemala. It is exhibited in the Hall of Plant Life (Hall 29).

Largest Flower of Western Hemisphere

Reproduction of the swan flower of Central America and the West Indies, on exhibition in the Hall of Plant Life. One of the flowers is shown in profile, revealing, when picture is turned with left side down, the resemblance to certain birds from which the plant gets such names as "swan," "goose," and "pelican flower."

SUNDAY TOURS IN FEBRUARY FEATURE GEMS AND JEWELS

With reservations being made several weeks in advance, the popular Sunday afternoon lecture tours conducted by Mr. Paul G. Dallwig, the Layman Lecturer of Field Museum, will continue through May. "Gems, Jewels and 'Junk,'" is the new subject for the four Sundays in February. This lecture includes tours of H. N. Higinbotham Hall, devoted especially to gems and jewels, and also of exhibits in other halls in the Department of Geology pertaining to precious and semi-precious gem stones and the sources from which they are obtained. Mr. Dallwig describes the processes of mining, cutting, and polishing gems, and relates many human interest stories about the most famous diamonds in the world. He also gives his hearers an insight into the workings of the international jewel markets.

In March the subject of Sunday tours will be "Nature's 'March of Time,'" dealing with prehistoric animals.

Each Sunday lecture tour is limited to a party of 125 persons. Reservations must be made in advance by mail or telephone (Wabash 9410). Parties are restricted to adults.

The lectures begin promptly at 2 P.M., and end at 4:30. Members of the parties may obtain refreshments in the Cafeteria, and smoke, during a half-hour intermission midway in the tours. Special tables are reserved for the groups.

GIFTS TO THE MUSEUM

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

Department of Anthropology:

From Alvan T. Marston, London, England—16 flint implements and a molar tooth of an elephant, England; from Miss Helen M. Dart, Chicago—a Bundu mask, West Africa.

Department of Botany:

From Irving Knobloch, San Juanito, Mexico—130 herbarium specimens, Mexico; from R. A. Dyer, Pretoria, South Africa—10 palm fruit specimens, South Africa; from Dr. Herbert M. Evans, Berkeley, California—1,650 herbarium specimens, California, Montana, and Oregon; from Dr. William R. Taylor, Ann Arbor, Michigan—10 specimens of algae, Arctic America.

Department of Geology:

From *The Chicago Tribune*—a relief map of North America; from Dr. H. C. Dake, Portland, Oregon—23 almandite crystals, Idaho; from Donald C. Boardman, Fillmore, California—2 specimens of lava and tuff inter-stratified, California; from Miss Bertha F. Gordon, Porterville, California—6 photographs of Death Valley and vicinity, California.

Department of Zoology:

From University of Miami, Coral Gables, Florida—a turtle, Bahamas; from Chicago Zoological Society, Brookfield, Illinois—a rat kangaroo and 4 birds; from Mrs. Clara K. Walton, Highland Park, Illinois—5 birds, Illinois; from Phil C. Orr, Santa Barbara, California—a cleaned domestic fowl skeleton; from Miss Claire Nemec, Chicago—a specimen of mollusk, Texas; from H. W. Lix, Hot Springs, Arkansas—a snake, Arkansas; from Luis Mille, S. J., Bahia de Caraquez, Ecuador—6 sponges and corals, Ecuador; from Michael Lerner, New York City—a mounted specimen of a North Atlantic broadbill swordfish, Nova Scotia, and a large photograph of it; from John M. Schmidt, Homewood, Illinois—a Florida opossum.

NEW MEMBERS

The following persons were elected to membership in Field Museum during the period from December 16 to January 15:

Associate Members

Adam Gabriel, Otto Madlener, Oscar G. Mayer, Joseph D. Murphy, Sarkis H. Nahigian.

Annual Members

Samuel Adams, Amos G. Allen, Mrs. H. S. Austrian, John S. Burchmore, Frank Osborne Elliott, Dr. Gordon B. Fauley, Mrs. William Edward Graham, J. C. Hauser, Mrs. Henry T. Heald, Benjamin G. Kaplan, H. A. Kern, Frank Kotrba, Mrs. Johannes Krawetz, Adolph Kroch, Arthur Kruggel, O. W. Lehmann, Mrs. Kenneth Llewellyn, Mrs. Samuel Nast, John F. O'Toole, Henry R. Richardson, Miss Lavinia Ritter, Meyer Schuman, John M. Simpson, Howard M. Sims, A. E. Thiffault, Casimir R. Wachowski.

SEASICK FISH

Page Mr. Ripley of "believe it or not" fame. This is a fish story, avowedly, but a true one although it makes severe demands on one's credulity.

While in a power boat, with the sea running high, during a Museum expedition off the coast of Maine, Mr. Alfred C. Weed, Curator of Fishes, and Staff Taxidermist Leon L. Pray, made a curious observation—that fish, of all creatures, are subject to *mal de mer*. The Museum men had made a good catch of live specimens, which they kept in a "live-car" alongside the boat. As the intensity of the waves increased, the water washed over the live-car in such a way as to provide potential means of escape for the captives. But the fish, actually and visibly seasick from the swaying motion of the container, remained miserably at the bottom of their floating prison-tank, with no apparent interest in swimming out to the freedom that beckoned. Later they were transferred to tubs on board the boat, but continued to suffer from the pitching and rolling motion of the vessel until port was reached.

FEBRUARY GUIDE-LECTURE TOURS FOR WEEK-DAY VISITORS

Conducted tours of exhibits, under the guidance of staff lecturers, are made every afternoon at 3 o'clock except Saturdays, Sundays, and certain holidays. Following is the schedule of subjects and dates for February:

Wednesday, February 1—Races of Mankind; Thursday—General Tour; Friday—South American Animal Life.

Week beginning February 6: Monday—Coal and Oils; Tuesday—Plants with Curious Habits; Wednesday—Burial Customs; Thursday—General Tour; Friday—Animal Families.

Week beginning February 13: Monday—Indians of North, Central and South America; Tuesday—Prehistoric and Modern Mammals; Wednesday—Story of Flax and Cotton; Thursday—General Tour; Friday—Birds at Home.

Week beginning February 20: Monday—Life in the Far East; Tuesday—Rocks and Their Formation; Wednesday—The Cavemen; Thursday—General Tour; Friday—Horses and Their Relatives.

Monday, February 27—Plant Ecology; Tuesday—Ancient Mexico.

Persons wishing to participate should apply at North Entrance. Tours are free. 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.

Examples of the traveling natural history exhibits circulated among Chicago's schools by the N. W. Harris Public School Extension are shown in Stanley Field Hall.

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 Correaponding, additiona under these classifications being made by apecial action of the Board of Trustees.

Each Member, in all classes, is entitled to free admission to the Museum for bimself, his family and house guests, and to two reserved seats for Museum lecturea provided for Members. Subscription to FIELD MUSEUM NEWS is included with all memberships. The courtesiea of every museum of note in the United Statea 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.

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.

Contributions made within the taxable year not exceeding 15 per cent of the taxpayer's net income are allowable as deductions in computing net income for federal income tax purposes.

Endowments may be made to the Museum with the provision that an annuity be paid to the patron for life. These annuitiea are guaranteed against fluctuation in amount, and may reduce federal income taxes.

PRINTED BY FIELD MUSEUM PRESS

Field Museum News

Published Monthly by Field Museum of Natural History, Chicago

Vol. 10 MARCH, 1939 No. 3

LARGE RELIEF MODEL OF NORTH AMERICA PRESENTED BY CHICAGO TRIBUNE

By L. BRYANT MATHER, JR.
ASSISTANT CURATOR OF MINERALOGY

From *The Chicago Tribune* the Museum recently received, as a gift, an unusually large model in relief of the continent of North America. This model, 10 feet wide and 15 feet long, has been repainted, and mounted on the west wall of Hall 36 in the Department of Geology.

There are many different ways in which a model such as this can be used to show, far more clearly than could many pages of writing, various interesting features of the continent on which we live. However, its most effective and valuable use in the Museum seems to be as an exhibit illustrating basic physical facts about North America: its shape, the elevation of the land, and the major physical divisions into which it may be divided.

The actual height of the land above sea level is shown modeled to scale. Lower areas are colored green, increases in depth of shading indicating lower land. Higher areas are buff to brown, the color darkening to correspond with rises in the level of the land. Conforming to conventional usage, areas covered by water are colored blue, and those covered for the greater part of the year by snow are colored white.

This relief model recalls to mind a number of facts that the average person seldom thinks about once his school-days are a few years behind him. For example, do you remember that the continent of North America contains approximately 8,300,000 square miles or just a little more than half of the land area of the entire New World of North and South America together? The American continental mass is intermediate in size between the earth's two other continental masses, the Eurasian-African-Australian group being a great deal larger, and the Antarctic mass much smaller.

The Museum exhibit, being a model in relief, illustrates graphically that the average height of the land of North America above sea level is only 2,100 feet, yet its highest point, Mount McKinley in Alaska, rises to an elevation of 20,310 feet. Higher mountains are found only in South America and Asia. Also the map makes clear the location of the lowest dry land on the continent, which lies in Death Valley in southern California, some 280 feet below sea level. Likewise indicated is the lowest part of the continent that is not dry land—the deepest point in Lake Huron, which is approximately 500 feet below sea level.

At present the oceans overlap the edges of the continent to some extent. It has been estimated that since the beginning of melting of the ancient ice sheet that once covered large parts of North America, the level of the oceans has been raised 258 feet by the water that has been returned to them, and that when the ice that still remains has all finally melted, the level of the sea will rise another 150 feet. The relief model in the Museum shows graphically that should this condition occur, only the tops of the highest buildings in cities such as New York and Boston would remain above the sea. Chicago would remain on quite dry land, but would be some 300 miles nearer to the Gulf of Mexico, due to the submergence of the lower Mississippi Valley.

The shape of continents is due to the location of their mountain ranges. North America owes its triangular shape to the spreading apart in the north of its two great mountain chains. The principal irregularities in continental outlines—peninsulas, bays and islands—arise either from the influence of these mountain chains or from sinking of low portions of the connecting plain.

In addition to the new model presented by *The Tribune*, there are other models in relief of parts of North America. These are on display in the west end of Clarence Buckingham Hall (Hall 35) and in the corridors between Halls 34, 35, and 36. Included are some devoted to the topography of Illinois and the Chicago region.

The North American Continent in Relief

Miss Elizabeth Hambleton (center), guide-lecturer on the staff of the James Nelson and Anna Louise Raymond Foundation, points out to a group of school girls and boy scouts interesting features on large relief model (10 by 15 feet) presented to Field Museum by *The Chicago Tribune*.

A GREAT GAME FISH— THE WHITE MARLIN

By ALFRED C. WEED
CURATOR OF FISHES

Fashions in game fishing usually change rather slowly. Some of the South Sea fishermen not only use the methods employed by many generations of their grandfathers but probably, in some cases, the same actual hooks and lines. Salmon fishing methods in England do not differ greatly from those that were in use when Izaak Walton wrote *The Compleat Angler*. On the other hand, we have in recent years seen many changes in American styles of fishing, both in tackle and in the kinds of fishes sought. These changes have been more notable in the marine fishes than in those of the rivers and lakes. Tarpon fishing as a sport is only about fifty years old.

Perhaps the most spectacular change in the sportsmen's ideas about game fishes has been the recent great rise in popularity of various members of the swordfish group. "Broadbill," the real swordfish, has been caught by anglers for many years at Catalina Island, California, but it is only a short time since attention began to be paid to sailfish and marlin in the waters around Florida and the West Indies. The search for sailfish was well established before our anglers began to try to take marlin. Two species of these magnificent fishes are fairly common in waters that can be reached easily from Miami, Florida, or from Bimini, Bahama Islands. The larger and less known of these is the blue marlin. This fish may reach a length well over ten feet and a weight of several hundred pounds. Such a fish makes a splendid trophy and may force the angler to work hard for some hours before it can be brought into the boat.

SPECTACULAR LEAPS

The white marlin is considerably smaller, not much larger than a sailfish, and rarely reaches a weight of more than one hundred pounds. However, this is not all the story. An active fish, weighing eighty to a hundred pounds, on moderately light tackle can give the angler plenty of thrills, and it seems from published accounts that this is just what the white marlin does. If one can believe the stories in books and magazines, there are few, if any, fishes that put up a more spectacular battle against the angler. While most fishes seek deep water when they feel the restraint of the line, the white marlin goes into the air, making spectacular leaps in such rapid succession that it seems to be dancing on the water.

The swordfishes of the world have not been well studied by scientists. There are three main divisions of the group. The true swordfishes carry on the front of the head a long, flat, bony structure resembling in shape the blade of a broad-sword. Fishes of this type are found in most warm and temperate seas. They look very much alike, and it is not yet known whether to class them all as one, or to make two or more species of them. All the others have pointed bony spikes in place of the sword. They are often called spearfishes to distinguish them from the swordfishes. These may be divided into two groups by the shape of the fin on the back. In the sailfishes this fin is very large, more than twice as high as the body of the rather slender creature. There are several species in this group.

STREAMLINED FOR SPEED

The marlins are larger and somewhat heavier for their length than the sailfishes, but still much more slender than the swordfishes. Their dorsal fins are smaller, quite high in front, and lower behind. All these fishes are streamlined for high speed. Because the fins would add much resistance they can be enclosed in grooves in the body of the fish so that they are entirely hidden much of the time. The number of species of marlins is not known. Various authors estimate it from two or three to about twenty.

In a new Hall of Fishes, currently in preparation, the Museum expects to have on exhibition some fine specimens of the larger game fishes. The most recent addition to this series is a beautiful specimen of white marlin caught by Colonel Warren R. Roberts in the Gulf Stream off Miami, Florida. This fish was mounted by Mr. Al Pflueger, of Miami, and presented by Colonel Roberts.

THIS MONTH AT THE MUSEUM

From various schedules which will be found in this issue of FIELD MUSEUM NEWS, it will be seen that there are special events scheduled for the entertainment and instruction of Museum visitors every day during March and April. On Saturdays, in the morning there will be the Raymond Foundation motion picture programs for children, and in the afternoon the illustrated lectures on science and travel for adults, both presented in the James Simpson Theatre. On Sunday afternoons there will be the lectures and tours conducted by Mr. Paul G. Dallwig, the Layman Lecturer. Daily from Monday to Friday inclusive there will be presented guide-lecture tours conducted by members of the Museum staff.

THE OLDEST KNOWN TEXTILES, MADE IN NEOLITHIC AGE

By HENRY FIELD
CURATOR OF PHYSICAL ANTHROPOLOGY

The average person probably does not associate the gentle arts of crocheting and embroidering with the sturdy woman of prehistoric times. Nor is there evidence that any form of textile making was known to the people of the Old Stone Age. But five or six thousand years ago some Neolithic lady (or was it her husband?) left a wooden crochet needle, and another some embroidered cloth for twentieth century excavators to find in prehistoric lake dwellings in Switzerland.

Evidences of the high development of various forms of textile art have come to light there. Spindle whorls and loom weights of stone and clay, bundles of raw flax fiber, specimens of knitted and netted fabrics, and loom-woven cloth of wool and of linen in forms as complicated as twill were found.

From these and other discoveries we know that this primitive people learned, possibly through accidental experience, that animal and vegetable fibers could be twisted to form long, strong threads; that from these threads they wove cloth; and that they decorated their cloth with rich borders, chain and plait fringes, and embroidery. They even wove designs by combining threads of different textures.

Fleecy, hairy-surfaced textiles were used for rugs and capes; coarse bags were sometimes made of braided bast and rushes; and baskets were coiled and twined.

Contemporary knowledge of weaving in ancient Egypt is indicated by the figure of a horizontal loom decorating a Badarian bowl recently found and attributed to about 4000 B.C.

In the Hall of the Stone Age of the Old World (Hall C), Case 13 contains spindle whorls and loom weights, as well as woven fabrics and a reconstruction drawing of a loom. In Case 14 are samples of nets and twisted fibers which had been charred and were therefore well preserved, although buried for several thousand years in the bed of Lake Neuchâtel. The large diorama opposite these cases (No. VIII) represents an early morning scene beside Lake Neuchâtel. In the foreground two fishermen are hauling in their seine. At the entrance to one of the thatched dwellings of their village stands a large loom, awaiting the attention of the woman of the house.

A GROUP OF TOUCANS COLLECTED BY MANDEL EXPEDITION

By EMMET R. BLAKE
ASSISTANT CURATOR OF BIRDS

The feeding habits, migrations, convergent adaptation, protective coloration, and various other elements in the intricate life patterns of certain birds are revealed in the Guatemala forest habitat group recently opened to the public in Hall 20.

Data, and specimens and accessories for the elaborate group, were collected in the dense tropical rain-forest of eastern Guatemala. A special expedition, organized and sponsored by Mr. Leon Mandel, of Chicago, spent six months in the field on this mission. The expedition collected also material for two other habitat groups, one of the exotic quetzal, national bird of Guatemala, and the other of a nesting colony of oropendulas. These groups, exhibited in adjoining cases, were pictured and described in the September and December (1938) issues of FIELD MUSEUM NEWS.

Toucans and Their Habitat

Photograph shows detail of one section of a group in Hall 20. The specimens were collected by the Leon Mandel-Field Museum Zoological Expedition to Guatemala, of which Assistant Curator Blake was a member.

Puerto Barrios, the Caribbean port of Guatemala, familiar to many travelers in Central American waters, was chosen as the ideal locale to be reproduced. The humid forests, luxuriant vegetation, and abundance of parasitic plants, so ably portrayed in this Guatemala forest group, are typical of the vast tropical lowlands of eastern Central America.

Featured in the group are two species of toucan, or "billbirds." More than fifty species of this fruit-eating family are known to science. All are characterized by enormous beaks which are of light, cellular structure internally. The colors of the beaks are generally brilliant and follow characteristic patterns. Toucans are restricted to the American tropics, but representatives of this interesting family may be found in forested regions from sea level upward to altitudes of seven or eight thousand feet.

Many factors are involved in the formation of natural associations of bird-life. Similarity of nesting or of feeding habits frequently attracts birds of widely separated families. Tropical fruit trees, such as the one reproduced in the present habitat group, are particularly important focal points for many species during the season of fruitage.

Birds which, in their search for food, ordinarily are widely scattered in the vast forests, become concentrated in and about these occasional sources of abundant food. Bishop grosbeaks compete actively and successfully, as shown, with the larger and more voracious toucans. Tree-tops which ordinarily shelter only occasional accidental bird visitors, suddenly become alive with avian activity.

Something of the intense competition existing within the ranks of every related group of animals is suggested by the attack of a short-keeled toucan upon two smaller collared aracari which were monopolizing a berry-laden branch. Not until the tree is entirely denuded of ripe berries does the assemblage of birds scatter to forage elsewhere.

The very important biological principle of convergent evolution is illustrated in the group by a western barred wood-hewer and a chestnut-collared woodpecker. Although members of entirely different orders or major groups of birds, wood-hewers, as well as woodpeckers, are equipped with stiffened tail feathers which serve as a necessary support while the birds are perched in a vertical position. Field observations reveal the basic similarity of the feeding habits of these unrelated species, and one concludes that the similarity of structure has, through evolutionary channels, been the natural result.

Also included in the exhibit is a northern wood thrush, representative of a large number of species which nest in North America but retire to the tropics each winter. Some, like the wood thrush, pause in Central America. Many others continue southward to South America or even fly directly across the Caribbean. Most of our insect-eaters are highly migratory, even the smaller species performing amazing journeys twice each year. Unfortunately, all of our songsters, of which the wood thrush is one of the finest, become relatively silent in winter. The tropical forest never resounds with the songs of North American birds.

The birds in the group, as well as the painted background, were prepared by Staff Artist Arthur G. Rueckert, and the accessories were made under the supervision of Preparator Frank H. Letl.

BOTANIST EMPLOYS MONKEYS TO COLLECT SPECIMENS

Stories of monkeys as botanical collectors always seem fantastic and incredible. Some time ago FIELD MUSEUM NEWS printed such a story and aroused critical comments from the incredulous. Here is another more detailed and documented one from a British source:

The *Kew Bulletin*, No. 7, 1938, quotes from the Annual Report of the Director of Gardens, Straits Settlements, an account of the use made of berok monkeys (*Macacus nemestrina*), widely used in the East by the Malays for gathering coconuts, to collect botanical specimens from tall trees. Two young beroks, Jambul and Putch, are at present employed; they understand twelve words of Kelantanese and can thus be instructed to pick specific twigs, and drop them to the ground. Mr. E. J. H. Corner, Acting Director of the Gardens, who obtained the team from Kelantan, states, "A berok upon the shoulder can be likened, in effect, to a falcon on the wrist; and its employment is recommended both to amateurs for its charm and cheapness, and to keepers of reserves where it is desirable to collect specimens repeatedly from the same trees without damage to them. Jambul and Putch are the first beroks to enter the government service."

Group of Geologists Visits Museum

Fifty members of the Marquette Geologists Association visited Field Museum in a body last month. They were conducted through the exhibits of the Department of Geology by Chief Curator Henry W. Nichols and Assistant Curator L. Bryant Mather, Jr.

BROKEN DISHES REVEAL HISTORY OF PREHISTORIC DWELLERS IN SOUTHWEST

By PAUL S. MARTIN
CHIEF CURATOR, DEPARTMENT OF ANTHROPOLOGY

In the Southwest a revival of pottery making has resulted in refuse piles around modern Indian pueblos similar to the dumps of abandoned prehistoric towns. The Hopis are making "classical" pottery again—more important, they often break it. The pieces of a broken bowl or pot, called sherds, are of extreme importance to the archaeologist.

Reconatructing Pottery and History

Dr. Paul S. Martin, Chief Curator of the Department of Anthropology, and Miss Marjorie Kelly, atudying jars rebuilt from fragments collected in Colorado by last aummer'a Field Museum Archaeological Expedition to the Southwest. At right is Mr. Tokumatsu Ito, Ceramic Restorer of the Department, whose special skill is reassembling as many as a hundred or more tiny bits of an ancient vessel so as to restore its original form.

Sedentary people have lived in the Southwest for at least 2,000 years, and the correlation between agrarian habits and pottery production is high. Not only the Hopis, but the Indians at Santa Clara, San Ildefonso, Tesuque, Zuni, Jemez, Acoma and other villages, are now making pottery.

The ancient Hohokam, the Cliff Dwellers at Mesa Verde, and the Basket Maker Indians at White Dog Cave likewise all made pottery. Inevitably a large amount was broken, providing sherds. Archaeologists have discovered that, fortunately, a fair sized sherd with the design elements present is a satisfactory substitute for a whole jar or bowl. Examination of a number of sherds from one site affords a comprehensive picture of pottery-making activities.

DIFFERENTIATING CULTURAL PHASES

Originally it was fascinating enough to make a qualitative study of the sherds. There were gross differences between specimens from the pueblo of Acoma in New Mexico and those from the Oraibi pueblo in Arizona. Around these places one could discover site after site loaded with sherds similar to those produced in the present towns. It was possible to associate particular pottery-making habits with particular house types, and thus phases were recognized and differentiated. A phase is an arbitrary point or period in cultural change, characterized by a peculiar combination of cultural traits. The Cliff Dwellers were recognized as a phase due to their distinctive custom of building pueblos in caves, and because they made a characteristic classical pottery known as "Mesa Verde ware."

The typological differentiation of phases has been corroborated by excavations revealing sherds scattered all over the surface of a ruin, and refuse mounds saturated with broken bits of pottery from top to bottom. As early as 1911 remarkable differences were noted between sherds found in a top "cut" and those in the bottom. This differentiation, recognized as a natural phenomonon, is called stratigraphy.

A common sense principle is founded upon stratigraphy: given a dump heap or a room artificially filled and, providing there has been no disturbance of the fill (in either historic or prehistoric times), the bottom layer must be older than the top, and an overlying deposition must be more recent than any underlying it. It is safe to assume, until there is evidence to negate it, that the strata were contiguous and that the changes in ways of making pottery, as shown by the sherds from one stratum to the next, were natural, transitional steps.

Principally upon sherd evidence, the Southwest (from Chihuahua to Colorado, and from Texas to southern California) came to be viewed as an archaeological area in which the vicissitudes of a single, fundamental cultural pattern could be observed. Four original variations on the fundamental pattern were conjectured: a Yuman, a Hohokam, a Caddoan, and a Basket Maker. Each of these "roots" was composed of a myriad of phases differentiated from each other in time position. Yet there was an asymmetrical relationship between the phases of one root and those of others. Early Acoma was contemporaneous in time alone with the abandoned Hopi village of Sikyatki. Their methods of making pottery were entirely unassociated, and dependent upon cultural trends from widely separated areas.

The reconstruction of cultural history for the Southwest has been given a definite form. We know that each of the peoples of Acoma, of Zuni, and of the Hopi mesas boasts a separate ancestry. In latter days the rigorous, inexorable qualities of quantitative technique have been employed in archaeological research. Earlier it had been noted that "natural" levels of deposition, outlined by strata of ash or sterile soil, were not to be trusted. In one incident, it was found that upon dividing a "natural" level vertically at an arbitrary point the sherds on one side were 100 per cent of one phase, and the sherds on the other were 100 per cent of another phase. It was discovered also that, quite generally, all of the pottery types of all of the different phases present in a particular site would be found present through all of the fill. Quantitative technique counteracted this discrepancy. If a refuse mound is divided into squares, and the refuse removed in blocks of a given depth, a chronology of pottery types for each square and its respective blocks is established. These squares can later be compared and a single chronology for the entire site created. This does away with the contradictions of "natural" levels.

PROSPECTS FOR FUTURE STUDY

Also, although unassociated pottery types are often found from the top to the bottom of a mound, it has been noted that the types definitely "out of place" are present in a much smaller proportion than the bona fide wares of any particular level. Therefore, by making an arbitrary ruling that no pottery type under 10 per cent of the total number of sherds for a particular block may be considered as characteristic, it has been possible to remove this aberration of natural mixing of unassociated sherds.

This new technique lends itself to the recognition of subtle, transitional stages between phases that might contain the same pottery types, qualitatively, but with a wide variation in proportions. It is impossible to say how much more will be accomplished with such new evidence. From the pessimistic viewpoint, it should be mentioned that no one will ever fill in the gaps in the Southwestern chronology to the point where there will be nothing more to learn. Possibly it would be best to predict the unpredictable and to say that one day there may be an entirely new school of thought that will examine the findings of Southwestern archaeologists for the promulgation of natural laws of the ways and habits of mankind.

TOXICOLOGIST COMPLETES STUDY OF PERU'S "DEATH VINE"

The collections of the Marshall Field Peruvian Expedition (1929–30) included some stems, branches, and roots, and a quantity of a native decoction from a twining shrub or woody climber known as *Caapi*. This plant is the source of a powerful narcotic, used in rites and divinations, by medicine men of the Indians in the Peruvian Montaña region. The physiological effects of *Caapi*—excitation and visions, followed by depression—have been described repeatedly and are well known. The active principle of the drug was made the object of various investigations, but no definite results were obtained. It was therefore deemed advisable to offer the material to a competent toxicologist for study, and it was accordingly placed at the disposal of Dr. K. K. Chen, of the Research Laboratories of Eli Lilly and Company, Indianapolis, in 1931. A report on his investigation has now been published, after the lapse of these several years, in the *Quarterly Journal of Pharmacy and Pharmacology*, a British technical periodical.

Dr. Chen found the active principle of *Caapi* or *ayahuasca* to be harmine, an alkaloid already known from another plant source. The many different terms which have been applied by various authors to the toxic principle of Caapi—e.g., *telepathine*, *yajeine*, *banisterine*, etc.—now may all be discarded. In the words of Dr. Chen, "the mystery of the action of *Caapi* is thus resolved."

In his experiments with harmine on mice and rabbits, Dr. Chen found that the effects of the drug were neutralized to a large extent by injections of certain barbituric acid derivatives which appear to offer a possible means of treatment of *Caapi* poisoning.

The use of *Caapi* or *ayahuasca* by Peruvian aboriginals was described by Mr. Llewelyn Williams, Curator of Economic Botany, and leader of the expedition, in the August, 1931, issue of FIELD MUSEUM NEWS. The following reprinted excerpts are of interest in connection with Dr. Chen's report:

The name *ayahuasca* derives from the Quechua dialect words *aya*, meaning death, and *huasca*, meaning vine. The "death vine" belongs to the tropical family Malpighiaceae.

Among the 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.

Visiting Hours Change March 1

Beginning March 1, spring visiting hours, 9 A.M. to 5 P.M., will replace the winter schedule of 9 to 4. The new hours will continue in effect until April 30, after which the Museum will be open from 9 A.M. to 6 P.M. until September 4 (Labor Day).

THINGS YOU MAY HAVE MISSED—DYAK HUNTER OF BORNEO

The Dyaks of Borneo are world-famed for their prowess in hunting. In Hall G of the Museum is a life-size figure representing a typical Siang-Dyak hunter with his weapons.

The chief weapon, both in hunting and warfare, is the blowgun, an example of which is shown in the exhibit. Reeds are sometimes used for the making of blowguns, but more typical are those made from a straight-grained stick of hard wood. This is cut to the desired length, and the blowpipe is bored with a long iron rod having a chisel-like end. When it has been smoothed and finished, a spear blade is lashed to the end, so that it can be used not only as a blowgun, but in hand-to-hand combat with a human or animal foe. Thus it parallels the idea and effect of the rifle with bayonet attached as used in the armies of the world.

Blowgun Marksman

Fully equipped Dyak hunter as represented in Museum exhibit. The blowgun, with spear blade like a bayonet, is seen in right hand.

In its use as a gun, the missiles employed are tiny darts. These are fitted at one end with a cone of pith, and the other end is pointed. To increase their deadliness, the points are smeared with a powerful alkaloid poison. Placing a dart in the tube, the Dyak raises it to his lips and blows mightily—a man with good lungs can direct the dart with sufficient force to kill his quarry at a distance of several yards. Speed of death is hastened by the poison, but the meat of an animal slain in this way is not damaged for consumption as food. The darts are carried in a quiver on the belt, as shown in the exhibit.

A Dyak hunter carries also a shield for warding off poison arrows which enemies may direct against him, and for parrying spears or knife thrusts. A long fighting knife is another customary item of equipment. The young men are exceptionally skillful fencers and spend many hours practising with these knives.

The data for the Museum's figure of a Dyak were assembled by Dr. Fay-Cooper Cole, now of the University of Chicago faculty, in connection with the Arthur B. Jones Expedition to Malaysia of which he was the leader. This expedition made extensive collections for the Museum in 1922. Dr. Cole was then a member of the staff of Field Museum's Department of Anthropology.

Field Museum of Natural History

FOUNDED BY MARSHALL FIELD, 1893

Roosevelt Road and Field Drive, Chicago

FIELD MUSEUM NEWS

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

FROM THE DIRECTOR'S DESK—

A Great Friend of Chicago's Children

A Benefactor of Field Museum, whose widespread generosity to the people of Chicago is perhaps not fully known and appreciated, is Mrs. James Nelson Raymond. Her gifts created the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures, through which the lessons of plant and animal life, the composition and structure of the earth, and the strange lives of primitive peoples of the world are made known to the school children of Chicago. In addition to her Foundation at Field Museum, Mrs. Raymond has established a similar project in the Art Institute of Chicago to promote a consciousness of art among school children, and she has provided scholarships and benefits for students in other educational institutions.

Mrs. James N. Raymond

Founder of the Raymond Foundation. Through her benefactions, lessons in natural history are brought by Field Museum to approximately a quarter of a million children each year.

The contributions of Mrs. Raymond for the conducting of work among children by Field Museum now amount to more than $565,000. A gift of $2,000 was received from her in February, following by only a few weeks the gift of $4,000 announced in the January issue of FIELD MUSEUM NEWS.

The continuous and enthusiastic support which Mrs. Raymond gives the Museum in its efforts to stimulate the interest of the growing generation in Nature and Science is one of the greatest factors in the institution's success as an educational force. Mrs. Raymond's Foundation is one that is working in a field where the most good can be accomplished, the young generation, upon which all our hopes must rely for the building of a better society, conscious of the needs and rights of contemporary mankind. A sincere appreciation of Nature is a potent force toward an improved civilization and a higher type of citizenship. The Raymond Foundation is developing this appreciation. It is a great and good work, the importance of which cannot be over-emphasized.

CLIFFORD C. GREGG, *Director.*

Distinguished Visitors

Among distinguished visitors recently received at Field Museum were the following: Colonel Richard Meinertzhagan, noted British ornithologist; Professor E. N. Transeau, Head of the Department of Botany, Ohio State University, and Dr. Osvald Siren, Curator of Oriental Art at the National Museum in Stockholm, Sweden.

Professor Malcolm F. Farley, of the Fukien Christian University at Foochow, China, is spending six months at the Museum on a research project in connection with Chinese ceramics and related subjects.

STAFF NOTES

Mr. L. Bryant Mather, Jr. has been appointed to the staff of the Department of Geology as Assistant Curator of Mineralogy. Mr. Mather studied at the Johns Hopkins University under some of the outstanding authorities of the mineralogical world. He has been engaged in mineralogical work for the United States Geological Survey and the National Park Service, and served for a time as Curator of Mineralogy in the Museum of the Natural History Society of Maryland, at Baltimore.

Mr. James R. Shouba has been appointed to the Museum staff to assist Superintendent W. H. Corning.

Mr. Karl P. Schmidt, Curator of Amphibians and Reptiles, presented his lecture, "A Naturalist in the South Seas," relating the story of the Cornelius Crane Pacific Expedition of Field Museum, before the Cornell Club of Chicago last month.

Staff Taxidermist John W. Moyer presented a lecture, "Behind the Scenes at Field Museum," before a large audience of guests of the Stevens Hotel on February 6. He also recently lectured before members of the Medinah Club.

Dr. Julian A. Steyermark, Assistant Curator of the Herbarium, has been appointed representative of Field Museum to the Conservation Council of Chicago, an organization devoted to the conservation of natural resources.

Dr. Steyermark gave an illustrated lecture before the Chicago Aquarium Society, February 15, on "Aquarium Plants and Their Flowers."

Staff Taxidermist C. J. Albrecht recently lectured on the life history of the Alaska fur seal before an audience at the Carnegie Museum of Pittsburgh.

NEW MEMBERS

The following persons were elected to membership in Field Museum during the period from January 16 to February 15:

Contributors

Wallace W. Lufkin, Clarence B. Mitchell

Associate Members

Mrs. Frances S. Cummings, Otto Gressens, George W. Lennon, Albert E. M. Louer, Frederic G. Pick.

Annual Members

Dr. Margaret Howard Austin, Mrs. Herman A. Behrens, H. L. Bloom, Sidney Weil Bloom, Clayton B. Burch, Richard W. Canman, James F. Clancy, Harry Dinkelman, George W. Dixon, Jr., Miss N. B. Durbin, Carl Ed, Henri Elman, Mrs. Cora F. Engel, Nick Fennema, Mrs. Earle B. Fowler, Thomas B. Gallaher, Herbert F. Geisler, Roger F. Howe, Mrs. R. M. Kimball, Mrs. Michael L. Mason, Mrs. George A. McKinlock, John B. Metzenberg, Mrs. Arthur O. Olsen, Mrs. George H. Parkinson, Dwight S. Parmelee, Mrs. John B. Rodgers, J. C. Schmidtbauer, J. A. Schram, Calvin F. Selfridge, Mrs. J. Harry Selz, Walter H. Siegfried, Sidney Stackler, W. L. Stensgaard, Albert J. Tarrson, Mrs. S. E. Thomason, Louis A. Weiss, E. L. Wilson.

A FEW FACTS ABOUT FIELD MUSEUM

Field Museum is open every day of the year (except Christmas and New Year's Day) during the hours indicated below:

November, December, January, February.....9 A.M. to 4 P.M.
March, April, and September, October.....9 A.M. to 5 P.M.
May, June, July, August....9 A.M. to 6 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 Museum's Library is open for reference daily except Saturday afternoon and Sunday.

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

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

Free courses of lectures for adults are presented in the James Simpson Theatre on Saturday afternoons (at 2:30 o'clock) in March, April, October, and November.

A Cafeteria serves visitors. Rooms are available also for those bringing their lunches.

Chicago Motor Coach Company No. 26 busses provide direct transportation to the Museum. Service is offered also by Surface Lines, Rapid Transit Lines (the "L"), interurban electric lines, and Illinois Central trains. There is ample free parking space for automobiles at the Museum.

"NATURE'S 'MARCH OF TIME'" ON SUNDAY TOURS

The prehistoric world, with its many strange forms of animals and plants which have been extinct for millions of years, will be brought to life for those who attend the Sunday afternoon lecture tours conducted during March by Mr. Paul G. Dallwig, the Layman Lecturer of Field Museum. "Nature's 'March of Time'" is the title offered by Mr. Dallwig for each of the four Sundays this month. The parties will tour Ernest R. Graham Hall of Historical Geology, where Mr. Dallwig will relate the most interesting facts about the various fossil specimens, as well as the restorations in which the creatures of the past are shown as science indicates they must have appeared in life.

Each Sunday lecture tour is limited to a party of 125 adults. Reservations must be made in advance by mail or telephone (Wabash 9410).

The lectures begin promptly at 2 P.M. and end at 4:30. Members of the parties may obtain refreshments in the Cafeteria, and smoke, during a half-hour intermission midway in the tours. Special tables are reserved for the groups.

In April Mr. Dallwig's Sunday tours will be on the subject "Digging Up the Caveman's Past."

GIFTS TO THE MUSEUM

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

Department of Anthropology:

From Dr. Henry Field, Chicago—3 glass and 4 pottery lachrymas and 3 glass bracelets, Italy; from William J. Town, Detroit, Michigan—a skull, Michigan; from C. J. Hambleton, Chicago—a Tibetan prayer wheel of silver, inlaid with turquoise and coral.

Department of Botany:

From R. C. Monteiro da Costa, Parà, Brazil—13 specimens of fibers and woods, Brazil; from Dr. Harold C. Bold, Nashville, Tennessee—20 specimens of algae, North Carolina and Tennessee; from University of California, Berkeley, California—91 herbarium specimens, South America, Mexico, and California; from Dr. F. Raymond Fosberg, Philadelphia, Pennsylvania—45 herbarium specimens, Hawaii.

Department of Geology:

From A. J. and Ray Schneider, Portland, Oregon—one rough and 7 cut and polished thunder eggs, Oregon; from Frank M. Preucil, Joliet, Illinois—6 meteorite photographs; from Glen C. Wolf, Chicago—110 concretions, Montana; from Grahame Horton, Glencullen, Oregon—a specimen of polished natrolite, Oregon.

Department of Zoology:

From Habib Rasool, Buxton, British Guiana—69 specimens of miscellaneous birds, British Guiana; from Dr. Wilfred H. Osgood, Chicago—28 small mammals and a mammal skeleton, Mississippi; from General Biological Supply House, Chicago—23 specimens of snakes, lizards, and fresh water snails, and a mass of eggs of the leopard frog, artificially produced, Florida, Panama, and the laboratory; from John G. Shedd Aquarium, Chicago—one Japanese giant salamander, and 8 fish specimens from Fiji, South America, Florida Keys, and Bahama Islands; from Chicago Zoological Society, Brookfield, Illinois—13 birds and 2 snakes.

The Library:

Valuable books from L. Bryant Mather, Jr., Dr. Henry Field, and C. Martin Wilbur, all of Chicago, and from Museo Arquologia e Historia de Yucatan, Merida, Yucatan.

The Raymond Foundation:

From Dr. Henry Field, Chicago—5 large colored transparencies of Egyptian subjects.

MARCH GUIDE-LECTURE TOURS FOR WEEK-DAY VISITORS

Conducted tours of exhibits, under the guidance of staff lecturers, are made every afternoon at 3 o'clock except Saturdays, Sundays, and certain holidays. Following is the schedule of subjects and dates for March:

Wednesday, March 1—Meteorites, Moon and Minerals; Thursday—General Tour; Friday—Carl Akeley and His Work.

Week beginning March 6: Monday—Uses of Plant Liquids and Fibers; Tuesday—The Eskimos and Their Cultures; Wednesday—Birds, Past and Present; Thursday—General Tour; Friday—The Story of Crystals.

Week beginning March 13: Monday—Reptiles of Ancient and Modern Times; Tuesday—The Door in History and Art; Wednesday—The Hall of Plant Life; Thursday—General Tour; Friday—China and Tibet.

Week beginning March 20: Monday—Animals of Cold Regions; Tuesday—Trees and Their Uses; Wednesday—Man Through the Ages; Thursday—General Tour; Friday—Field Museum Bronzes.

Week beginning March 27: Monday—The Earth and Its Crust; Tuesday—Paints and Dyes; Wednesday—Beavers and Other Gnawers; Thursday—General Tour; Friday—African Cultures.

Persons wishing to participate should apply at North Entrance. Tours are free. 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 FAMOUS GROUP—THE RARE MARCO POLO SHEEP

Marco Polo's sheep (*Ovis poli*), named for the famous Venetian traveler who first reported it, is generally regarded as the finest of all wild sheep. Its long, gracefully sweeping horns are among the most highly prized trophies of the hunt.

The habitat of these sheep is in the Pamir ranges of western Turkestan, beyond the main Himalayas, where travel is very arduous.

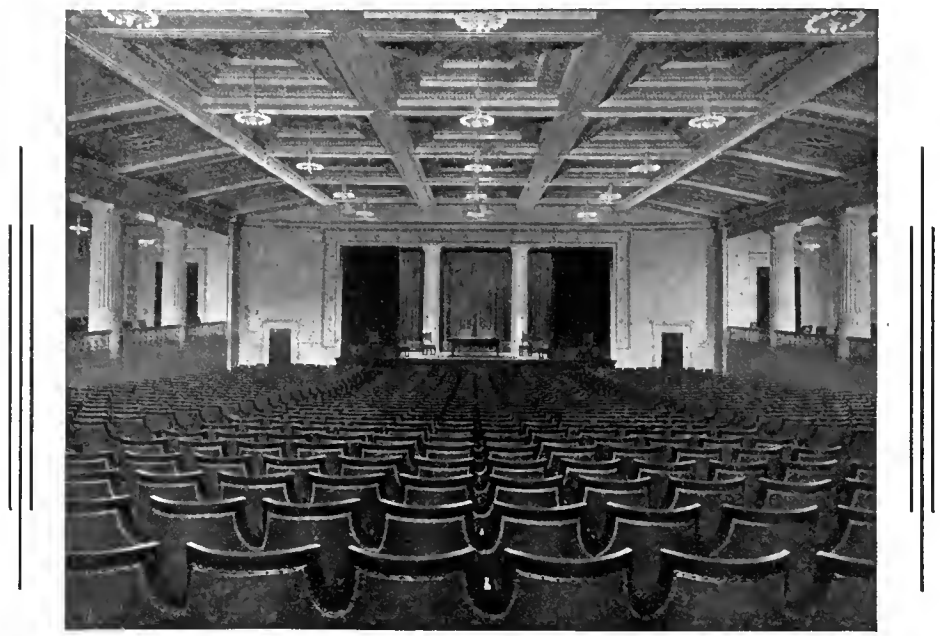
The specimens in Field Museum's group, on exhibition in William V. Kelley Hall (Hall 17), were shot by Colonel Theodore Roosevelt and Mr. Kermit Roosevelt, leaders of the James Simpson–Roosevelts Asiatic Expedition. They are good average examples of the species, with horns slightly more than fifty inches long. Although horns exceeding seventy inches in length are known, none approaching this size have been taken for many years, according to the records.

The Ovis Poli

Group of Marco Polo's sheep in William V. Kelley Hall. The specimens were collected by an expedition sponsored by Mr. James Simpson, and led by Colonel Theodore Roosevelt and Mr. Kermit Roosevelt, of New York.

SPRING LECTURES FOR ADULTS WILL BEGIN MARCH 4

The seventy-first free course of illustrated lectures on science and travel to be presented by Field Museum will open March 4. Lectures by well-known scientists, naturalists, and explorers, together with motion pictures and stereopticon slides, will be given each Saturday afternoon throughout March and April. These will be presented in the James Simpson Theatre of the Museum, and all will begin at 2:30 o'clock. Admission is restricted to adults.



The James Simpson Theatre

Field Museum's auditorium in which are presented the Saturday afternoon lectures for adults, and the Raymond Foundation entertainments for children on Saturday mornings. The adult course begins on March 4. The children's programs began in February. Both series will continue until the end of April. The Theatre was built with funds provided by Mr. James Simpson, who is both a Trustee and a Vice-President of the Museum. It is equipped for the presentation of both sound and silent motion pictures, as well as stereopticon slides. Seating capacity exceeds 1,100.

Following is the complete schedule of dates, subjects and speakers:

March 4—Where Falls the Yellowstone
Mr. Alfred M. Bailey, Colorado Museum of Natural History

March 11—Rainbow River
Mr. Martin K. Bovey, Concord, Massachusetts

March 18—Tropical Brazil
Mr. James C. Sawders, Nutley, New Jersey

March 25—Africa Speaks Again
Dr. Paul C. Hoefler, Los Angeles, California

April 1—The Basket Maker Indians in Eighth Century Colorado
Dr. Paul S. Martin, Field Museum

April 8—Life Among the Alaskan Eskimos
Mr. Elder C. Anderson, Minneapolis, Minnesota

April 15—Colorful Caribbean Shores
Mr. William B. Holmes, Evanston, Illinois

April 22—Mysterious Kinabalu
Mr. Harold J. Coolidge, Jr., Museum of Comparative Zoology, Cambridge, Massachusetts

April 29—Western Wild Flowers
Mr. John Claire Monteith, Hollywood, California

No tickets are necessary for admission to these lectures. A section of the Theatre is reserved for Members of the Museum, each of whom is entitled to two reserved seats on request. Requests for these seats may be made by telephone or in writing to the Museum, in advance of the lecture, and seats will be held in the Member's name until 2:30 o'clock on the day of the lecture. All reserved seats not claimed by 2:30 o'clock will be made available to the general public.

RAYMOND FOUNDATION OFFERS MORE CHILDREN'S PROGRAMS

Nine more free programs of motion pictures for children remain to be given on Saturday mornings during March and April in the spring series begun last month by the James Nelson and Anna Louise Raymond Foundation. The programs include films with talking and other sound effects, musical animated cartoons by Walt Disney, and a great variety of educational subjects. There will be two showings of the pictures on each program, one beginning at 10 A.M., and one at 11. Children from all parts of Chicago and suburbs are invited, and no tickets are required for admission. The Museum is prepared to receive large groups from schools and other centers, as well as individual children coming alone or accompanied by parents or adults. Teachers are urged to bring their classes.

The following schedule shows the titles of the films to be presented on each day:

March 4—How to Know Our Spring Birds; Where Bananas Ripen; Rainbow Natural Bridge; The Cutter *Northland* in Alaska.

March 11—Father Noah's Ark (Disney Cartoon); Living Jewels of the Surf; Sponge Divers of Tarpon; Jungle Playmates; Old Sea Chanties.

March 18—Mr. and Mrs. Goldfinch; Cheeka the Indian Lad:—Cheeka's Home; Cheeka's Canoe; Cheeka and the Caribou; The Proud Seminoles.

March 25—Pioneer Days (Disney Cartoon); The Strange Duck-billed Platypus; Thrills of Bali.

April 1—The Declaration of Independence; Elephants of Today.

April 8—Busy Beavers (Disney Cartoon); In Faraway Manchukuo; We're on Our Way; The Life of a Plant; Spotted Wings.

April 15—Bill and Bob Trap a Mountain Lion; Our Four-footed Helpers; The Trumpeter; Majorca the Picturesque; Wild Life on the Amazon.

April 22—Birds in the Spring (Disney Cartoon); Chumming with Chipmunks; Leaping Through Life; Pottery Makers of the Southwest; Nature's Armor.

April 29—In Nature's Workshop; Let's Save a Life; The Heart of the Sierras; Our Zoo Acquaintances.

An iron meteorite weighing 3,275 pounds, and remarkable for its large size and symmetrical form, is on exhibition in Case 10 of Stanley Field Hall. It was found near Tonopah, Nevada.

MEMBERSHIP IN FIELD MUSEUM

Field Museum has several classes of Members. Annual Members contribute $10 annually. Associate Members pay $100 and are exempt from dues. Sustaining Members contribute $25 annually for six consecutive years, after which they become Associate Members and are exempt from all further dues. Life Members give $500 and are exempt from dues. Non-Resident Life Members pay $100, and Non-Resident Associate Members $50; both of these classes are also exempt from dues. The Non-Resident membership are available only to persons residing fifty miles or more from Chicago. Those who give or devise to the Museum $1,000 to $100,000 are designated as Contributors, and those who give or devise $100,000 or more become Benefactors. Other memberships are Honorary, Patron, Corresponding and Corporate, 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.

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.

Contributions made within the taxable year not exceeding 15 per cent of the taxpayer's net income are allowable as deductions in computing net income for federal income tax purposes.

Endowments may be made to the Museum with the provision that an annuity be paid to the patron for life. These annuities are guaranteed against fluctuation in amount, and may reduce federal income taxes.

PRINTED BY FIELD MUSEUM PRESS

Field Museum News

Published Monthly by Field Museum of Natural History, Chicago

Vol. 10 APRIL, 1939 No. 4

THE GOLDEN EAGLE AND THE AMERICAN (OR BALD) EAGLE—HOW THEY DIFFER

By RUDYERD BOULTON
CURATOR OF BIRDS

All peoples of all times have been impressed with the power and spirit of large birds of prey, and the many species of eagles that exist in all countries of the world have been a focus for this interest. Countless legends and traditions attest to the high regard, and even perhaps to a little of the awe, in which these splendid birds have been held from earliest antiquity to the present day. The "thunder bird" of the Indians of the southwestern United States was probably patterned after a huge condor known only from fossil remains. The coats-of-arms of many nations include an eagle on the device, and eagles could only be flown by royalty when falconry was at its hey-day in medieval Europe.

The Golden Eagle

Habitat group of an outstanding bird of prey, as exhibited in the Hall of Birds (Hall 20). Although not new to the Museum's exhibits, this group has been recently reinstalled and improved by Taxidermist John W. Moyer.

In North America there are two species that occur commonly and have wide distribution. Magnificent specimens of both are shown in Field Museum: the bald eagle in Hall 21, and a habitat group of the golden eagle in Hall 20. The group was prepared by Taxidermist Julius Friesser, with painted background by the late Staff Artist Charles A. Corwin, and has just been reinstalled by Taxidermist John W. Moyer. The two eaglets are the gift of Mr. Alfred M. Bailey, formerly a member of Field Museum's staff, and now Director of the Colorado Museum of Natural History in Denver.

Golden eagles are holarctic in distribution —that is, they are circumpolar, and inhabit all north temperate regions. In this regard they resemble a great many birds, mammals, and other vertebrates that have taken advantage of the proximity of Alaska to Siberia and have extended their domain to include all habitats suitable to them. About six or seven geographic races have been recognized, based on slight differences in size and color. The American race is one of the largest and darkest, and the golden sheen from which the species gets its name is largely confined to the lanceolate hackle feathers of the neck.

Unlike the white-headed bird used as the national emblem of the United States, the golden eagle is partial to mountainous regions and arid barren wastes. It is therefore much more common in the western states than in the east, where it occurs only as a migrant. The nesting places of the eagles that yearly fly down the length of the Alleghenies are unknown, but the flights are of regular occurrence, and the birds can generally be seen in mid-October drifting past Hawk Mountain in Pennsylvania. Even in the Chicago region hardly a year passes without the visit of a straggler from his chosen mountain terrain. Yet golden eagles are not now known to nest east of the Rockies.

Eagle's nests, often poetically called eyries, are large affairs made of sticks and branches with a finer lining of leaves and lichens. Often a pair of eagles will have two or three nests which they use in alternate years. The nests, when first built, are no more than three or four feet in diameter, but as they are used for many years and are continually repaired and added to, they become huge structures six or eight feet in diameter and as many feet thick.

Almost invariably the nest is perched on a ledge in a canyon or on a rocky crag from which a wide view can be obtained. Rarely, a huge tree is used. The eggs are two in number, occasionally three, and are white, attractively shaded and blotched with pinkish brown. It not infrequently happens that one egg is infertile and fails to hatch. If both eggs hatch, one of the youngsters is invariably larger than the other because the eggs are laid at an interval of about a week and the first-born gets a start on its nest mate. And thus it happens that often only one young bird is brought to maturity, for the elder and stronger youngster may tear its weaker brother to bits in the sheer exuberance of living.

Eaglets are clothed in thick, soft white down when they hatch. They wear this coat for about three weeks. Then comes a period of about two weeks while their feathers are growing, during which time they are ragged, pathetic looking creatures. They remain in the nest for another three weeks—two months in all—while they gain strength and confidence to venture into the exciting and strenuous world.

A reliable eye witness in California states, in describing his observations of an eagle teaching its youngster to fly: "The mother started from the nest in the crags and, roughly handling the young one, she allowed him to drop about ninety feet. Then she would swoop down under him, wings spread, and he would alight on her back. She would

soar to the top of the range with him and repeat the process. The farthest she let him fall was about 150 feet."

There is nothing particularly spectacular or bizarre about the courtship of eagles, but their complete mastery of the air makes the sight very impressive. The two birds circle in intertwining, ever rising spirals, sometimes brushing wings as they pass each other. Then the male will execute a series of "power dives" with half-closed wings, shrieking musically his *joie de vivre*. Eagles

The American Eagle

Also known as the bald eagle. Many people confuse this species, which is used as a national emblem of the United States, with the golden eagle shown in the illustration on page 1. The above specimen is in Field Museum's systematic collection of birds in Hall 21.

probably mate for life, but when one of a couple is killed, the other soon finds another partner and brings it to its established nesting territory.

Golden eagles feed largely on mammals—cottontail rabbits, ground squirrels, domestic and mountain sheep lambs, and even on antelope and deer occasionally. Strangely enough, they are also fond of rattlesnakes. There is an authentic instance of a fox attacking an eagle that was feeding on a rabbit that it had killed. After a fierce struggle, the eagle managed to rise into the air although the fox clung to its breast with clamped jaws. The eagle rose higher and higher and the fox, with nothing but thin air to brace himself against, was at a disadvantage. Eventually he released his hold and was dashed to death on the ground. The eagle escaped, exhausted and weak.

THE BALD EAGLE, OUR NATIONAL BIRD

The bald eagle, which nests from Florida to Alaska, is a strictly American bird unlike its widespread golden cousin. It is therefore appropriate that it should have been chosen as our national symbol by Congress on June 20, 1782. The habits and bearing of the white-headed bird do not compare, however, with the noble, fearless design for living characteristic of the golden eagle.

The bald eagle is rarely found far from water, for its food consists almost entirely of fish and water birds, although mammals that occur in marshes and along shores are taken. This eagle obtains its food whenever possible by strategy rather than by sheer power and speed. It is perfectly able to catch a full winged duck in the air. However, it is more likely to tire a duck by forcing it to dive repeatedly until the duck is exhausted and becomes an easy victim.

In its behavior towards the osprey or fish hawk, it is one of the most famous of pirates. The osprey, slightly smaller than the eagle, is an expert fisherman and expert he must be, for he often feeds both himself and the eagle. Waiting in majestic pose on the bare top of a dead tree, the eagle spies a heavily laden osprey returning to his nest. The marauder gives chase and though the osprey, if unburdened, might escape, he is eventually forced to drop the fish which the eagle often retrieves in full flight before it reaches the water.

TULIP TIME RECALLS A MANIA OF SEVENTEENTH CENTURY

By SOPHIA PRIOR

The tulip probably is the most popular of all spring garden flowers. It is a native of China, Japan, Siberia, Asia Minor, Turkey, the Mediterranean countries, and central Asia. Its early history and origin are very obscure. However, records show that it was first introduced into Europe from Turkey in 1554, at which time seeds were brought to Vienna by the Austrian ambassador to Turkey, and soon tulips spread rapidly over Europe. Clusius, a Dutch botanist and horticulturist, developed on a large scale new varieties which he sold. The red and yellow tulip with the narrow pointed segments, a favorite of the Turks, was developed into broad, rounded, petaled forms of unusual colors.

This anxiety for new varieties culminated in the year 1634 in the historic craze designated as "tulipomania," and during several subsequent years many Dutch fortunes were invested in bulbs and their culture, and vast sums were lost through speculation. Fabulous prices were paid for bulbs, as much as $1,000 to $4,000 each, until the government interfered. Holland nevertheless continued developing varieties for commercial purposes, and its tulips reached such a degree of perfection that to this day the Dutch bulbs are prized among gardeners.

Of interest to Chicagoans is the tulip festival held each spring at Holland, Michigan, a short drive from the city. This Michigan town was founded by Netherlanders and to this day has preserved much characteristic atmosphere of their homeland.

AN ODDITY AMONG MINERALS

By L. BRYANT MATHER, JR.
ASSISTANT CURATOR OF MINERALOGY

It looks like lard—it feels like butter—it cuts like cheese—yet it is a *mineral* that can't be melted!

The material possessing these striking properties was received at Field Museum as a gift from Mr. Ben Hur Wilson of Joliet, Illinois. Mr. Wilson reports that it came from a locality near Agate on the Union Pacific Railroad, fifty miles from Barstow, California, where it is being worked for use in the ceramics industry. The mineral has locally been called "Eyrite," derived from the name of its discoverer, but preliminary study in the Museum laboratory indicates that it is sufficiently similar to *Saponite* (Dana No. 488) to be classified as a variety of that species. Chemically it is a hydrous silicate of magnesium with about 20 per cent water, and small amounts of lime, fluorine and alumina. When the mineral is heated, the water is given off and the lard-like appearance of the specimen is changed to a chalk-like one. It is distinguished from its distant relative *Sepiolite* (better known as "Meerschaum") from which fine pipes are carved, and which is likewise a hydrous magnesium silicate, by several tests. The most striking of these is its failure to display that characteristic property of *Sepiolite* of adhering to the tongue.

EARLIEST SPRING FLOWERS

Among garden plants the earliest to bloom in the spring are the snowdrop (*Galanthus nivalis*), usually with white flowers, and the squill (*Scilla sibirica* and *Scilla bifolia*), usually with blue flowers. These are dainty low-growing herbs only a few inches in height. Both the snowdrop and the squill are natives of the cooler parts of Europe and Asia Minor, the Siberian squill inhabiting Russia and Asia Minor, while the snowdrop is a native of Europe from the Pyrenees to the Caucasus Mountains. They were introduced into cultivation in the United States by the early New England settlers. In the Chicago region they usually bloom in March and early April.

The crocus also flowers very early, as do the daffodils and jonquils, but these come into bloom somewhat later than the snowdrop and the squill. —J. A. S.

AVERY BOTANICAL EXPEDITION REPORTS SUCCESSFUL WORK

Letters received recently from Curator Paul C. Standley, in charge of the Sewell Avery Botanical Expedition to Guatemala, report exceptional success in field work in many widely separated areas of that country. During the past three months 10,000 specimens of plants have been collected, at altitudes varying from sea level to more than 12,000 feet. While vegetation is not so luxuriant during the dry winter months as during the wet summer season, at all times there is a great abundance of flowers to be found in favorable areas, Mr. Standley states.

Some of the richest regions for plants that Mr. Standley has visited have been the slopes of the volcanoes, which form such a conspicuous element of the magnificent Guatemalan scenery. He has collected plants on the slopes of the volcanoes of Pacaya, Agua, Fuego, Acatenango, and Zunil, and on March 6, with an Indian guide, he ascended on foot to the summit of the volcano of Santa Maria (12,560 feet), near Quezaltenango in western Guatemala. Santa Maria, one of the most celebrated volcanoes of Central America and perhaps the most symmetric and majestic of them all, has been almost unknown botanically, and is rarely visited by foreigners.

Mr. Standley reports that the work of the Guatemalan expedition has been greatly facilitated through the courtesy of Dr. J. R. Johnston, Director of the National School of Agriculture of Chimaltenango, Don Mariano Pacheco, Director of the Department of Agriculture, Guatemala, and Professor Ulises Rojas, Director of the Botanic Garden of Guatemala.

THINGS YOU MAY HAVE MISSED

Relation of Soil to Rock in the Chicago Area

With the approach of spring, interest in the soil rises to its annual high point. As the first shoots of green come up through the ground surface, it may be interesting to recall some of the unusual and characteristic features of the soils of the Chicago area and their relation to the rock surface beneath. In Hall 36 of the Department of Geology there is a model on which these relations are strikingly shown. It might be expected that in digging deeper the soil would become increasingly rocky until quite gradually it would grade into the unweathered rock, and quite likely this would be the case had Chicago not been visited by the great glaciers of the Ice Age.

If we could go back to the time before the ice came, we would find the Chicago region a country of rather steep hills and valleys covered by a soil derived from the underlying bed rock, a limestone of great age formed in the Niagara stage of the Silurian period (about 400,000,000 years ago). Then, as the glaciers slowly advanced and receded, this soil, and with it a layer of the limestone itself, was scraped off, as if by a giant carpenter's plane, not however destroying the ruggedness of the topography. As the ice melted and the glacier receded for the last time, these valleys and hills were filled and covered by sands and gravels that we call "till"—material that the glacier had picked up on its journey, some coming from as far away as the northern part of Canada. Thus it was that the glaciers that bared the limestone bed-rock were also the agents that buried it again, but this time under its present mantle of glacial drift.

There was a time, soon after the retreat of the ice, when Lake Michigan stretched considerably to the south and west of its present shoreline, covering most of the area on which the city is now built. During this time there was deposited over the till a relatively thin layer of lake mud which comprises the top soil layer of much of Chicago today. Erosion, since the glacier and later the lake retreated leaving the country to assume its present topographic form, has in some places removed the till and exposed the limestone at the surface. Elsewhere, especially in those places where before the glacier came there were valleys, the limestone is buried by as much as 200 feet of till.

These are the conditions interpreted as bringing about the situation represented in the model. They explain why in the Chicago area, as in all regions over which the glacier moved, there is a sharp break between the soil and the bed-rock below, and why the rugged rock surface is overlain by comparatively level terrain. —L.B.M., Jr.

Underneath "Chicagoland"

Model in the Department of Geology showing the relation of soil to rock in the Chicago area, and how this was affected by presence of glaciers in this region during the Silurian period, some 400,000,000 years ago.

Enormous palm leaves, as much as forty feet long, are shown in Hall 25.

CURATOR C. C. SANBORN RETURNS FROM EUROPEAN RESEARCH

Mr. Colin Campbell Sanborn, Curator of Mammals, who was appointed a Fellow of the John Simon Guggenheim Foundation last spring, returned from Europe on March 1. Through this fellowship he has spent the last seven months, chiefly in London at the British Museum (Natural History), working on a taxonomic revision of the horseshoe bats. In connection with this work he also visited museums in Edinburgh, Amsterdam, Leiden and Paris.

About twenty-five type skulls of bats, representing genera not in Field Museum, were photographed and measured so that these genera can be more accurately identified here, should the need arise. An exchange was arranged with the British Museum for 125 specimens, including five genera and many species new to the collection in this institution.

Mr. Sanborn spent two weeks in Scotland collecting red grouse for a proposed habitat group. Besides a dozen birds, he collected heather, bracken, and grass for accessories, and made photographs to be used for guidance in preparing the background. A few Scotch mammals were also collected.

In order to study two species of horseshoe bats in life, Mr. Sanborn made a trip to the Cheddar caves in Somerset, as the guest of Mr. J. L. Chaworth-Musters. Here, with the help of the Spelaeological Society of Bristol University, a number of caves were visited, and about fifteen specimens of bats were obtained.

The British Museum has entrusted Mr. Sanborn with the identification of some 800 bats collected in Haiti, Trinidad, and Dutch Guiana by Mr. Ivan T. Sanderson, author of *Animal Treasure*. The collection has been shipped to Field Museum for this study.

Mr. Sanborn was in London during the international crisis last September, and had to suspend his work to help pack type and other valuable specimens in the British Museum mammal collection for removal to a safer place in case of emergency.

The remainder of Mr. Sanborn's fellowship will probably be spent in the field, studying the life histories of bats, and photographing and collecting specimens.

THE CRYPTOGAMS OR NON-FLOWERING PLANTS—WHAT THEY ARE, AND THEIR IMPORTANCE

By FRANCIS DROUET
CURATOR OF CRYPTOGAMIC BOTANY

(Editor's Note:—The Cryptogams, or non-flowering plants, are of immense importance in the economy of Nature, and comprise thirteen out of fourteen major divisions of the Plant Kingdom. Large collections of them have in the course of years accumulated in the Herbarium of Field Museum, and some of them are represented in the botanical exhibits, but it is only recently, with the addition of Dr. Francis Drouet to the Museum staff, that it has been possible to give them anything approaching the scientific attention which they demand. —B.E.D.)

Perhaps many more than half the species included in the Plant Kingdom are those which bear no flowers or seeds; most of them have no leaves, stems, or roots. Such plants as a group are often spoken of as the Cryptogams. Familiar to us are the ferns, the mosses, the fleshy fungi, the molds, the lichens, the seaweeds, and the pond-scums, most of them large enough to be recognized with the naked eye. Less familiar, but of far greater economic importance, are the thousands of species of bacteria, fungi, and algae, which may be seen and recognized only under the microscope.

The bacteria comprise many hundred species of extremely small, single-celled, and mostly colorless plants which have little distinguishable internal structure. They all are parasites on other living things, or secure their food from dead or other organic matter. Many are useful to man; others are harmful. Certain species live within the bodies of human beings and other animals, and some of these produce poisons which cause such diseases as tuberculosis and pneumonia. Other species live in the bodies of larger plants. The amount of damage which they do to the leaves and fruits of trees and herbs is of vast importance to the agriculturist. Nitrifying bacteria live in the soil and in the roots of leguminous plants; they convert nitrogen of the air into nitrates, which are absorbed by green plants. Certain bacteria are responsible for the souring of milk, the spoiling of foods, the production of vinegar, and the decay of organic matter of all sorts. The bacteria are of such unparalleled economic importance to medical science, agriculture, and various industries that the highly specialized science of bacteriology has been developed.

THE CHIEF SOURCE OF IODINE

The algae are an even more extensive group of species, comprising both large and microscopic forms. The plant bodies consist of single or many cells; they all contain the green coloring matter (chlorophyll) which enables them to manufacture food from inorganic substances. The largest algae are the seaweeds, some of which exceed all other plants in length. Most of these are colored red or brown and grow in greatest abundance in shallow marine waters along rocky shores. They are the world's chief source of iodine and an important one of agricultural fertilizers. Some are used as food by many people, especially in the Orient. In both fresh and salt water there occur the diatoms, flagellates, and other microscopic algae. The federal and state bureaus of fisheries expend much money and time in the study of these unicellular plants, which are the basic source of food for all animals of the sea and of fresh water. The diatoms, the blue-green algae (Myxophyceae), and the green algae (Chlorophyceae) grow not only in water but also on soil and moist rocks. With the mosses and lichens, they are suspected of being responsible for the rehabilitation of poor and worn-out soils. The microscopic algae, and especially the Myxophyceae and flagellates, may develop in such abundance as "water-blooms" in reservoirs that serious damage may be done to city water supplies. Deposits of shells of diatoms which grew in the sea thousands of years ago, known now as diatomaceous earth, are used as polishing and insulating agents in industry.

The fungi are perhaps the largest group of cryptogams. They have single- or multi-celled bodies which contain no chlorophyll. Their food is derived from living plants or animals, or from other organic matter. They are responsible for certain human ailments, especially those of the skin, and for the majority of diseases of crop plants, which entail yearly losses of millions of dollars to the farmer. The molds and the fleshy fungi, along with the bacteria, bring about the decay of dead bodies of animals and of other plants. Mushrooms and certain other fleshy fungi are annually assuming more and more importance in American cookery. Still other fleshy fungi are deadly poisonous when eaten. The yeasts are unicellular fungi upon whose life processes the baking and brewing industries are founded. The yeast plants change sugar to alcohol and carbon dioxide gas, and, according to species and ingredients, are agents in manufacturing beer, wine, whiskey, etc. Gas from yeast makes bread dough rise.

The lichens are composite plants, made up of fungi and algae living together. They grow on rocks, trees, and soil. All are large enough to be seen with the naked eye. They often develop best upon poor, barren soils, especially in arctic regions, where they constitute the only food of herbivorous animals.

Collecting Cryptogams

Curator Francis Drouet is seen in search of algae in a pool in the bed of the Rio Pacoty, Ceará, Brazil. The plants are gathered in the vasculum or collecting pan which is strapped over the explorer's shoulder, and brought back to camp for sorting, study, and packing for shipment home.

EROSION PREVENTIVE

The mosses and liverworts are small green plants, never microscopic, many with stems and distinct leaves. They grow on soil, rocks, and trees, and in water. Those in the water are responsible for the formation of bogs. By gradually filling lakes and ponds with their own remains they bring about the ultimate disappearance of these bodies of water. The mosses, lichens, and soil algae cover bare soils, and are important in preventing erosion in deforested areas.

The most familiar green cryptogams are the ferns and their "allies," all rather similar in structure to the flowering plants. The ferns comprise many species, most of which live in the tropics, a few in temperate regions. Thousands of years ago these plants, with the horsetails, clubmosses, and extinct seed ferns, were a far more important component of the flora than they now are. Some grew to enormous sizes, as may be seen in the Hall of Plant Life (Hall 29), and in the reconstruction of the flora of the Carboniferous period in Ernest R. Graham Hall (Hall 38). Various species now living have economic uses.

Representative types of all these groups of cryptogams are on display in Hall 29.

STAFF NOTES

Mr. Llewelyn Williams, Curator of Economic Botany, on leave in Venezuela to aid the government botanist, Dr. Henry Pittier, in botanical exploration of that country, recently made a trip from Caracas across the Venezuelan Guiana, by way of Ciudad Bolivar and La Paragua. He was accompanied by Captain Felix Cardona, of the Venezuelan Frontier Commission. They journeyed in canoes up the Caroni River to regions very little explored botanically.

A paper "Chemistry in Field Museum," by Chief Curator Henry W. Nichols, Department of Geology, appears in the March *Chemical Bulletin* (American Chemical Society).

Dr. Samuel J. Record, Research Associate in Wood Technology on the staff of Field Museum, and Professor of Forest Products at Yale University, has been appointed Dean of the University's School of Forestry.

Staff Taxidermist John W. Moyer is the author and publisher of a book, *Lessons in Museum Taxidermy*, which appeared recently. It is intended as an aid both to the amateur who wishes to mount birds, mammals, fishes, etc. as a hobby, and to persons who wish to train themselves in taxidermy as a profession.

Twins—a boy and a girl—joined the family of Mr. Robert E. Bruce, Purchasing Agent of the Museum, on March 12.

Miss Elizabeth Peitzsch, Secretary to the Director of the Museum, became the bride of Mr. William E. Diez, on March 31.

Dr. Fritz Haas, Curator of Lower Invertebrates, presented a series of ten lectures under the general title "The Biologist Looks at Human Life," before the Jewish People's Institute during January, February and March. Mr. John R. Millar, Curator of the N. W. Harris Public School Extension, recently lectured on "Field Museum and Its Work," before the Biology Round Table. Dr. Julian Steyermark, Assistant Curator of the Herbarium, spoke before the Chicago Conservation Council, and before the Chicago Cactus Society, on botanical subjects. Mr. Emmet R. Blake, Assistant Curator of Birds, lectured before the Chicago Ornithological Society, and the Kennicott Club, on the work of the Sewell Avery Zoological Expedition to British Guiana, which he led. Mr. Karl P. Schmidt, Curator of Amphibians and Reptiles, lectured on animal geography to a class at the University of Chicago, and before the Illinois Committee of the Chicago Association of Commerce. Dr. Henry Field, Curator of Physical Anthropology, broadcast a lecture on "Recent Archaeological Discoveries Throughout the World" over a nation-wide radio network, in the Columbia Broadcasting System's Science Service series. Dr. Field also lectured before the Friday Club, and at the Art Institute before the Chicago Chapter of the Archaeological Institute of America, on anthropological and archaeological subjects.

GROUP SHOWS HOW POWHATANS MADE STONE IMPLEMENTS

One of the most important industries of North American Indians was the manufacture of stone implements. A race of hunters and warriors required stone knives, spearheads, arrow-heads, and scrapers in vast numbers. Quarries of flint and other varieties of workable stone were opened in many sections of the country, and extensive traces of pitting and manufacture are found by investigators today.

The group of figures shown in the accompanying illustration is a life-size exhibit in Hall B demonstrating how the work was carried on by Powhatan Indians in an extensive quarry on the site now occupied by the city of Washington. The costumes are restored from drawings left by John White and John Smith, historians of the Virginian colonies.

The Indian at the left is engaged in prying up the quartzite boulders, the best material

Indian Toilers

Life-size group showing implement makers of the Powhatan tribe, on exhibition in Hall B of the Museum.

found in the region. The middle one is breaking up the larger masses as a first step in shaping. The sitting Indian at the right is flaking out rude blades, a number of which are heaped at his side. These blades were carried away from the quarry to be worked into various specialized implements as occasion demanded.

A comparative exhibit of the skeletons of the higher apes and man may be seen in the Hall of Osteology (Hall 19).

NEW MEMBERS

The following persons were elected to membership in Field Museum during the period from February 16 to March 15:

Associate Members

W. C. Banes, Mrs. Sidney M. Bloss, W. H. Dangel, Edmund K. Eichengreen, Joseph M. Johnson, Rudolph J. Olson, Mrs. Ira M. Pink.

Sustaining Members

Sydney Stein, Jr.

Annual Members

William J. Alexander, E. M. Antrim, Walter Bachrach, Charles Bass, Mrs. R. B. Carter, Fred J. Clifford, Jr., Harry Cohen, Dr. C. A. Cummings, Miss Ellen T. Danielson, Mrs. H. G. Davies, Arthur G. Davis, Robert J. Eitel, Mrs. Albert W. Engel, Charles E. Fawkes, J. W. Floto, Charles W. Follett, John V. Frankenthal, Fred M. Friedlob, Ralph L. Goodman, Clinton B. King, Byron W. Knoblock, Simon P. Larson, Edward N. Lee, Mrs. Frank G. Logan, F. B. McConnell, Oscar F. Meredith, Mrs. E. W. Nardi, Herbert U. Nelson, Harvey Pardee, Ernest B. Price, Clarence E. Ridley, Earle L. Ross, Walter L. Rubens, Mrs. Philip Spiegel, Miss Charlotte M. Stevens, Theodore Tieken, Dr. E. E. Ulvestad, James Weber, R. T. Welch, William W. Welsh, Mrs. Frank A. Windes.

Distinguished Visitors

Among distinguished visitors recently received at Field Museum are: Dr. R. A. Falla, Director of the Canterbury Museum, Christchurch, New Zealand, who was in this country making a study of museum methods and techniques; Dr. Watson Davis, Managing Director of Science Service; Mr. Lorenz Hagenbeck, one of the owners of the Hagenbeck Tierpark, of Stillengen, Germany; Dr. Norman C. Fassett, Curator of the Herbarium of the University of Wisconsin; Mr. T. A. Monmayeda, Director of the Japan Institute, New York, who came to consult about Field Museum's plans for Japanese collections, and Mr. Taneo Taketa, Manager of the New York office of the South Manchurian Railway.

Field Museum of Natural History

FOUNDED BY MARSHALL FIELD, 1893

Roosevelt Road and Field Drive, Chicago

FIELD MUSEUM NEWS

CLIFFORD C. GREGG, *Director of the Museum....Editor*

CONTRIBUTING EDITORS

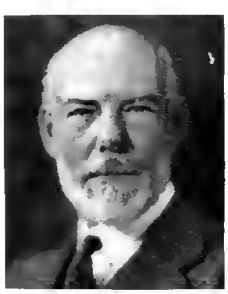
PAUL S. MARTIN.....*Chief Curator of Anthropology*
B. E. DAHLGREN.....*Chief Curator of Botany*
HENRY W. NICHOLS.....*Chief Curator of Geology*
WILFRED H. OSGOOD.....*Chief Curator of Zoology*
H. B. HARTE.....*Managing Editor*

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

FROM THE DIRECTOR'S DESK—

Another Benefactor of Education

The brief article which appeared in this column last month in tribute to a Benefactor of Field Museum brought such favorable comment that I am moved to tell of another good friend of the institution whose works should be known to its Members. I refer to Mr. Albert W. Harris, for many years a Trustee of the Museum, and now one of its Vice-Presidents and the Chairman of its Finance Committee.



Albert W. Harris

Mr. Harris, a Trustee and Vice-President of the Museum for many years, enthusiastically has carried on the benefactions of his father, the late Norman Wait Harris, Founder of the N. W. Harris Public School Extension Department.

For many years school children in Chicago have been privileged to study, in their own school buildings, exhibits which were brought to them by representatives of the N. W. Harris Public School Extension of Field Museum. This splendid service was founded by Mr. Norman Wait Harris, father of Albert Harris, in 1912. Mr. Stephen C. Simms, late Director of Field Museum, was the first Curator of the Harris Extension.

As the value of the Harris Extension became known in the schools of Chicago, demands and opportunities for its service came to the Museum in such numbers that the income from the special endowment was entirely consumed by operating expenses, and the requirements for expansion could not be met. Then it was that Mr. Albert Harris came to the support of his father's endowment, adding to it so that it might perform adequately the full service for which it had been founded.

When a new truck was needed, and money was not available, Mr. Harris quickly saw that the need was filled. When the vagaries of the earnings of securities and declining interest rates caused income to fall below the amount required for proper operation, Mr. Harris again came to the rescue. His gifts to Field Museum now amount to more than $250,000. Mr. Harris has not felt content to satisfy his interest in Field Museum with money alone, but has given unselfishly of his time, his advice, and his counsel.

His interest in the Museum, manifested not only in his gifts but by his keen appreciation of those actually carrying on the work, has been an incentive which has helped to keep up the high standard of the work done not only in the Harris Extension but throughout Field Museum.

—CLIFFORD C. GREGG, *Director.*

GIFTS TO THE MUSEUM

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

Department of Anthropology:

From Dr. Henry Field, Chicago—3 stamp seals, Iraq; from Miss S. W. Peabody, Chicago—6 ethnological specimens, Siam.

Department of Botany:

From Dr. Earl E. Sherff, Chicago—65 herbarium specimens; from Southwest State Teachers College, Springfield, Missouri—90 herbarium specimens, Missouri; from Dr. G. W. Prescott, Albion, Michigan—31 specimens of algae, Wisconsin; from University of Chicago—73 specimens of Brazilian woods; from S. C. Johnson and Son, Inc., Racine, Wisconsin—2 specimens of wax; from Dr. H. C. Bold, Nashville, Tennessee—14 specimens of algae, Tennessee; from Senor S. A. Guarrera, Buenos Aires, Argentina—11 specimens of algae, Argentina.

Department of Geology:

From George Byrland, Marion, Iowa—a hollow hematite concretion, Iowa; from R. E. Frison, Ten Sleep, Wyoming—8 gastroliths, Wyoming; from George Artamonoff, Chicago—a specimen of sand, Canal Zone; from A. D. Carter, East Los Angeles, California—26 minerals, California; from Ben Hur Wilson, Joliet, Illinois—a specimen of saponite, California; from Benedict Gresky, Chicago—6 specimens of boron carbide.

Department of Zoology:

From John M. Schmidt, Homewood, Illinois—3 bats, Texas; from John R. Schmidt, Lakeland, Florida—a limbless lizard, Florida; from Mrs. Robb White, Thomasville, Georgia—3 salamanders, Georgia; from Mrs. George Artamanoff, Chicago—5 fish, Guatemala, and 15 specimens of lower invertebrates, near Canal Zone; from D. S. Bullock, Goodrich, Michigan—64 frogs, toads, lizards, and snakes, Chile; from Chicago Zoological Society, Brookfield, Illinois—3 mammals; from Colonel Richard Meinertzhagen, London, England—4 mammals, northern Afghanistan; from H. Loewenstamm, Chicago—16 lots of land and fresh-water shells, representing 15 species, Palestine; from H. B. Conover, Chicago—3 birds, Paraguay.

The Library:

Valuable books from Biblioteca Municipal, Guayaquil, Ecuador; from Lyman Bradford Smith, Cambridge, Massachusetts; from Carnegie Institution, Washington, D.C. and from Dr. Henry Field, Clifford C. Gregg, and C. Martin Wilbur, all of Chicago.

Exhibit of Corwin Paintings

An exhibit of paintings by the late Charles Abel Corwin, former Staff Artist of Field Museum, was held last month at the Newcomb-Macklin Galleries, Chicago. Shown were landscapes and other works which Mr. Corwin painted prior to and during his many years of association with the Museum. While his work in this institution was confined to backgrounds for habitat groups, and to a series of murals in the Department of Botany, he maintained a private studio in which he continued other painting.

The pictures shown covered a wide variety of subjects, including many of the old West with its Indians and cowboys. There were also landscapes of scenes in the Chicago region, scenes from the Chicago World's Columbian Exposition of 1893, seascapes, and scenes of Hawaii where Mr. Corwin lived in his youth.

Grotesque totem poles and grave posts from tribes of the northwest coast of America are exhibited in Hall 10.

A FEW FACTS ABOUT FIELD MUSEUM

Field Museum is open every day of the year (except Christmas and New Year's Day) during the hours indicated below:

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

Admission is free to Members on all daya. 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 Museum's Library is open for reference daily except Saturday afternoon and Sunday.

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

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

Free courses of lectures for adults are presented in the James Simpson Theatre on Saturday afternoons (at 2:30 o'clock) in March, April, October, and November.

A Cafeteria serves visitors. Rooms are available also for those bringing their lunches.

Chicago Motor Coach Company No. 26 busses provide direct transportation to the Museum. Service is offered also by Surface Lines, Rapid Transit Lines (the "L"), interurban electric lines, and Illinois Central trains. There is ample free parking space for automobiles at the Museum.

FIELD MUSEUM MUMMY TO FLY TO NEW YORK WORLD'S FAIR FOR X-RAY EXHIBIT

By RICHARD A. MARTIN
CURATOR OF NEAR EASTERN ARCHAEOLOGY

A mummy named Harwa, from Field Museum's Egyptian collection, will leave Chicago April 5 on a United Air Lines sleeper plane for New York, to attend the World's Fair which opens there April 30.

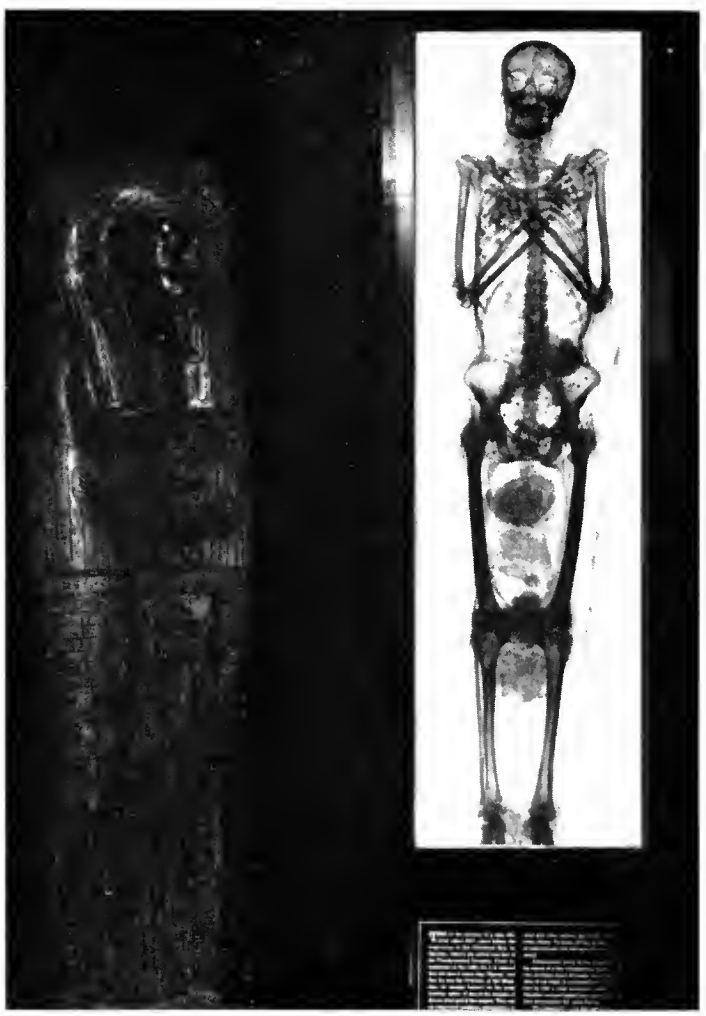
Twenty-eight hundred years after ending a useful life as an agricultural official for one of the temples dedicated to the ancient god Amon, Harwa now becomes the first adult-sized person to be publicly fluoroscoped. Visitors to the General Electric X-Ray Corporation's exhibit at the Fair will only have to press a button to see a fluoroscopic image of his skeleton. The mummy, with the coffin-lid nearby, will be displayed, as shown in the accompanying illustrations, against a background of black velour. Pressing the button energizes a mechanism which dims the golden-amber floodlights, shifts a full-length fluoroscopic screen in front of the mummy, and turns on 125,000 volts for the x-rays which then pass through the dried flesh and the layers of wrappings and create a full-sized image on the viewing screen.

Standard medical x-ray apparatus is used in conjunction with a specially built fluoroscopic screen made to these unusual specifications by the Patterson Screen Company, of Towanda, Pennsylvania. Lead glass will protect visitors from any harm by the rays.

Illustrations by courtesy of General Electric X-ray Corporation

Harwa as He Will Appear at New York World's Fair

Egyptian mummy and coffin lid loaned by Field Museum for the exhibit of the General Electric X-Ray Corporation. The young lady is pushing a "magic button" which dims the lights, energizes a mechanism that moves a large sliding fluoroscopic screen in front of the mummy, and starts a 125,000-volt x-ray machine into action.



Harwa's Skeleton Revealed by Fluoroscope

The x-rays pass through mummy wrapping and dried flesh, and a fluoroscopic image of the mummy's skeleton is projected on the screen. This remains for half a minute, after which the screen automatically slides back, again showing the mummy as it appears in the picture at the left, until another visitor pushes the "magic button."

BROADBILL SWORDFISH CAUGHT BY MRS. MICHAEL LERNER

An excellent mounted specimen of Atlantic broadbill swordfish was recently presented to the Museum by Mr. Michael Lerner, well-known sportsman, of New York. The fish was caught on rod and reel by Mrs. Lerner, off the coast of Nova Scotia, near Louisburg, Cape Breton, and it is reported to be the first swordfish ever thus taken by a woman angler in Canadian waters. The fish weighed 295 pounds, and it required nearly three hours of skillful work to bring it into the boat after it had been hooked. It will be included among exhibits in a new Hall of Fishes, upon which work is now in progress but which will not be ready to open for several months.

Mr. and Mrs. Lerner are now on an expedition to New Zealand and Australia for the American Museum of Natural History, New York, and stated before leaving that they would make efforts to collect some material also for Field Museum.

About a year ago Mr. Lerner presented to this institution a record-size swordfish of the blue marlin species, weighing 537 pounds, which he caught near the Bahama Islands. It will also be displayed in the new hall.

SATURDAY AFTERNOON LECTURES CONTINUE ANOTHER MONTH

Five illustrated lectures on science and travel in the spring course for adults remain to be given on Saturday afternoons during April. All lectures begin at 2:30 P.M., and are presented in the James Simpson Theatre of the Museum. The speakers engaged for the series are well-known scientists, naturalists and photographers. Motion pictures or stereopticon slides accompany each lecture. Because of the heavy demand for seats, children are not admitted; for them, the James Nelson and Anna Louise Raymond Foundation presents free programs of motion pictures on the mornings of the same days.

Following are the dates, subjects and speakers for the remaining lectures:

April 1—The Basket Maker Indians in Eighth Century Colorado
Dr. Paul S. Martin, Field Museum

April 8—Life Among the Alaskan Eskimos
Mr. Elder C. Anderson, Minneapolis, Minnesota

April 15—Colorful Caribbean Shores
Mr. William B. Holmes, Evanston, Illinois

April 22—Mysterious Kinabalu
Mr. Harold J. Coolidge, Jr., Museum of Comparative Zoology, Cambridge, Massachusetts

April 29—Western Wild Flowers
Mr. John Claire Monteith, Hollywood, California

No tickets are necessary for admission to these lectures. A section of the Theatre is reserved for Members of the Museum, each of whom is entitled to two reserved seats on request. Requests for these seats may be made by telephone or in writing to the Museum, in advance of the lecture, and seats will be held in the Member's name until 2:30 o'clock on the day of the lecture. All reserved seats not claimed by 2:30 o'clock will be made available to the general public.

APRIL SUNDAY TOURS PRESENT STORY OF PREHISTORIC MAN

"Digging Up the Cave Man's Past" is the title of the lecture-tours to be presented on Sunday afternoons during April by Mr. Paul G. Dallwig, the Layman Lecturer of Field Museum. Mr. Dallwig will conduct his listeners on tours of the Hall of the Stone Age of the Old World, lecturing on the series of dioramas containing life-size restorations of various types of prehistoric men, and on the extensive accompanying exhibits of artifacts displayed in near-by cases.

As each Sunday tour is necessarily limited in size to 125 adults (*children cannot be accommodated*), it is necessary to make reservations in advance by mail or telephone (Wabash 9410). Lectures begin promptly at 2 P.M., and end at 4:30. During a half-hour intermission midway in the tours, members of the parties wishing to do so may obtain refreshments in the Cafeteria, where they may also smoke. Special tables are reserved for the groups.

In May the subject of Sunday tours will be "The Parade of the Races," in connection with which Mr. Dallwig will conduct his hearers on tours of the Hall of the Races of Mankind containing the famous series of sculptures by Malvina Hoffman.

SPECIAL NOTICE

Members of the Museum who have changed residences or plan to do so are urged to notify the Museum of their new addresses, so that FIELD MUSEUM NEWS and other communications may reach them promptly. A post card for this purpose is enclosed with this issue.

Members going away during the summer, who desire Museum matter sent to their temporary addresses, may have this service by notifying the Museum.

FIVE PROGRAMS FOR CHILDREN ARE OFFERED THIS MONTH

The James Nelson and Anna Louise Raymond Foundation will present in April five more programs in its spring series for children. These programs are given on Saturday mornings in the James Simpson Theatre of the Museum. Admission is free. The films on each program will be shown twice, at 10 A.M., and at 11, in order to accommodate maximum audiences. Included are pictures with talking and sound effects, musical animated cartoons by Walt Disney, and educational subjects in great variety. Children from all parts of Chicago and suburbs are invited. No tickets are needed. The Museum is prepared to receive large groups from schools and other centers, as well as individual children coming alone or accompanied by parents or other adults. Teachers are urged to bring their classes.

The following schedule shows the titles of the films to be presented on each program.

April 1—The Declaration of Independence; Elephants of Today.

April 8—Busy Beavers (Disney Cartoon); In Faraway Manchukuo; We're on Our Way; The Life of a Plant; Spotted Wings.

April 15—Bill and Bob Trap a Mountain Lion; Our Four-footed Helpers; The Trumpeter; Majorca the Picturesque; Wild Life on the Amazon.

April 22—Birds in the Spring (Disney Cartoon); Chumming with Chipmunks; Leaping Through Life; Pottery Makers of the Southwest; Nature's Armor.

April 29—In Nature's Workshop; Let's Save a Life; The Heart of the Sierras; Our Zoo Acquaintances.

APRIL GUIDE-LECTURE TOURS FOR WEEK-DAY VISITORS

Conducted tours of exhibits, under the guidance of staff lecturers, are made every afternoon at 3 o'clock except Saturdays, Sundays, and certain holidays. Following is the schedule of subjects and dates for April:

Week beginning April 3: Monday—Ores and Metals; Tuesday—Native American Fruits and Vegetables; Wednesday—Animal Life of the Chicago Region; Thursday—General Tour; Friday—American Archaeology.

Week beginning April 10: Monday—Building Materials; Tuesday—Cats and Their Relatives; Wednesday—Races of Mankind; Thursday—General Tour; Friday—The Art of Ancient Egypt.

Week beginning April 17: Monday—Our Spring Birds; Tuesday—Palms and Cereals; Wednesday—Totem-pole Builders; Thursday—General Tour; Friday—Pottery and Porcelain.

Week beginning April 24: Monday—Apes and Monkeys; Tuesday—Plants of Tropical Lands; Wednesday—Glimpses of Melanesian Life; Thursday—General Tour; Friday—Jades and Their Uses.

Persons wishing to participate should apply at North Entrance. Tours are free. 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 by arrangement with the Director a week in advance.

MEMBERSHIP IN FIELD MUSEUM

Field Museum has several classes of Members. Annual Members contribute $10 annually. Associate Members pay $100 and are exempt from dues. Sustaining Members contribute $25 annually for six consecutive years, after which they become Associate Members and are exempt from all further dues. Life Members give $500 and are exempt from dues. Non-Resident Life Members pay $100, and Non-Resident Associate Members $50; both of these classes are also exempt from dues. The Non-Resident memberships are available only to persons residing fifty miles or more from Chicago. Those who give or devise to the Museum $1,000 to $100,000 are designated as Contributors, and those who give or devise $100,000 or more become Benefactors. Other memberships are Honorary, Patron, Corresponding and Corporate, 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.

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.

Contributions made within the taxable year not exceeding 15 per cent of the taxpayer's net income are allowable as deductions in computing net income for federal income tax purposes.

Endowments may be made to the Museum with the provision that an annuity be paid to the patron for life. These annuities are guaranteed against fluctuation in amount, and may reduce federal income taxes.

PRINTED BY FIELD MUSEUM PRESS

Field Museum News

Published Monthly by Field Museum of Natural History, Chicago

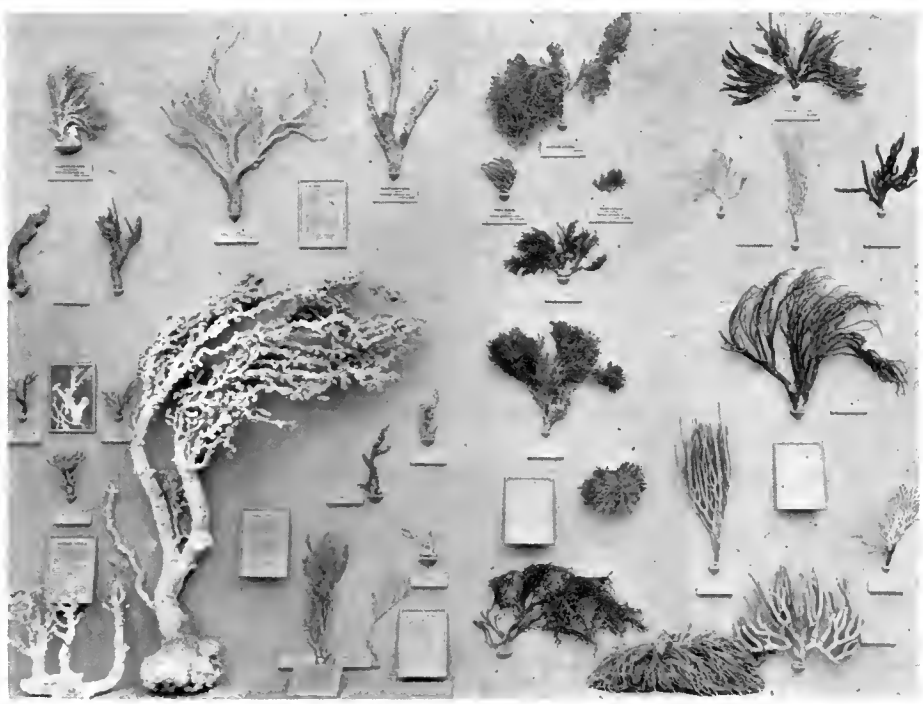
Vol. 10 MAY, 1939 No. 5

FANTASTIC INVERTEBRATE CREATURES OF THE SEA ARE SHOWN IN A NEW HALL

By FRITZ HAAS
CURATOR OF LOWER INVERTEBRATES

The lower animals, which are so fascinating to the human imagination because of their bizarre shapes, bright colors, and almost unbelievable patterns, are the subject of an extensive series of exhibits occupying a new hall (Hall M on the ground floor of the Museum), which was opened last month.

While it is planned later to make additions to these exhibits, the cases already available contain a choice collection. Many shells of clams and snails illustrate the thousands of variations of which these animals are capable. Varieties so tiny as to be hardly visible contrast with giant clams ranging from two to three feet in diameter, and weighing as much as 155 pounds. Included also are both marine and fresh-water pearl-mussels, with examples of the products obtained from them upon which various industries are based. Land snails of many highly colored varieties, and many grotesque shapes, form another interesting section of the exhibits.



One of the Exhibits in the New Hall of Lower Invertebrates

Many other cases, like this one, are filled with specimens of some of the strangest denizens of the sea depths. The displays of bizarre creatures are made all the more striking by a new and extremely effective type of lighting. In this particular group are shown some of the varieties of corals which resemble trees and shrubs in appearance.

Well represented are the corals, which make up a vast army composed of varieties ranging in color from white through all the hues of the spectrum, and of different forms which give them such names as "brain-like," "fan-like," and "tree-like" corals. Other odd creatures selected from the populations of seas and sea-shores for display in this hall are the sea-urchins, the star-fishes, and a host of other animals of strange appearance and remarkable habits.

These exhibits fill a gap which has long existed in the Museum's Department of Zoology. It is expected that they will not only attract the attention of lovers of nature, but that they may prove to be fertile material to stimulate the fancy of artists and designers because of the many surprising suggestions they offer as inspiration for compositions in color and form.

Outstanding in interest are life-size reproductions of a large octopus and a giant squid which are hung from the ceiling in this hall.

The exhibits in this hall are equipped throughout with a new type of "daylight" lighting which reveals the true colors of the specimens, bringing out rich tones as well as somber shades, and all the delicate variations, in a manner that has never before been possible with ordinary illumination. The hall is the first in Field Museum, and probably the first in any museum, to be thus completely equipped. The light is furnished by a new type of tubular fluorescent lamp, recently developed by the General Electric Company. As used in the Museum, these lamps are concealed in specially constructed light boxes at the tops of the exhibition cases. Before deciding to adopt this innovation, exhaustive tests were made in the Museum for several months to determine to what extent the lighting was improved, and also to ascertain whether the lights would cause fading or other damage to exhibited objects. The lamps passed the tests on all points. A check on the amount of current consumed indicates an average saving of 71 per cent in wattage as compared with the old type of lights. Certain other exhibits are already being equipped with the new lights, and plans are under consideration for gradually installing them in many other exhibits, and also in the Library, in offices and laboratories, and elsewhere.

NEW LIGHTING USED IN BIRD HALL ALSO

Shortly after the completion of the new Hall of Lower Invertebrates, installation of the new type of lighting used there was completed also in Hall 21, devoted to the systematic collections of birds. Here, as in Hall M, the new lights were found to have distinct advantages in showing exhibits in their true colors.

An application of the new lights in illumination of a habitat group has also been successfully made in the new Hall of Fishes (Hall O), currently in preparation. Exhibits in Hall O, however, will not be available to the public until construction and installation work is completed, which will require several more months.

A Gift of Navaho Textiles from Homer E. Sargent

Augmenting his many previous gifts over a long period of years, Mr. Homer E. Sargent, of Pasadena, California (formerly of Chicago), recently presented an additional collection of notable Navaho textiles.

EXPEDITION WILL COLLECT FLORIDA MARINE ANIMALS

An expedition to collect specimens of marine animals, and study the invertebrate life of the shores along both the Atlantic and Gulf coasts of the Florida peninsula, will leave Chicago about May 10. Members of the expedition are Dr. Fritz Haas, the Museum's Curator of Lower Invertebrates, and Mr. Leon L. Walters, of the staff of taxidermists.

Specimens will be sought by Dr. Haas for addition to the collection in the recently opened Hall of Lower Invertebrates (Hall M). He will also make studies and collect material for possible use in habitat groups planned for the future. Mr. Walters will assist Dr. Haas, and will make special attempts to obtain certain important species of large turtles—loggerheads and green sea turtles. From the specimens collected he will make plaster casts for use in preparing reproductions at the Museum later.

The expedition is sponsored by the President of the Museum, Mr. Stanley Field.

FOSSIL MAMMALS OF WEST SOUGHT BY EXPEDITION

A Field Museum expedition left Chicago on April 17 to collect skeletal material representing various species of extinct mammals in the Oligocene, Miocene and Pliocene fossil beds of northwestern Nebraska and eastern Wyoming. Mr. Paul O. McGrew, Assistant in Paleontology, is the leader. He is accompanied by Mr. John M. Schmidt, of Homewood, Illinois, and Mr. Orville Gilpin, of Chicago. The party drove to the region of operations in a motor truck, which will be used also for transport of the specimens excavated.

The expedition will seek prehistoric mammals of species not yet represented in the Museum's large collections. Previous surveys of the territory to be worked indicate that among the specimens which may be found are camels and rhinoceroses which once inhabited the American plains, small three-toed horses, and various rodents, carnivores, and insectivores. Some of the species to be sought lived as far back as forty million years ago.

Plans call for the continuance of the work until some time in July. The expedition is sponsored by Mr. Stanley Field, President of the Museum.

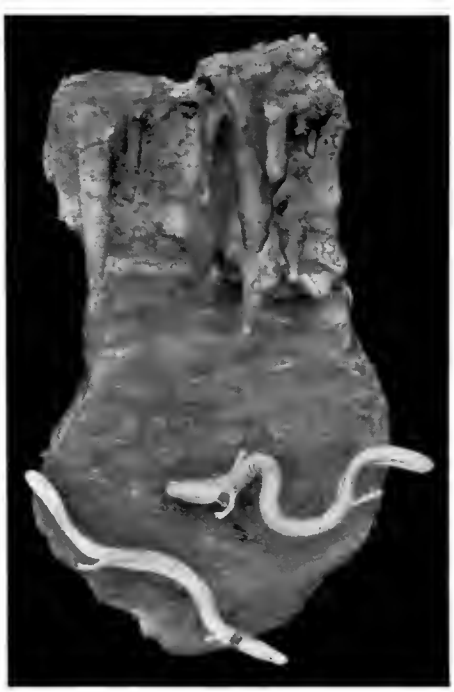
RAYMOND FOUNDATION AIDS SCHOOL RADIO PROGRAMS

On April 13 the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures presented the fourth in its series of "Radio Followup" programs of the present school year, in co-ordination with the science broadcasts of the Public School Broadcasting Council. Two informal meetings for groups of children were held in the Lecture Hall of the Museum. The subject was "The Age of Trees." Many fine specimens showing annual rings were loaned by the Department of Botany. Each child who attended had an opportunity to observe different types of woods and to study the formations of the annual rings, as well as to ask questions. The discussions were followed by conducted tours to Museum halls containing wood exhibits, and to Hall 7 for the exhibit explaining tree ring dating and its use in archaeology. One hundred sixty-nine pupils from eighth grade classes were the guests of the Museum for these programs. Similar programs given in preceding months treated the subjects of birch trees, coal, and meteorites. —M.M.C.

THINGS YOU MAY HAVE MISSED

The European Cave Salamander

The underground waters of caves in the Carinthian and Balkan limestone region harbor one of the strangest of living creatures—a white, blind, and eel-like salamander. It is known in German as "Olm," and in English sometimes as the proteus (from its scientific name, *Proteus anguineus*). Its bright red tufts of gills on each side of the neck mark it as a larval form—one of those salamanders which even breed as aquatic larvae and have altogether lost the adult land stage into which we may presume their ancestors transformed. The olm is further remarkable among salamanders for producing living young, numbering only two at birth.



White, Blind, and Eel-like
The European cave salamander (or "Olm"), as it is represented in an exhibit in Albert W. Harris Hall.

The olm is not difficult to transport and may occasionally be seen alive in aquaria in this country. In spite of the very considerable numbers of specimens captured for sale to aquarists and to scientists, the remaining olm population in caves happily does not seem to have declined.

There are two cave salamanders, also white and with eyes covered over with skin, in the United States. One occurs in the caves of the Ozark region of Missouri and Arkansas, and the other lives in the underground waters of a limited area in the vicinity of San Marcos, Texas.

The European cave salamander is shown in Albert W. Harris Hall. —K.P.S.

—and Things the Editors Missed!

A Correction

In the caption for the illustration accompanying the *Things You May Have Missed* article on page 3 of the April FIELD MUSEUM NEWS there occurred an error involving some 399,982,000 years, more or less. This caption placed glaciers in the Chicago region "during the Silurian period, some 400,000,000 years ago." The period of glaciation referred to was the Pleistocene, and it ended about 18,000 years ago. The Silurian period was the time of formation of the underlying rock of which the upper layer was planed off by the glaciers.

DR. P. S. MARTIN TO EXCAVATE RUINS IN NEW MEXICO

During the summer of 1939, Field Museum will again sponsor an archaeological expedition to the Southwest under the leadership of Dr. Paul S. Martin, Chief Curator of the Department of Anthropology. Resumption of this important work has been made possible by a gift from Mr. Stanley Field, President of the Museum.

Dr. Martin, who in recent years has completed eight seasons of field work in southwestern Colorado, will this season turn his attention to excavating some early ruins near Glenwood, New Mexico. He and his associates will leave Chicago about June 1, and will continue field operations until autumn.

Dr. Martin has concluded investigation of all of the various known manifestations in southwestern Colorado of Anasazi culture (i.e., the Modified Basket Maker Period, and Pueblo Periods I, II, and III). Two reports on his researches have already been issued by Field Museum Press, and another is in press now for release within a few months.

The ruins Dr. Martin will investigate in New Mexico this season belong to what is known as the Mogollon culture. It is barely possible that a cultural connection exists between the early Mogollon and the Basket Maker cultures, Dr. Martin states.

EGGS OF ODD SHAPES, SIZES, AND COLORS, EXHIBITED

A temporary exhibit of a selection of some of the world's most interesting birds' eggs has been installed in Stanley Field Hall. Originally placed on view as a special feature for the Easter week-end, it proved so popular among Museum visitors that it was decided not to withdraw it for several weeks. Ultimately, it is planned to substitute a more extensive permanent exhibit of eggs.

EVEN "TRIANGULAR" EGGS!

In the present exhibit are included eggs of various shapes, sizes and colors—eggs of long extinct birds, the smallest known birds' eggs, and a replica of the largest egg known. In addition to those of the familiar oval shape, there are approximately triangular eggs of shore birds, laid in groups of four which fit together in a nest like the pieces of a cut pie; tapered conical eggs of murres, and the round eggs of owls which are almost as spherical as billiard balls. The conical murre's eggs represent an example of Nature's provisions for "safety first." These eggs are not laid in nests, but directly on the rocks on high cliffs in the Arctic wildernesses they inhabit, where high winds blow. The conical shape causes them to roll in a circle when blown by the wind, instead of rolling off the cliffs to disaster.

The eggs in this special exhibit are selected from the Museum's vast study collection which comprises more than 60,000 specimens. The greater part of these were collected and presented by the Hon. R. Magoon Barnes, of Lacon, Illinois, Curator of Birds' Eggs. This collection is one of the largest and most important in America.

Among the eggs shown are those of the South American tinamous, remarkable for their pastel colors and a characteristic glaze that makes them appear as though they were made of glass; and eggs of the mound-builder birds which have a bisque-like texture resembling pottery. The mound-builders' eggs are laid in mounds and abandoned by their parents. Incubation is accomplished by rotting vegetation, and the young birds when thus hatched out are able to shift for themselves from the start, states Mr. Rudyerd Boulton, Curator of Birds.

A NINE-QUART EGG

The tiniest eggs shown are those of humming birds—scarcely the size of small coffee beans. The largest egg is that of the extinct *Aepyornis*, one of the three largest birds that ever lived. This bird attained statures exceeding eleven feet in height. Its eggs were as much as fifteen inches long, and had a capacity of about one and three-quarters gallons. The specimen exhibited is a replica, cast from a mold made over an original specimen in the possession of the Museum (the original is too rare to risk in an exhibit). Several of these replicas have been prepared by Mr. James H. Quinn, Assistant in the Museum's paleontological laboratories. The largest eggs of modern birds are those of the ostrich, which average about five and one-half inches in length by five inches in diameter. Cubically measured, one *Aepyornis* egg equals about six ostrich eggs, and about ten dozen hens' eggs.

Aepyornis is probably the inspiration of the many legends about the mythical "roc" (or "ruhk") which figured in the *Arabian Nights*. Rocs were supposed to feed their young on full-grown elephants which they carried to their nests, and to drop heavy boulders on the ships of early traders and sink them. It was in such an "air raid" that Sindbad the Sailor was wrecked, according to the story.

FOUND FLOATING AT SEA

Nests of the *Aepyornis* were made in the sand dunes of southwestern Madagascar. Eggs from these were often washed out by wave action, and then found floating at sea by Arab and Indian mariners. The sailors were naturally led to speculate as to what sort of bird could have laid such large eggs and thus the roc legends arose, according to Curator Boulton.

Tiny Nest of Hummingbird, and Eggs
Illustration is about actual size. Dimensions of the nest are: 1¾ inches in length, 1½ inches in width, 1¼ inches in outside depth, and ⅝ inch in inside depth.

Rare Books From Colonel Roosevelt

Two beautiful illuminated religious manuscripts from Tibet, written on parchment in the ornate Tibetan script, and bound in elaborate wooden covers, were recently presented to the Library of Field Museum by Colonel Theodore Roosevelt, of New York, a Trustee of the institution.

$1,250,000 for Glass

The plate glass required for the protection of exhibits in Field Museum runs into notable figures. The total amount used in all Museum cases is approximately 2,100,000 square feet, and represents a value of more than $1,250,000.

A GEOLOGICAL COLLECTION OF HISTORIC INTEREST

The Department of Geology has received, as a gift from Dr. Henry Field, Curator of Physical Anthropology, a large and valuable collection of minerals and fossils numbering more than 1,500 specimens. The collection derives much of its interest and significance from the fact that the specimens contained in it were collected or acquired more than 120 years ago by the Misses Salisbury of Baggrave Hall, Leicestershire, England. Before their death in the 1820's, these remarkable women had collected minerals and fossils from many of the now "classical" localities both in Great Britain and on the continent, and had acquired mineral specimens from points as distant as California, Siberia, and the East Indies.

Eight hundred of the specimens are invertebrate fossils, including assemblages of forms from the famous English localities of Wenlock, Lyme Regis, and the chalk cliffs, as well as from deposits of many other ages and places. Among the mineral specimens, of which there are more than 600, are representative examples of the varied and, in some cases, rare minerals of Cornwall, Devon, Cumberland and Derbyshire, as well as fine collections from Arendal, Norway, and the Vesuvius region in Italy.

In addition to providing a great deal of material for study, some of it from localities in which such specimens can no longer be obtained, this collection will enhance the exhibits, and will provide some material for educational use by the N. W. Harris Public School Extension. A specimen of Cumberland fluorite from this collection has been added to the fluorescence display between Halls 34 and 35. —L. B. M., Jr.

Higinbotham Portrait Received

A painting of the late Harlow N. Higinbotham, who was the second President of Field Museum, serving in that capacity from 1898 to 1908, has been presented to the Museum by Mrs. Richard T. Crane.

AFRICAN BOYS PROVE FORTITUDE AS MARRIAGE ESSENTIAL

By WILFRID D. HAMBLY
CURATOR OF AFRICAN ETHNOLOGY

When traveling through hilly country in east central Nigeria some years ago (while conducting the Frederick H. Rawson–Field Museum Ethnological Expedition to West Africa), my attention was attracted by a group of people arranged in a circle from the center of which came sounds of drumming and dancing. One could see at a glance that an important ceremony was in progress, as a dignified chief was in charge, while two "janitors" were enlarging the arena by a liberal and impartial use of their long whips.

All the people were of the Fulani tribe, who might almost be described as a *race*, so clearly distinguished are they from other Africans in appearance and language. There is a mixture of Negro blood in the Fulani, but the light brown skin color and refined features betoken basic traits of another race. Many of the Fulani are nomadic cattle keepers who wander over wide areas of west Africa, and without design I had the good fortune to arrive at the beginning of a rite of initiation into manhood. This pain test is an indispensable prelude to marriage, for no girl among those standing around would accept a coward.

How African Boys Prove Their Manhood

The flogging ceremony, a part of the initiation of the youths of the Fulani tribe in Nigeria. Note the marks on the body of the boy who is holding up the sword. The photograph was made by Curator Wilfrid D. Hambly, who was permitted to witness the ritual while in Africa conducting the Rawson–Field Museum Ethnological Expedition.

MATERNAL INSTINCT THWARTED

The chief secured for me a place near the orchestra whose principal instruments were slender drums one of which was held under the arm of each player. Louder grew the music, and more energetic were the efforts of the janitors with their whips, but when at last a space was clear a boy stepped forward and removed his tunic so that he was naked from the waist upward. From the circle of spectators rushed an elderly woman, the mother of the lad, who threw her arms about him, and in this protective manner sought to draw him back to the crowd. This, however, she was not permitted to do, and after a brief scuffle the boy stood holding a sword above his head.

Another boy of the same age came forward, testing the suppleness of a stout pliable stick that he swished through the air with great satisfaction as evidenced by his broad smile. The boy holding the sword appeared to take a less cheerful outlook, but despite the punishment he was about to receive he stood still and held the sword firmly. The music was accelerated, and in time to the rhythm the boy with the switch danced round his victim, pausing now and then to raise his weapon as if about to deliver a blow, then once more resuming his gyrations. The boy who held the sword stood still with downcast eyes, giving no indication of emotion when the blow threatened. His exhibition of stoicism drew applause from the onlookers.

At last the blow descended with a sickening thud, leaving a conspicuous welt. The sufferer bent double for a second, and an elderly man ran forward and rubbed him. Then the victim made a few rhythmical steps and smiled, rather faintly, at the crowd which was vociferous with applause. The actions of the victim were intended to indicate his contempt for pain. Three times the performance was repeated. Then came a transfer of roles. The sufferer proceeded leisurely to dress and take the whip, while the boy who had wielded it before now prepared to play a less happy part. Again an attempt was made at rescue, by the mother, but she was thrust back into the ring of spectators. The lad who had received three blows undertook his new task with relish, dancing slowly and threatening his victim repeatedly before actually delivering a blow.

WIVES CHOSEN AT ONCE

The second victim emerged as triumphantly as the first, and both were surrounded by admiring girls from whom the lads quickly selected their mates. The ceremony, though forbidden by the colonial government, is still considered by the Fulani as a necessary prelude to marriage. One cannot but wonder whether there are any boys who prefer to enjoy a painless bachelorhood.

In Sennar, far away from this site, I have seen men flog each other with rhinoceros hide whips as part of a wedding entertainment. Each man gave and received three blows, and all concerned appeared gratified with this crude exhibition of fortitude.

Additions to Mammal Exhibits

Recent additions to the systematic collection of mammals in Hall 15 include a screen on one side of which are displayed several species of hyena, and on the other side specimens of the varied assortment of interesting animals comprising the raccoon family. To the exhibit of monkeys has been added a specimen of the strikingly marked Indo-Chinese species known as the douc langur.

Hopewell Flint Discs

The largest single cache ever found in America of flint discs fashioned by prehistoric men is on exhibition in the Hall of North American Archaeology (Hall B). They come from the famous Hopewell Mounds of Ohio, and have been installed as nearly as possible in the same position in which they were left by the early Indian inhabitants of that region.

WILD FLOWER LEAFLETS—

Of special interest and usefulness to those interested in recognizing the wild flowers appearing at this season are illustrated leaflets, *Spring Wild Flowers*, and *Spring and Early Summer Wild Flowers*, published by Field Museum. J. Francis Macbride, Associate Curator of the Herbarium, is the author. The booklets are on sale at the BOOK SHOP of the Museum—25 cents each.

IRISH MOSS

By LLEWELYN WILLIAMS
CURATOR OF ECONOMIC BOTANY

Chinese gastronomes are famous for their strange dishes, prominent among which are ancient eggs and birds'-nest soup.

The secret of the palatability of the venerable eggs seems to be that they are pickled in a lime solution which preserves them almost indefinitely. They are sliced and served cold as in a salad.

The birds'-nest soup is made of material similar to the so-called Irish moss which is popular for puddings and desserts in the New England states, particularly Massachusetts and New Hampshire. The use of this small seaweed for food is not confined, however, to the United States. Its gelatinous properties and serviceability for the preparation of desserts have long been known in Europe and Great Britain, where the plant grows in abundance in many places off the coast, especially that of southern and western Ireland. A similar seaweed obtained from the Red Sea and Indian Ocean is used in Persia.

USED IN COIFFURES, HATS, BEVERAGES

Prior to 1835 the small quantity of this seaweed imported from Europe was sold in this country at $1 to $2 per pound. When it was found to be abundant also on this side of the Atlantic the price soon fell, and by 1880 it had been reduced to about 3 cents a pound. Besides serving as food, this marine plant has a variety of other uses, such as in making bandoline for stiffening milady's coiffure, for clarifying alcoholic beverages, and as sizing in the manufacture of calico and hats.

Irish moss, or carrageen, is one of the red algae, and as such is related to agar, or agar-agar, which yields a similar vegetable "gelatine." Its native habitat is the sea and it grows at low-water mark as well as at greater depths, but flourishes best on rocks constantly washed by strong waves. The harvest season extends from May to September. The plant is obtained in two ways—by hand-picking at low tides, and by means of long-handled rakes used from boats. Men go out in sailboats or dories at half tide, and return at half flood to scrape the "moss" off the rocks.

EXTENDED CURING PROCESS

For curing, fair weather with abundant sunshine is necessary. On being brought ashore the clumps of much branched moss-like algae are red and are spread out on the high beach to be bleached by repeated wetting and drying in the sun. The material is then placed in hogsheads, in which it is re-saturated with salt water by rolling the barrels in the marshes, after which the material is again spread out and further bleached. This alternate treatment is repeated four or five times until the product is yellowish-white. The final drying is done in barns where the mass is finally picked over and packed in 100-pound barrels.

The Chinese birds'-nest soup is the product of a small, red seaweed which abounds along the coast of China and some islands of the Indian Archipelago, and forms, with its entangled small organisms, the principal source of food of a species of swallow. The bird feeds upon the seaweed and macerates the material in its crop. The partly digested algal substance is regurgitated and drawn out in gelatinous fiber which the birds attach with their bills. The silky adhesive matter lends itself to the construction of beautiful white nests, about the size of goose-eggs, as thin as a silver spoon. When dry they are brittle and weigh about half an ounce. The gathering of them for food is often hazardous work. Before being used they are carefully cleaned. After they have been freed of foreign matter they are stewed with pigeons' eggs, spices and other ingredients. The cooked article suggests chicken broth.

Specimens of both the Irish moss, and the type of weed which forms the basis of birds'-nest soup, are on exhibition in the Hall of Plant Life (Hall 29).

HARWA, FIRST MUMMY TO FLY, GOES TO FAIR IN NEW YORK

When Harwa, a 2,800-year-old Egyptian, once the agricultural overseer for a temple of the god Amon, was placed aboard a United Airlines' plane for New York on April 12, he was well on his way toward establishing a list of "firsts" for the country's museum populace. It is believed he is the first mummy to travel on a plane, and he is the first adult-size person to be publicly fluoroscoped.

Harwa, a mummy from Field Museum's Egyptian collection, was the guest of Lowell Thomas and a personal representative of the Egyptian Consul-General at a luncheon of the Advertising Club in New York on April 13. Following that, he was taken to one of the New York World's Fair buildings where he is to be displayed in the General Electric X-Ray Corporation's exhibit. There, when a visitor to the booth pushes a button, an x-ray machine will create a full-length image of Harwa's skeleton on a fluoroscopic screen.

Illustration by courtesy of General Electric X-Ray Corporation

Mummy from Field Museum Boards Plane for New York Fair

Harwa, 2,800-year-old Egyptian, is shown leaving Chicago to appear in fluoroscopic exhibit of General Electric X-Ray Corporation. At left is Mr. A. J. Kizaur, General Electric engineer who designed the exhibit. At right is Mr. Richard A. Martin, Curator of Near Eastern Archaeology at Field Museum, who served as historical advisor.

Field Museum of Natural History

FOUNDED BY MARSHALL FIELD, 1893

Roosevelt Road and Field Drive, Chicago

FIELD MUSEUM NEWS

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CONTRIBUTING EDITORS

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HENRY W. NICHOLS.....*Chief Curator of Geology*
WILFRED H. OSGOOD.....*Chief Curator of Zoology*
H. B. HARTE.....*Managing Editor*

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

FROM THE DIRECTOR'S DESK—

Conservation

During the past month the local newspapers have carried some information regarding conservation. Conservation Week was officially proclaimed from April 9 to April 15 in the State of Illinois by the Acting Governor. It is fitting that we should turn our attention from time to time to the problem of conservation and all that it means.

Unfortunately the term is rather generally misunderstood. To some it means the abolition of the privilege of hunting and fishing at any time. To others it means the establishment of game preserves and the restoration of wild life. Still others regard conservation as the preservation of all natural things as we find them.

Conservation actually does not mean prohibiting the use of our natural resources, but it does imply that we must use them with intelligent understanding so that they will not diminish or be lost to the world, but may be passed on substantially as we find them to succeeding generations. This implies more than building fish hatcheries to restock our streams, and closing seasons for a year or two on the hunting of birds and animals. Not only the hunter, but the farmer, the lumberman, the miner, the industrialist, and almost all of the rest of us at some time, by our carelessness or lack of knowledge, tend to destroy the natural things that cannot be replaced. In short, what must be learned is that it is dangerous to destroy the balance of nature.

Elimination of predatory birds and beasts has sometimes permitted rodents and grasshoppers to overrun the grain fields of the farmers. Ill-advised irrigation projects have taken the water from one watershed and transferred it to another, reducing ground water levels and making deserts out of former prairies. Industrial wastes in our streams have poisoned the fish and made the waters uninhabitable for the new crop of fish from the hatcheries. Sloughs have been drained to add to the area of marginal farm lands, resulting in the reduction of wild fowl by the elimination of their nesting-sites. All these and many more abuses against the balance of nature have done far more harm even than the fisherman or hunter who does not limit himself to a fair day's catch.

Extinct Passenger Pigeons

A lesson in conservation. These birds are believed to have been exterminated by excessive shooting for food (not only for humans but for fattening hogs). The last wild one was seen in 1907; the last captive died in 1914 in the Cincinnati Zoological Garden. Shown above is part of a group in Stanley Field Hall.

In the belief that our natural resources are being wasted more because of ignorance than because of greed, Field Museum takes its place among the conservationists in an effort to acquaint people with the problem. An appreciation of wild life, whether flowers, trees, or animals, is perhaps the first element in creating the desire to retain them for posterity. An understanding of the surroundings which make wild life possible, and an appreciation of the inter-relationships of the various forms of wild life are basic factors in solving the problem. It seems then that every intelligent person who understands these matters and who desires to pass on the beauties of nature to posterity must become in one way or another an ardent conservationist.

—CLIFFORD C. GREGG, *Director*

ADOLF CARL NOE

October 28, 1873–April 10, 1939

Dr. Adolf Carl Noé, Professor of Paleobotany of the University of Chicago, died April 10, 1939, after a short illness. He had been associated with Field Museum for many years, and had been a member of the staff of the Department of Botany as Research Associate in Paleobotany since 1933, having become interested especially in the Department's reconstruction of the coal forest vegetation.

Dr. Noé's researches and publications in coal formations and coal balls are well known to scientists. He placed the use of his collections and his large knowledge freely at the disposal of the Museum. His most important collections were made chiefly in Illinois, for the Illinois State Geological Survey, and in Iowa, Kentucky, Texas, Mexico, and Russia. In order to gain some first-hand knowledge of the flora of the tropics for comparison with fossils, he spent a season in Panama, at the Barro Colorado Island laboratory.

Scion of an old aristocratic family of French origin and long Austrian tradition, Professor Noé was born in Graz, and served in his youth as an officer in an Austrian Hussar regiment. He was an enthusiastic horseman, fencer and marksman. His first experience in his chosen science of paleobotany was as a demonstrator at the University of Graz. In 1899 he came to the United States, studied at the University of Chicago, and there obtained his A.B. degree, and later his Ph.D. degree. In later years he was awarded honorary degrees by the University of Graz and the University of Innsbruck. He was well-known as a scholar in the field of German literature as well as in science.

His publications include *Fossil Flora of Northern Illinois*, and *Ferns, Fossils, and Fuel*. After his participation in the Allen and Garcia Commission for the study of the coal beds of Russia in 1927 he wrote *Golden Days of Soviet Russia*.

The Museum staff regrets keenly the loss of a valued friend and associate.

The evolution of the horse from a small four-toed animal to a large one-toed animal is interestingly illustrated in Case 22 of Stanley Field Hall.

A FEW FACTS ABOUT FIELD MUSEUM

Field Museum is open every day of the year (except Christmas and New Year's Day) during the hours indicated below:

November, December,
January, February.....9 A.M. to 4 P.M.
March, April, and
September, October.....9 A.M. to 5 P.M.
May, June, July, August....9 A.M. to 6 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 Museum's Library is open for reference daily except Saturday afternoon and Sunday.

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

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

Free courses of lectures for adults are presented in the James Simpson Theatre on Saturday afternoons (at 2:30 o'clock) in March, April, October, and November.

A Cafeteria serves visitors. Rooms are available also for those bringing their lunches.

Chicago Motor Coach Company No. 26 busses provide direct transportation to the Museum. Service is offered also by Surface Lines, Rapid Transit Lines (the "L"), interurban electric lines, and Illinois Central trains. There is ample free parking space for automobiles at the Museum.

STAFF NOTES

Mr. Alfred C. Weed, Curator of Fishes, has been in Englewood on the west coast of Florida for several weeks, and has collected a number of fishes and specimens of other forms of marine life. Valuable co-operation was extended to him by the Bass Biological Laboratories.

Dr. Wilfred H. Osgood, Chief Curator of the Department of Zoology, recently returned from a sojourn of several weeks in Florida, principally at Captiva Island, where he made surveys in preparation for a forthcoming Field Museum expedition, and did a limited amount of collecting.

Mr. Paul C. Standley, Associate Curator of the Herbarium, at present in Guatemala on a botanical expedition sponsored by Mr. Sewell Avery, a Trustee of the Museum, in his last report indicated that he had completed plant collecting in the western region of the country. He was planning at that time to transfer his activities to the Cobán district, rated as having the richest vegetation in Guatemala.

Mr. L. Bryant Mather, Jr., Assistant Curator of Mineralogy, will participate in an expedition under the leadership of Dr. Joseph T. Singewald, Jr., Professor of Economic Geology at The Johns Hopkins University, between May 1 and 15. The expedition will visit eighteen important mineral and mining localities in Pennsylvania, New Jersey, and New York. Material will be collected for Field Museum's mineral and physical geology collections.

Mr. D. Dwight Davis, Assistant Curator of Anatomy and Osteology, presented a scientific paper before the meeting of the American Society of Mammalogists at Baton Rouge, Louisiana, April 4.

Staff Taxidermist C. J. Albrecht lectured recently before an audience at the American Museum of Natural History, New York, on fur seals, telling his experiences on a Field Museum expedition to the Pribilof Islands. While in the east he also made studies of the collections in several other leading museums.

Mr. C. Martin Wilbur, Curator of Chinese Archaeology and Ethnology, lectured on Chinese jades on April 26 before the Society of Fine Arts and History of Evansville, Indiana.

Dr. Paul S. Martin, Chief Curator of the Department of Anthropology, lectured on the work of his expeditions in the Southwest before an audience of members of the P. E. O. Club in the lecture hall of the Museum on April 20.

DETAILED STUDY REVEALS SU-LIN WAS A MALE GIANT PANDA

Now it can be told—the late Su-Lin, most famous of giant pandas, was a deceiver. Known to its many admirers during life at the Chicago Zoological Park, Brookfield, as "she," this animal actually should have been referred to as "he." This was announced recently by Mr. Edward H. Bean, Director of the Zoo, upon receipt of a report from Field Museum in whose laboratories, for more than a year since the panda's death (on April 1, 1938), meticulous detailed dissection has been in progress for purposes of research. The skin was mounted and placed on exhibition at the Museum within a few weeks after Su-Lin's death, but the soft anatomy, preserved by chemical injections, was turned over to Mr. D. Dwight Davis, Assistant Curator of Anatomy and Osteology, for the first thorough study of the species which has ever been possible to scientists.

Su-Lin Fooled the World

The famous giant panda, alwaya known as "she" during life at the Brookfield Zoo, was actually a male, it has been revealed by the detailed dissection in progress in the laboratories of Field Museum. The animal is shown above as it has appeared as a mounted specimen at the Museum since shortly after death in April, 1938. The exhibit is in Stanley Field Hall.

Mr. Davis's research, which is not yet completed, has just recently reached the stage where it has been discovered that, owing to peculiarities of the little known species, Su-Lin, while outwardly appearing to be a female, was actually a male.

"While Su-Lin was alive there was no external indication that would lead to the suspicion that the animal was anything other than a female as had generally been supposed," states Dr. Wilfred H. Osgood, Chief Curator of the Department of Zoology. "This is not so surprising as it might at first seem to a layman—there are various other animals in which the evidences of sex are so concealed that it is difficult to distinguish males from females by external examination only. It is particularly difficult with animals that are not fully mature, as was the case with Su-Lin. Most of the supposed relatives of the giant panda are fairly normal, so it was natural to assume that Su-Lin was a female until dissection revealed facts to the contrary."

Distinguished Visitors

Among distinguished visitors recently received at Field Museum are: Dr. Paul H. Nesbitt, of Beloit College, who came to study the Museum's Southwestern archaeological collections; Mr. L. D. Bestall, Director of the Hawkes Bay Art Gallery and Museum, Napier, New Zealand; Mrs. Nicholas (Alice Roosevelt) Longworth, widow of the late Speaker of the House of Representatives of the United States, and her daughter; the Duke and Duchess of Sutherland, of London; Mr. Dillman S. Bullock of Angol, Chile, donor of many Chilean specimens to the Museum, who conferred with Chief Curator Osgood and Curator Sanborn on problems of Chilean zoology; Count Benedict Tyszkiewicz of Poland; Mr. Harold J. Coolidge, Jr., Assistant Curator of Mammals at the Museum of Comparative Zoology, Cambridge, Massachusetts, who spent several days in conference with members of the staff of Field Museum; Dr. C. R. Ball, of Washington, D.C., an authority on willows; and Mrs. M. Quennell, Hon. A.R.I.B.A., who is the Director of the Geffrye Historical Museum, in London, England.

MAY GUIDE-LECTURE TOURS FOR WEEK-DAY VISITORS

Conducted tours of exhibits, under the guidance of staff lecturers, are made every afternoon at 3 o'clock, except Saturdays, Sundays, and certain holidays. Following is the schedule of subjects and dates for May:

Week beginning May 1: Monday—Sea Invertebrates (*new hall*); Tuesday—Plants of Plains and Deserts; Wednesday—Peoples of the South Seas; Thursday—General Tour; Friday—Dinosaurs and Other Prehistoric Animals.

Week beginning May 8: Monday—Amphibians and Fish; Tuesday—Plants That Trap Insects; Wednesday—Crystals and Gems; Thursday—General Tour; Friday—Indians of North, Central, and South America.

Week beginning May 15: Monday—Animals at Home; Tuesday—Our Native Trees; Wednesday—From Chellean to Swiss Lake Dweller; Thursday—General Tour; Friday—The Benld and Other Meteorites.

Week beginning May 22: Monday—Hall of Plant Life; Tuesday—Birds That Nest in the Chicago Region; Wednesday—Minerals; Thursday—General Tour; Friday—Chinese Art.

Week beginning May 29: Monday—Lacquers, Turpentine, and Rubber; Tuesday—Memorial Day holiday, *no tour;* Wednesday—Carl Akeley Exhibits and Processes.

Persons wishing to participate should apply at North Entrance. Tours are free. 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 by arrangement with the Director a week in advance.

GIFTS TO THE MUSEUM

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

Department of Anthropology:

From Dr. Henry Field, Chicago—68 ethnological specimens, Italy, England, and Near East; from Thomas E. Donnelley, Chicago—44 pieces of bronze and wooden movable type, Korea.

Department of Botany:

From Dr. Delzie Demaree, Monticello, Arkansas—92 herbarium specimens, Arkansas; from Richard A. Schneider, Kankakee, Illinois—190 herbarium specimens, Mexico; from Hermann C. Benke, Chicago—257 herbarium specimens, Wisconsin and Illinois; from Mrs. George Artamonoff, Chicago—150 herbarium specimens, Mexico and Central America; from Dr. J. A. Steyermark, Chicago—5,107 herbarium specimens, Missouri; from Jardim Botanico de Belo Horizonte, Minas Geraes, Brazil—1,772 herbarium specimens, Brazil.

Department of Geology:

From George W. De Muth, Chicago—187 specimens of minerals; from Dr. Henry Field, Chicago—a collection of 1,543 specimens of minerals and fossils, England and Europe, and a specimen of marl, Moravia; from William G. Rinehart, Batesville, Arkansas—8 photographs of region where Joe Wright Mountain meteorite was found; from Geringer Brothers, Oak Park, Illinois—2 specimens of scheelite, California; from Mrs. George Artamonoff, Chicago—17 specimens of volcanic products, Guatemala and El Salvador; from Dr. M. J. Groesbeck, Porterville, California—2 specimens of minerals, Nevada and California.

Department of Zoology:

From Dr. W. C. Hobgood, Monticello, Arkansas—a frog and 3 salamanders, Arkansas; from Instituto de La Salle, Bogota, Colombia—8 bats and 4 rodents, Colombia; from H. St. John Philby, Jidda, Arabia—6 toads, 36 lizards, and 7 snakes, Arabia; from Eugen G. J. Falck, Chicago—13 crayfish and 105 land and fresh water shells, Illinois; from Lincoln Park Zoo, Chicago—an anaconda, South America; from John White, Thomasville, Georgia—a scorpion, Georgia; from Chicago Zoological Society, Brookfield, Illinois—a lemur, a kinkajou, and a new-born sea lion; from Michael Blackmore, London, England—6 bats, England; from J. L. Chaworth-Musters, London, England—15 bats, England; from James Little, Naperville, Illinois—a salamander, 8 snakes, and 7 frogs and toads, Wisconsin; from John M. Schmidt, Homewood, Illinois—4 garter snakes, Illinois; from Frank Bagot, Miami Beach, Florida—a beetle, Florida; from Henry Dybas, Chicago—3 land shells, Colombia; from John G. Shedd Aquarium, Chicago—a turtle, Bahama Islands; from Mrs. Robb White, Thomasville, Georgia—a short-headed hognosed snake, Georgia; from Mrs. George Artamonoff, Chicago—6 fish and 625 specimens of shells and other lower invertebrates, Central America and Mexico.

The Library:

Valuable books from Americana Corporation, New York City; from Professor Norman C. Basset, Madison, Wisconsin; from Mme. L. Lion, Paris, France; from Carnegie Institution, Washington, D.C.; from William L. Stearn, London, England; and from Miss Margaret Ennis, W. J. Gerhard, Dr. Albert B. Lewis, and John W. Moyer, all of Chicago.

NEW MEMBERS

The following persons were elected to membership in Field Museum during the period from March 16 to April 15:

Associate Members

Mrs. Laura T. C. Alford, Miss Aurelia Bertol, Mrs. W. W. Sherman.

Annual Members

Edwin D. Allen, Claude A. Benjamin, William George Carlisle, Willard F. Clark, John H. Drummond, Dr. William P. Finney, Mrs. R. H. Fogler, John R. Fugard, J. E. Fuller, Mrs. Steve Gavin, Mrs. Thomas D. Heed, Chester S. Hendry, Lewis J. Isaacs, Dr. M. J. Kostrzewski, Edward Marshall, Wallace Meyer, Walter D. Monroe, R. L. Nafziger, Dr. Harry A. Oberhelman, L. A. Phillips, Albert C. Pobloske, Mrs. Lewis J. Pollock, J. Rockefeller Prentice, Victor W. Purcey, Rex Rathbun, Robert S. Smith, Dr. Max Thorek, Rudolph E. Vogel, Eugene Whitmore.

"PARADE OF THE RACES" OFFERED ON SUNDAY TOURS IN MAY

May is the final month in the current season of Sunday afternoon lecture-tours given at Field Museum by Mr. Paul G. Dallwig, the Layman Lecturer. On each Sunday in this month Mr. Dallwig will present "The Parade of the Races," which in the past has proved to be one of his most popular subjects. Those participating will tour the Hall of the Races of Mankind (Chauncey Keep Memorial Hall) with Mr. Dallwig, where they will view the extensive series of sculptures by Malvina Hoffman, and hear the lecturer's dramatic but factual stories about each of the races represented.

Attendance at Sunday afternoon lecture-tours is restricted to those who have made advance reservations, because parties are necessarily limited in size. *Heavy demands have resulted in the filling of quotas for each of the remaining Sundays of this season and no further reservations are available.*

Mr. Dallwig's next season of Sunday lecture tours will begin November 5, and continue until the last Sunday in May, 1940.

Museum Hours Extended for Summer Period

Summer visiting hours, 9 A.M. to 6 P.M. daily, including Sundays and holidays, will go into effect at Field Museum on May 1, and continue throughout the period up to and including September 4 (Labor Day).

MEMBERSHIP IN FIELD MUSEUM

Field Museum has several classes of Members. Annual Members contribute $10 annually. Associate Members pay $100 and are exempt from dues. Sustaining Members contribute $25 annually for six consecutive years, after which they become Associate Members and are exempt from all further dues. Life Members give $500 and are exempt from dues. Non-Resident Life Members pay $100, and Non-Resident Associate Members $50; both of these classes are also exempt from dues. The Non-Resident memberships are available only to persons residing fifty miles or more from Chicago. Those who give or devise to the Museum $1,000 to $100,000 are designated as Contributors, and those who give or devise $100,000 or more become Benefactors. Other memberships are Honorary, Patron, Corresponding and Corporate, 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.

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.

Contributions made within the taxable year not exceeding 15 per cent of the taxpayer's net income are allowable as deductions in computing net income for federal income tax purposes.

Endowments may be made to the Museum with the provision that an annuity be paid to the patron for life. These annuities are guaranteed against fluctuation in amount, and may reduce federal income taxes.

PRINTED BY FIELD MUSEUM PRESS

Field Museum News

Published Monthly by Field Museum of Natural History, Chicago

Vol. 10 JUNE, 1939 No. 6

NEW EXHIBIT OF ARCHAEOLOGICAL MATERIAL FROM THE AMERICAN SOUTHWEST

By PAUL S. MARTIN
CHIEF CURATOR, DEPARTMENT OF ANTHROPOLOGY

After months of study and work, the Basket Maker Indian materials recovered by the 1938 Field Museum Archaeological Expedition to Southwestern Colorado have been placed on exhibition in Hall 7 of the Department of Anthropology.

Included in this exhibit are several classes of objects which should be of great interest to all who are interested in southwestern prehistory. For example, attention should be called to the skillfully restored pottery. All of this was in fragments when found, having been smashed by the weight of tons of earth which have lain upon these fragile objects for more than ten centuries.

Some red-on-orange pots are the most fascinating because they represent a very rare type of pottery—a type which was practically unknown up to a few years ago. This very beautifully made ware, which dates from about A.D. 700 (or possibly earlier), is a source of some mystery, because at present no one knows where it was first made. Further, the use of designs in red on an orange background is not in the accepted tradition of Basket Maker ceramics. Usually, Basket Maker pottery is plain gray or is marked with black designs of a simple nature on a plain gray background. Therefore, Field Museum is proud to be able to display this rare kind of pottery which has never before been exhibited in Chicago.

One of these red-on-orange pots merits special notice, because the shape is unique. This particular pot is provided with a basket-handle made of baked clay and decorated with a zig-zag design.

The painted pottery was never used for cooking purposes, but served rather as containers for prepared food and beverages.

The plain gray pottery, which comes in various shapes and sizes, was what may be called the utilitarian ware. Some of it was used for cooking food and boiling water. The large narrow-necked jars were undoubtedly used as water containers. One very large, plain gray jar had been smeared all over with a red-ocher paint.

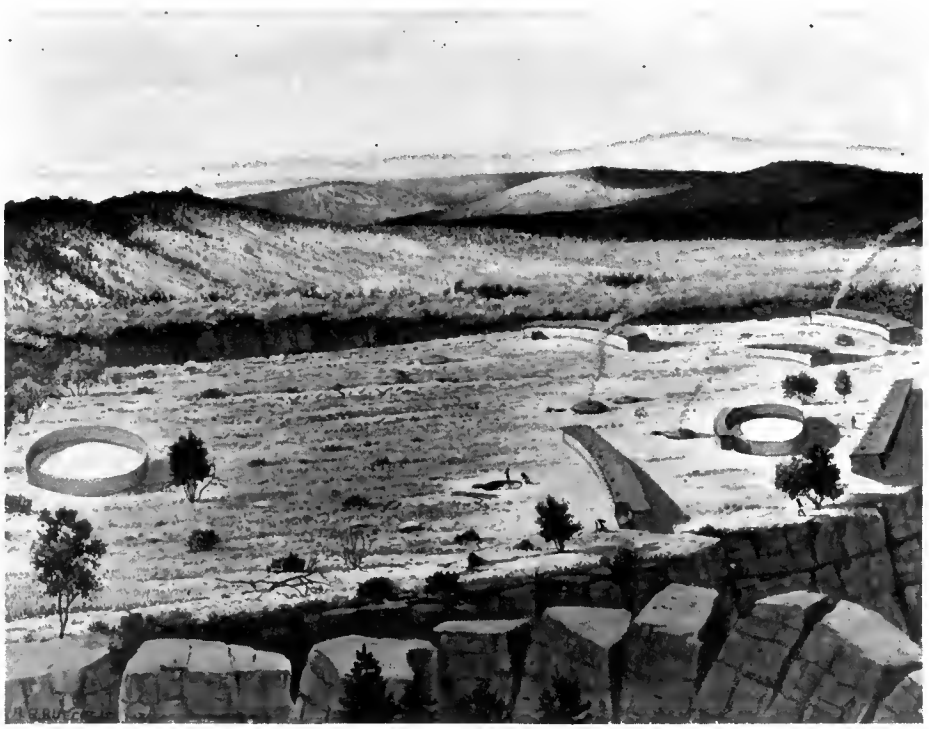
In addition to the pottery, there are displayed other objects which were used in the daily lives of the Basket Maker Indians. These include: bone awls for piercing holes in buckskin; bone needles; bone scrapers; stone hoes, axes, and mauls; and *manos* or the upper portion of corn-grinding mills. Included also are some of the ornaments with which these Indians decorated themselves.

Since the ancient villages which were excavated by the Museum expedition had been exposed to the rains and snows of more than a thousand years, all the perishable objects, such as basketry, cloth, sandals, matting, and wooden materials, have long since rotted away. This is unfortunate, because the archaeologist is confronted with the difficult task of reconstructing the history of these Indians from only three classes of objects: pottery, bone, and stone. Imagine how trying it would be for any archaeologist of the future to have to piece together a complete story of our complex civilization from only broken dishes, rusty tools (the uses of which he did not know), and tin cans!

In spite of this difficulty, however, we have managed to reconstruct a reasonably clear history of the Basket Maker Indians of southwestern Colorado. This story, written in non-technical language, has been included in a report covering in detail the expedition's work, and the research conducted on the material brought to the Museum. This report, richly illustrated, will be released by Field Museum Press sometime during the summer, and it may then be purchased at the Museum.

One of the special features of the exhibition recently opened to the public is a sketch showing how a Basket Maker village actually looked. This reconstruction is very accurate, as it was based on all the data collected by the expedition. A reproduction of the sketch is published with this article.

This village was built on a narrow promontory which juts out into Cahone Canyon, Colorado. The Indians built two types of houses: pit houses and surface houses. The pit houses (in the middle-ground) look like big ant hills; the surface dwellings are the long low structures. At the extreme left of the picture, and also toward the right, may be seen examples of circular structures called "great kivas." A *kiva* is a



Village of Basket Maker Indians, About A.D. 860

Restoration, by Staff Artist Arthur G. Rueckert, of an ancient site excavated by Field Museum Archaeological Expeditions to the Southwest, as the researches of Chief Curator Paul S. Martin indicate it must have appeared when occupied by prehistoric inhabitants. Circular structure at left is the largest known great kiva or ceremonial chamber. At right is a smaller kiva, close to the barracks-like rows of surface houses. The small circular structures from which smoke issues are pit-houses. Both house types were probably used as dwellings.

place for holding ceremonies. These "great kivas" were probably used for celebrating large communal ceremonies. The larger of these two great kivas measured 83 feet in diameter, and is the largest structure of this type yet found. The lesser great kiva measured 43 feet in diameter. Neither of these structures was roofed.

In all, the writer and associated archaeologists have spent eight summers in the excavation of Basket Maker sites in Colorado. About the first of June the ninth expedition, sponsored by Mr. Stanley Field, President of the Museum, will resume this work, but a new field will be entered this year. The 1939 operations will concentrate upon the excavation of some ruins near Glenwood, New Mexico. The new sites belong to what is known as the Mogollon culture, and investigations will be conducted to determine whether or not there was a cultural connection between the early Mogollon and Basket Maker cultures.

1939 IS YEAR FOR APPEARANCE OF THE 17-YEAR CICADA

By WILLIAM J. GERHARD
CURATOR OF INSECTS

In many of the forest preserves in Cook County last month the ground under the trees was perforated with numerous openings or vertical burrows, some topped with capped mud chimneys. These burrows indicated that the compact brood XIII of the seventeen-year or periodical cicada—sometimes incorrectly called the "seventeen-year locust"—would again make its appearance in large numbers in woodland tracts of northern Illinois, eastern Missouri, southern Wisconsin and Michigan, and northern Indiana, during the spring of 1939.

A few inches below the burrow openings lay the waiting pupae that represent the third stage in the life-history of this cicada. For seventeen years (in the northern states) the young or larvae, which the pupae closely resemble, have lived in the ground, where they sucked the juices of roots and rootlets.

During some night, possibly in the latter part of May before this publication, or at least in the early part of June, the pupae were due to leave their burrows almost simultaneously and crawl up on some nearby object. When this occurs, a longitudinal slit appears in the skin of their backs, and therefrom emerge the flabby, white adults with little wrinkled wing pads. Within a few hours the soft wings expand, harden, and become nearly transparent, while at the same time the body hardens and assumes its characteristic color.

On the day following their emergence from the pupal stage the adults are ready to mate, and the females begin to lay their eggs in the terminal twigs and branches of trees by means of their sword-shaped ovipositor. As a result of this egg-laying habit the leaves of many terminal twigs soon turn yellow and the twigs may also be blown to the ground by strong winds. While the females are fulfilling their mission in life, the males are busy producing their familiar, prolonged, buzzing sound. And in from four to six weeks their adult life is ended.

MAY FLIES TO APPEAR AGAIN

Within a month or more countless numbers of fragile insects known as May flies will also again make their appearance in the Chicago area and elsewhere on or near the shores of the Great Lakes. They will annoy housewives because of their fondness for artificial light. Every year swarms of them descend upon this city and its suburbs.

These four-winged creatures, with their two or three hair-like caudal appendages, are of interest on account of their brief adult life, which may last only a few hours—rarely more than two days. Unlike other insects they molt or shed their old skin after their wings are fully developed. The name "May fly" is not a misnomer, for some species appear during May in certain places.

Although the adult life of May flies is an ephemeral one, which is the reason why the Greeks of Aristotle's day called them *Ephemeron*, they are in fact rather long-lived insects. Their development from the egg to the adult or winged stage actually requires from one to three years. But except for a few hours or days they live as wingless nymphs in lakes, ponds and streams, where they feed mainly on low forms of plant life. Many of the nymphs in turn are eaten by fish. In some waters it has been found that nearly a fifth of the food of fish consisted of May fly nymphs.

When the nymphs are full-grown, they come to the surface of the water, and from a slit or fissure that appears in their backs the winged adults emerge. After finding a convenient resting place like a wall, tree, or blade of grass, the adults shed their old skin, including that of the wings, the skins remaining attached to the objects upon which they were shed. Unable to eat anything during their short adult life, they nevertheless are now ready for mating. The females lay their eggs on or in the water—hundreds to several thousands of them.

DANISH AND NORWEGIAN ROYALTY VISIT FIELD MUSEUM

Twice recently Field Museum has been host to European royalty. On April 25, Their Royal Highnesses, Crown Prince Frederik and Princess Ingrid, of Denmark, were guests of the institution. On May 4, His Royal Highness, Crown Prince Olav, of Norway, was a visitor to the Museum.

Prince Frederik and Princess Ingrid were escorted to the Museum by Mr. Reimund Baumann, the Danish Consul, and Prince Olav by Mr. Sigurd Maseng, Consul of Norway. Each of the royal parties was conducted on a tour of outstanding exhibits by the Museum Director, Mr. Clifford C. Gregg. All of the royal guests indicated especial interest in and appreciation of the Races of Mankind sculptures, by Malvina Hoffman, in Chauncey Keep Memorial Hall.

Photograph by courtesy of Chicago Daily Times

Royal Personages at Field Museum

Their Royal Highnesses, Crown Prince Frederik and Princess Ingrid, of Denmark, on tour of Chauncey Keep Memorial Hall during their visit to Chicago. They were extremely interested in the Races of Mankind sculptures by Malvina Hoffman. Left to right: the Princess, Mr. Clifford C. Gregg, Director of the Museum, and the Prince.

STRAW HATS

In Europe the history of what is known as the "straw hat" dates back to the early seventeenth century when hats were made from wheat straw in Bedfordshire, England. In Italy the "Leghorn hat" was a well-known article of manufacture in Tuscany about the middle of the same century. In addition to types of wheat straw hats, there is on display in Hall 28 of the Department of Botany at Field Museum an exhibit showing steps in the manufacture of the so-called Panama hat (actually made principally in Ecuador), and also some distinctive hats from Alaska, Brazil, the Philippine Islands, China, and India, made from materials, such as split palm leaves, rushes or grasses, and stems of reeds.

The First Step in Making a Panama Hat—
—is to grow a Panama hat palm (*Carludovica palmata*). This plant is native to Central America and northern South America, especially Ecuador and certain parts of Peru. The reproduction shown above is on exhibition in Field Museum's Hall of Plant Life (Hall 29).

ARABIAN METEORITE CONVERTED DESERT SANDS INTO GLASS

By HENRY W. NICHOLS
CHIEF CURATOR, DEPARTMENT OF GEOLOGY

Of more than ordinary interest are two small meteorite specimens and a large piece of silica glass recently added to Field Museum's meteorite collection in Hall 34. This material was presented by Mr. William Lenahan, of the California Arabian Standard Oil Company, Jidda, Arabia, and represents an unusually spectacular meteorite fall.

In February, 1932, Mr. H. St. John Philby, noted British explorer, discovered at Wabar, which is in the heart of the Arabian (or Rub'al Khali) Desert, a group of craters formed by the impact of an enormous meteorite. This impact had been so violent that it generated intense heat which melted and even vaporized part of the sand upon which it struck. Vapors were generated so suddenly and in such quantity that severe explosions were produced blowing out five craters, the largest about one hundred yards in diameter. Specimens of the meteorite and of the silica glass formed from the melted and vaporized sand were collected by Mr. Philby and sent to the British Museum in London, where they have been thoroughly studied.

Wabar is in such an inaccessible region of the desert that it was not again visited until 1937, when a geologist of the California Arabian company succeeded in reaching the place. He collected there the meteorite specimens and silica glass which now appear in Field Museum's exhibit.

The meteorite specimens resemble other iron meteorites of like size, and the silica glass, as might be expected from its origin, has the general appearance of a furnace slag, or of any rock which has been melted and suddenly cooled. Its unique nature is perceived only on the closest inspection, and its most remarkable feature can be seen only under the microscope. The stony semi-opaque glass is filled with a multitude of minute bright globules of iron, a thousandth of an inch and less in diameter. This can only mean that the heat generated by the impact of the meteorite was so great that part of the iron meteorite boiled off as iron vapor and mingled with the vapor given off by boiling silica from the sand, while the silica vapor, shielding the iron, prevented its burning. As the mixed vapors cooled they condensed into a rain or mist of iron and silica which formed the silica glass.

FIELD MUSEUM'S QUETZAL GROUP APPEARS IN BRITISH WEEKLY

A beautiful full-page reproduction, in colors, of Field Museum's habitat group of the quetzal, national bird of Guatemala, appeared in the March 25 issue of *The Illustrated London News*, one of Great Britain's most important periodicals. The illustration was made from a natural-color photograph taken by Mr. Clarence B. Mitchell, Research Associate in Photography on the Museum staff.

Publication of a picture in these dimensions, and in full colors, by a magazine exercising the superior type of editorial discrimination characteristic of *The Illustrated London News*, can be accepted as a tribute to the skill and artistry both of the photographer, and of the taxidermist and artists responsible for the preparation of the group—Mr. John W. Moyer, who mounted the birds, Mr. Arthur G. Rueckert who painted the background, and Mr. Frank Letl who prepared the plant accessories for the foreground. The birds in the group were collected by Assistant Curator Emmet R. Blake as a member of an expedition sponsored by Mr. Leon Mandel.

A small reproduction, in colors, of this group appeared in the December, 1938 issue of FIELD MUSEUM NEWS. Colored post cards of it are available at The Book Shop of the Museum.

The making of flour is illustrated by a miniature mill on exhibition in Hall 25.

THINGS YOU MAY HAVE MISSED

The Least Weasel

Ounce for ounce, with the possible exception of the shrews, the tiny least weasel is the most ferocious and bloodthirsty animal of the mammalian class. Only a fraction over six inches in length, and weighing on an average about one-third of a pound, it is distinguished from the other weasels by its extremely small size and almost total lack of the characteristic black tip to the tail. With its long flattened head, wide jaws, and peculiar looping gait when scenting a trail, it gives a definite impression of resemblance to a reptile. There is a tense readiness about it, comparable to a coiled spring held precariously in leash.

The least weasel is reddish-brown above, and white beneath. In common with other weasels, it possesses the ability to change to a white coat in winter, which must give it an enormous advantage over the mice and birds upon which it preys. In fact, it is only in the light of the almost unbelievable fertility of its victims that one can conceive of their continued existence, for all weasels are known to attack out of mere lust for killing. However, this is apparently part of Nature's scheme of checks and balances, and the conduct of weasels should not be judged by human moral standards. On the credit side are an enormous number of insects and rodent pests destroyed by this small predator, thus making it decidedly beneficial to man's interests.

The four North American subspecies of this highly successful little carnivore range from Alaska to Hudson Bay, and southward to Montana, Minnesota, Indiana, and Pennsylvania; but in addition the species has recently been shown to be represented by Old World races, making it circumpolar in range. Nevertheless, despite this wide radiation, it is rarely taken in traps and little is known of its habits. The nest, usually grass-lined, is in a hole in a bank. Four to six young are born in a litter.

A specimen of least weasel is shown among the fur-bearing animals in the systematic collection of mammals (Hall 15).—W.J.B.

Tiny Killer
The least weasel, which many zoologists describe as, ounce for ounce, "the most bloodthirsty of mammals." The illustration is approximately one-quarter life size.

ARTIFICIALLY DEFORMING THE HUMAN HEAD FOR 'BEAUTY'

By HENRY FIELD
CURATOR OF PHYSICAL ANTHROPOLOGY

There is a saying that "beauty is only skin deep," but judging from the age-old ideals of certain groups of people scattered throughout the world, it would seem that Samuel Johnson's broader interpretation of that desirable quality is more accurate. Johnson defined beauty as "that assemblage of graces, or proportion of parts, which pleases the eye." It is that "proportion of parts" which is the chief concern of those people who practise artificial deformation of the head as an aesthetic measure.

Some prefer heads that are flattened in front and abnormally elongated towards the back. Others favor the domed variety, flattened at the back and growing upwards, sometimes into an actual peak. There are many variations of these two extremes and many methods by which they are achieved.

Photo copyright Field Museum

Mangbetu

Woman of African tribe with head peculiarly deformed for aesthetic reasons. A bronze sculpture by Malvina Hoffman, in the Hall of the Races of Mankind.

Molding or massaging of an infant's head, and application of bandages, boards, pads, or even of stones, are some of the measures taken in attempting to force the head to grow into the desired shape. Another familiar method is the use of the cradle-board.

ELONGATION MARKED NOBILITY

The peculiar custom of artificial cranial deformation dates back several thousand years, at least to the Late Minoan III period in Crete and a contemporary age in Egypt. Ikhnaton's skull is an outstanding example, and many people believe that his wife, the beautiful Nofretiti, and their daughters also had deformed heads. Others are of the opinion, however, that the apparent abnormality of the heads of the queen and princesses was nothing more than a built-up coiffure.

Hippocrates, who died about 350 B.C., stated that there were peoples living in the Caucasus who elongated their heads artificially, and he added that a head so deformed was a mark of nobility. There is abundant evidence—in India, China, Celebes, and Madagascar, to cite only a few localities—that the practise originated among persons of high rank. It has been suggested that the desire to simulate the majesty and wisdom of Ikhnaton started the custom in Egypt, and that it spread to other parts of the world. This theory loses weight, however, when one considers that the custom has been practised on every continent except Australia, from very early to modern times.

The Indians of Peru had long deformed their children's heads before the Spanish conquerors arrived during the sixteenth century and issued decrees against the practice. Two hundred years later, Lewis and Clark reported that the Chinook tribes of our Northwest Coast had their heads flattened "in a most disgusting manner." From China comes the story that during the massacre at Nanking the final test of identity of a Manchu was the shape of his head. Any soldier found with a head flattened in the back was promptly executed. Deformation has been practised throughout Europe, especially in south Russia, at various periods, and is still current in certain parts of France and Holland. I was told in Marken, Netherlands, that the grandmother generally molds the infant's head by massage and that a tight cap is also used, the object in this instance being to make the head rounder. Among the Mangbetu in central Africa, children's heads are still bound, with bark cloth, string, fibre, or the hair of the giraffe.

MENTAL ABILITY UNIMPAIRED

In southwestern Asia the "Armenian" cradleboard is used in parts of Syria, Anatolia, Iraq, Iran, and the Caucasus. The head is deformed, generally without intention, as a result of the hard pad upon which the child's head rests. The child remains fastened in the cradle for the first two years of its life, or even longer, the only respite being the occasion of the weekly bath. The reason usually advanced for this confinement is that the child keeps in better health than otherwise, and that it can never be stifled by being carried around in its mother's arms.

Although there are reports that some of the more severe methods of misshaping the skull are painful, and that the brain is inevitably injured, comparative examination of numerous deformed and undeformed skulls has shown that cranial capacity is not affected. The head merely grows in unrestricted but abnormal directions. Proof is also lacking of any change in mental ability.

Cradle-board for Head Flattening

Method of deforming child practised by Chinook Indian tribes of the Northwest Coast (*illustration after Catlin*). The mother's head shows how the changed shape—considered "beautiful"—continues in adulthood.

Thus, the results of intentional deformation of the head seem to be merely the satisfaction of vanity, on the one hand, and on the other, the confusion of anthropologists in their search for accurate indications of race. Head shape is one of the most constant of physical traits, and by means of measurements which determine the relative length and breadth of a head, the cephalic index (dolichocephals are long heads; brachycephals, short heads), we are able to trace certain racial affinities more positively than in any other way. But the "sugar-loaf" skull of an ancient Peruvian or the streamlined head of a Nofretiti baffles the best anthropologist, and scientific accuracy must bow to the supremacy of beauty.

According to E. J. Dingwall, author of a text-book on this subject, some of the finest examples of artificially deformed skulls are those from Peru and the Northwest Coast on exhibition in the section devoted to physical anthropology in the Hall of the Races of Mankind (Hall 3) at Field Museum.

New Data on Orbicular Jasper

"A Study of Orbicular Jasper," by Dr. Albert J. Walcott, appeared in the February issue of *The Mineralogist*. Dr. Walcott, basing his thorough study on material in Field Museum's collections, has determined that this unique stone, highly prized by lapidarists, is not a jasper but another form of quartz.

Dr. Walcott recently lectured on asterism at the convention of the American Gem Society at the Stevens Hotel. A party of sixty-one delegates from the convention was conducted on a tour of the Museum's geological exhibits.

NATURAL HISTORY MUSEUMS
(*A Review of Recent Developments*)

BY WILFRED H. OSGOOD
CHIEF CURATOR, DEPARTMENT OF ZOOLOGY

(Editor's Note:—The following article, written by Dr. Osgood at the request of the Editors of THE 1939 BRITANNICA BOOK OF THE YEAR, *is reprinted here by special permission of the publishers—Encyclopaedia Britannica, Inc. It concisely tells the principal developments of the past year in the museums of the world.)*

Evidence continues to accumulate indicating that natural history museums are changing their ways. There have been museums or collections of natural objects for centuries, but it is only in the last few decades that they have attained a new status and changed more than in all their previous history. In municipalities, states, and nations their importance, amounting almost to indispensability, is everywhere being recognized. In 1938 the British Standing Commission on Museums and Galleries made sweeping recommendations for new museums and extensive additions to existing ones in the South Kensington district in London. Significant, also, was the establishment in Argentina by executive decree of a national "Commission on Museums and Historic Sites." Such commissions already exist in many other countries.

MANY NEW MUSEUMS OPENED

The multiplication of small municipal and park museums has continued. In the United States there are now forty-five museums in national parks, representing an investment of $1,300,000 and serving 1,500,000 visitors annually. Louisiana proposes "to establish an appropriate historical or natural history museum within each state park." Other states have already gone far in the same direction. A new specialization in the museum field is a psychology museum opened in Chicago. This so-called "museum movement" is practically world-wide. In the British Isles it is stated that new museums have been opened at the rate of one every three weeks for the past ten years. One student, investigating museum methods in 1938, visited no less than 300 museums of various kinds in the British Isles. In the United States, in addition to the large privately endowed institutions, there are now twenty-three independent state museums. In Canada there are thirty-six museums with full-time staffs. Even in newly organized Manchuria there are at least six museums of some importance, and Soviet Russia has more than seven hundred of all classes.

In Russia, the aim of many governmentally supervised museums is plainly adult education for the masses. Exhibits are shown without glass fronts, and visitors are encouraged to handle many of the objects. The same aim is the fundamental one in nearly all museums elsewhere. Entertainment is still a great function but the tendency is to combine it with service. This is seen not only in organized work with schools, colleges, and other cohesive groups, but also in didactic exhibits and in general public relations ranging from docent services to national radio broadcasts. The modern demand is for exhibits that are thought-provoking or definitely instructive as well as those that inspire wonder and admiration. The habitat group, which has been especially developed in America, continues to be popular both for its colorful art and its subtle didacticism. During 1938, six large habitat groups were completed by the American Museum of Natural History in New York. In Chicago, at Field Museum, seven new groups of large size also were opened. In museums with smaller resources, some large groups are still being made, but the small diorama, which serves many of the same purposes, is receiving much attention.

In the United States, many museums have been stimulated to put their houses in order and to undertake long postponed projects through assistance received from personnel supplied by the federal unemployment relief agencies. In this way, in 1937, services from a total of 2,774 additional employees were obtained by museums throughout the country. In 1938, the number was slightly increased and much valuable work was accomplished.

The movement for the training of museum workers to meet the requirements of modern specialization is gaining headway both in the United States and Great Britain. The Buffalo Museum has regular organized courses for students intending to pursue museum work and a system of "internes" closely comparable to that so well established in medical education. Several other museums provide similar service, and the National Museum of Wales accepts students on a three-year basis for work in special branches of science. The British Museums Association, through its Education Committee, offers a diploma for students of museology, which is thus becoming an organized profession. The Carnegie United Kingdom Trustees continued their policy of promoting inter-museum travel. During the year seven grants were made, each essentially a traveling fellowship.

MEASURES FOR SAFETY IN WAR

The violent "war scare" in 1938 was of considerable concern to museums, especially in England. Hasty preparations were made for the removal of special museum treasures from the large cities to places in the country offering comparative safety. Not much could be done in the limited time available and it was obvious that immediate bombing might have produced much irreparable destruction. The result has been the formation of more definite plans for the permanent removal of much material (especially that having a basic relation to research) to new quarters. It is not unlikely that the future will see the research of museums conducted in the quiet and relative safety of the country while the exhibits, many of them replicas, and the popular education will remain in the city.

WORLD-WIDE EXPEDITIONS

Museum expeditions during the year have been numerous and world-wide, but mostly financed through private sources since museums, like other endowed institutions, find their income from fixed endowment curtailed by prevailing low interest rates. In number and importance of expeditions, the American Museum of New York easily stands first with parties working in New Guinea, Venezuela, Burma, South Africa, and many parts of North America. Field Museum of Chicago worked in British Guiana, Guatemala, Canada and the United States. The Philadelphia Academy of Sciences reports no less than eighteen expeditions of varying importance.

Raymond Foundation "Followup" to School Radio Program

The Museum's last "radio followup" meeting of the present school year was given in the Lecture Hall by the James Nelson and Anna Louise Raymond Foundation on May 4, in conjunction with a science program of the Public School Broadcasting Council. The subject was "Spring Wild Flowers." Colored slides of flowers both common and rare in the Chicago region were shown, and special attention was called to those protected by state laws. After the talk, herbarium sheets, from the Department of Botany, were exhibited, and the steps necessary in collecting, cutting, and mounting plants were explained. The meeting was attended by 129 representatives chosen by eighth grade science classes.

Reported Nest of Fossil Eggs Found to Be Not Genuine

Fossil eggs are known from various localities, but up to the present no genuine fossil birds' eggs have been recovered in Illinois, according to Mr. Elmer S. Riggs, Curator of Paleontology. A recent newspaper report of the discovery of a nest of fossil eggs in DeKalb County, Illinois, was investigated by Mr. Riggs and Assistant Curator Bryan Patterson, who visited the locality on May 17 and examined eleven of the supposed egg specimens. Three of these were brought back to Field Museum and subjected to microscopic examination and to chemical tests. It was found that the "eggs" were artificial, some of them being composed of lime and sand cast in a mold, and others composed of portland cement and sand.

FROM THE DIRECTOR'S DESK—

Field Museum Ready to Help You Enjoy Your Summer Vacation

With the coming of summer, plans for vacation trips will be made in many homes throughout the Chicago area. Information is being gleaned from travel bureaus, from so-called vacation states, and from summer hotels, in an effort to gain the greatest amount of enjoyment and benefit from the proposed trip. It is generally agreed that advance preparation for a vacation trip greatly enhances its value and enjoyment and gives understanding and appreciation of the scenes viewed and the places visited.

For almost any trip which leads to woods or open waters, to scenic regions, or to foreign countries, Field Museum has a great store of information to impart. To become familiar with a typical scene and afterwards to experience it in its original beauty and splendor must add to vacation pleasure.

Those who intend to visit the Rocky Mountains will be interested in the group showing plant life in the alpine zone of the Rocky Mountains, at approximately the twelve-thousand foot level.

Perhaps your vacation travel may take you to the southwest or to the north woods, in each of which places you may be in proximity with the American Indian. An extensive collection of Indian artifacts so displayed as to give one some appreciation of the Indians' mode of living and their ingenuity in the struggle for existence will be found in several halls at the Museum.

The fisherman has ample opportunity at Field Museum to see and to learn to identify the species of fish which he hopes to catch. On his return he may have an intimate view of the big one that got away!

For all wilderness travelers the wild life groups and the systematic mammal, bird, fish and reptile collections hold the key to greater pleasure in introducing them to the denizens of our forests, fields, and streams. To see and identify animals in their native habitats brings far greater pleasure than merely to see them and wonder what they are.

Those so fortunate as to make extensive trips around the world will find at Field Museum vast stores of interesting information not only on the animal and bird life of foreign countries, but on the life and customs of primitive peoples in all parts of the globe.

For visitors from other states and nations, Field Museum is an end in itself. A casual inspection of the parking lot at the Museum at any time during the summer months reveals a horde of automobile licenses from other states, from Mexico, and from Canada. These cars bring in visitors from near and far who have heard the story of Field Museum and who pause in their travel to see for themselves a collection of exhibits which has few rivals.

At vacation time, Field Museum offers opportunities galore for those who would come and see.

—CLIFFORD C. GREGG, *Director*

STAFF NOTES

Dr. Paul S. Martin, Chief Curator of the Department of Anthropology, has been elected First Vice-President of the American Anthropological Society (Central Section). The election took place at a meeting held in May at Ann Arbor, Michigan.

Mr. C. Martin Wilbur, Curator of Chinese Archaeology and Ethnology, conducted a seminar on "Museum Work as a Career," at Grinnell College in Iowa last month.

Dr. Julian A. Steyermark, Assistant Curator of the Herbarium, and Mr. Loren P. Woods, of the Raymond Foundation staff, made a collection of plants, fishes, reptiles, and mammals for the Museum recently, in the Black River watershed in the Ozark Mountains of Missouri.

Mr. L. Bryant Mather, Jr., Assistant Curator of Mineralogy, has returned from an expedition under the direction of Dr. Joseph T. Singewald, Professor of Economic Geology at the Johns Hopkins University. The party included fourteen geologists. Localities in Pennsylvania, New Jersey, and New York were visited. Eighty-seven mineral species were collected for Field Museum.

Miss Margaret M. Cornell, Chief of the James Nelson and Anna Louise Raymond Foundation staff, recently spoke before the children's division of the Story Paper Editors' Conference on the subject: "The Development of Museum Stories for Children." Mrs. Leota G. Thomas, also of the Raymond Foundation, addressed members of the Prairie Club on natural history of the Chicago region.

Distinguished Visitors

Among distinguished visitors recently received at Field Museum are Mr. William J. Morden, well-known traveler and explorer, and Associate of the Department of Mammals in the American Museum of Natural History, New York; Lieutenant Colonel J. H. Patterson, of the British Army (retired), who shot the man-eating lions of Tsavo now exhibited in Field Museum, and is author of an interesting book about these famous marauders; Dr. Robert Allen Cooley, well-known entomologist specializing in ticks at the Rocky Mountain Laboratory, Hamilton, Montana; Mr. A. H. Kierney of the Bureau of Plant Industry, United States Department of Agriculture; Mr. J. B. Kinlock, of the Department of Forestry of British Honduras; Dr. Margaret Mead, Assistant Curator of Ethnology at the American Museum of Natural History, New York, who is the author of well-known books on island peoples of the South Pacific; Mr. Charles R. Knight, of New York, the artist who painted the series of prehistoric life murals in Ernest R. Graham Hall of Field Museum; Mr. Newton B. Drury, Secretary of the Save-the-Redwoods League, of California; and Dr. Hu Chao-chun, Director, City Museum of Greater Shanghai, China, who is investigating American museum administration and technique.

A FEW FACTS ABOUT FIELD MUSEUM

Field Museum is open every day of the year (except Christmas and New Year's Day) during the hours indicated below:

November, December, January, February.....9 A.M. to 4 P.M.
March, April, and September, October.....9 A.M. to 5 P.M.
May, June, July, August....9 A.M. to 6 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 Museum's Library is open for reference daily except Saturday afternoon and Sunday.

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

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

Free courses of lectures for adults are presented in the James Simpson Theatre on Saturday afternoons (at 2:30 o'clock) in March, April, October, and November.

A Cafeteria serves visitors. Rooms are available also for those bringing their lunches.

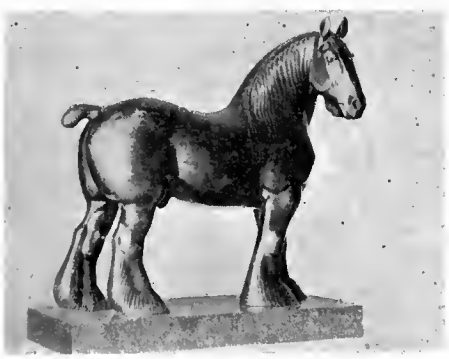
Chicago Motor Coach Company No. 26 busses provide direct transportation to the Museum. Service is offered also by Surface Lines, Rapid Transit Lines (the "L"), interurban electric lines, and Illinois Central trains. There is ample free parking space for automobiles at the Museum.

HASELTINE SCULPTURES OF DOMESTIC ANIMALS WIN HIGH PRAISE FROM ART EXPERT

"Of great significance artistically is the permanent exhibition of sculptures of champion domestic animals by Herbert Haseltine, British sculptor, which occupies a special hall at Field Museum of Natural History," wrote Mrs. Katherine Kuh, of the Kuh Galleries, after a recent visit to the Museum.

Mrs. Kuh was so enthusiastic about the Haseltine works that she immediately got in touch with members of the staff of the Department of Zoology, urging that this collection, in Hall 12, be brought to the attention of a wider public.

The Haseltine series, a gift to the Museum from Mr. Marshall Field, a Trustee of the institution, immortalizes in bronze and stone some of the finest animals in the service of man. Each represents a life study of animals which won honors as the best examples of live stock bred in Great Britain —horses (draft, racing and polo), bulls, cows, sheep, and hogs. The series comprises nineteen sculptures, all scaled to one-quarter life-size. They not only represent the actual winners of contests, whose mettle has been proved in the stock shows and on the race courses, but they typify the physical characteristics of various outstanding breeds. In most cases, stones of various hues and textures, suitable for representing the colors and characteristics of the animals, have been used. Also employed, with the utmost success, are such materials as plated gold and bronze, ornamented in some cases with lapis lazuli, ivory, or onyx. The statues are beautifully mounted and lighted. Before coming to Chicago for their permanent home, the sculptures were exhibited in Paris, London, and New York.



Draft Horse, by Herbert Haseltine
The animal is Sudbourne Premier, a Suffolk Punch atallion. The aculpture is in bronze, plated with gold.

Hereford Bull, by Herbert Haseltine
Bronze partially plated with gold. The animal represented was known in England as Twyford Fairy Boy.

Race Horae in Bronze, by Herbert Haseltine
It represents Polymelus, a British thoroughbred, winner of many races, and a champion aire for years.

PARTS OF OLD AUTOMOBILE AID PALEONTOLOGIST

By ELMER S. RIGGS
CURATOR OF PALEONTOLOGY

Before a fossil animal can become an exhibit in a glass case, with possibly a background and habitat accessories, it must first be an object of careful and painstaking work in a laboratory.

In fact, the museum worker usually first makes its acquaintance in the field as a mere tantalizing prospect in a ledge of rock or a bank of clay, and thence follows it through a variety of stages, all laborious. Only after arduous toil is the specimen separated from the terrain as a block of "matrix" in which the bones still remain imbedded. Shipped home, this block next appears mounted on a chipping block in the laboratory where it is attacked, but gently and carefully to avoid damage to the bones, with chisels and hammer. At long last the preparator finds his specimen laid out on a laboratory table as an assemblage of mended and sorted bones. Then, to obtain a satisfactory pose for exhibition, a temporary mount is necessary.

This last step often taxes the ingenuity of the preparator more than any other. Far different from a plastic material to be molded in a modeler's hands, the skeletal parts must be set up, posed, and almost interminably readjusted. Distorted parts have to be reshaped until they finally form a consistent whole correctly interpreting the physical structure of an animal which has never been seen alive, or even as a carcass, by any human eye.

Mr. James Quinn, a Field Museum collector and preparator of fossil mammals, recently solved the difficulty of assembling troublesome fossil skeletons by enlisting for the purpose certain discarded parts of a small car. A pair of lifting-jack screws, mounted upon two upright standards, furnish adjustable supports for the body bones of the animal. Flat rods, with adjustable knees attached to every vertebra, make the vertebral column almost as mutable as the flexible arm of an electric fixture.

Sliding jointed braces make it equally possible to raise and lower the head. The ball and socket joints of a steering gear, joined by varying lengths of tie-bar and piping with slip joint, form an adjustable leg support capable of universal adjustment at hip, knee and hock. In short, by using all the movable parts of a half-dozen steering gears and other pieces from the scrap-heap, a fossil skeleton, in the hands of Mr. Quinn, resourceful adaptor and manipulator, becomes almost a "robot" of movement. Recently the device was used to support the skeleton of a fossil horse, thus presenting a combination of features of the by-gone horse and buggy age with that of the motor car.

But pose, not action, is the object being seriously sought here. When all of the adjustments of body, head, legs and feet have been made, and the pose, whether representing an animal as walking or standing, idling or alert, has been checked and found correct, screws and lock-nuts are tightened down and the specimen from some remote period may be trusted to stand. Then permanent supports, less conspicuous than those of the temporary device, are shaped and fitted to the skeleton, and the steering-gear framework is detached and laid aside until required again in a different set-up adapted to a pose for some other animal of the long ago.

Notable Study Collection

A notable collection of some 800 ceramic objects of Chinese and Siamese origin, found in the Philippine Islands, has been placed in the Museum, for study, by Mr. E. D. Hester, of Manila, Economic Adviser to the High Commissioner of the Philippines. These ceramics range in date from about the thirteenth to the seventeenth century.

POISON IVY—

—Now is the time to beware of this pestiferous plant, which can do so much to spoil a summer vacation.

An illustrated leaflet—No. 12 in Field Museum's Botanical Series—tells how to identify the plant, how poisoning takes place, the nature of the poison and the disease it causes, and the remedies for ivy poisoning.

On sale at the BOOK SHOP of FIELD MUSEUM—15 cents.

SUNDAY LECTURE-TOURS END; TO RESUME IN NOVEMBER

The Sunday afternoon lecture tours conducted by Mr. Paul G. Dallwig, the Layman Lecturer, ended for the season on May 28. Since October 2, Mr. Dallwig has conducted 33 parties, with an aggregate attendance of approximately 2,800, or an average of 84 each Sunday. This was an increase over the 1937–38 season, despite the fact that the number of Sundays was two less in the 1938–39 season. The audiences included, besides Chicagoans, visitors from many sections of the United States, Canada and Europe—men and women engaged in a wide variety of professions, businesses, and other activities. Reluctantly, Field Museum has been forced to disappoint approximately 1,500 persons whose applications for reservations were received too late, but this was necessary in order to limit the groups to a size practicable for handling.

Mr. Dallwig will resume his activity as Layman Lecturer on the first Sunday in November (reservations will be accepted beginning October 1). In the 1939–40 season he plans to present some additional subjects, as well as repeating those which have proved so popular with the public during the past two seasons. Mr. Dallwig renders this service as a contribution to the Museum. In his lectures this season he covered prehistoric animals, prehistoric man, the living races of mankind, and precious and semi-precious gem stones.

GIFTS TO THE MUSEUM

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

Department of Anthropology:

From A. Leslie Armstrong, Stockton Heath, Warrington, England—3 deer antler picks, England; from J. Mandement, Ussat-les-Bains, Ariège, France—6 archaeological objects, France; from Dr. W. C. Pei, Peiping, China—115 artifacts, and casts of implements from Choukoutien, 2 plaster busts of the restoration of *Sinanthropus pekinensis* by Lucille Swan, and a set of colored plaster casts of teeth, China; from Arthur W. Joseph, Chicago—a Dakota Sioux cradle hood; from Robert S. Carson, New York—13 pottery fragments of typical black and gray ware, China.

Department of Botany:

From Dr. Delzie Demaree, Monticello, Arkansas—276 herbarium specimens, Arkansas; from William A. Daily, Indianapolis, Indiana—49 specimens of algae, Minnesota, Ohio, and Indiana; from George L. Fisher, Houston, Texas—165 herbarium specimens, New Mexico, Texas, and Mexico; from Professor J. Soukup, Puno, Peru—169 herbarium specimens, Peru.

Department of Geology:

From William Lenahan, Jidda, Arabia—2 meteorites and a specimen of silica glass, Arabia; from Miss Bertha Gordon, Porterville, California—14 specimens of minerals, California.

Department of Zoology:

From Dr. L. C. Buckley, Trang, Siam—15 bats, Siam; from Chicago Zoological Society, Brookfield, Illinois—45 birds, 6 ticks, a mangabey monkey, and a kinkajou; from Herman C. Benke, Chicago—33 specimens of marine shells, east coast of the United States; from General Biological Supply House, Chicago—a giant earthworm, Peru; from Julius Friesser, Chicago—4 mountain lion skulls and a lynx skull, Arizona; from John Werler, Seaside, Oregon—9 garter snakes, Oregon; from Boardman Conover, Chicago—2 red-eyed pochards, Africa; from Carl Bartell, Blue Island, Illinois—a barn owl, Illinois; from H. St. John Philby, Jidda, Arabia—12 bats and 3 hedgehogs, Arabia; from Clark Sanderson, Chicago—6 specimens of the terrestrial saw bug, Illinois; from H. E. Woodcock, Chicago—7 butterflies, New Mexico; from Loren P. Woods, Evanston, Illinois—2,056 fish specimens, 17 specimens of frogs, lizards, snakes, tadpoles, and a turtle, Missouri; from Henry Barthman, Useppa Island, Florida—a tarpon, Florida; from John R. Millar, Chicago—2 turtles and 2 snakes, Indiana; from Fred Rittschof, Urbana, Illinois—a fence lizard, Illinois; from Brother Niceforo Maria, Bogota, Colombia—22 birds, Colombia; from Mrs. Charles A. Corwin, Chicago—4 oil paintings of Laysan Island birds; from Frederick W. Hill, Chicago—2 humming birds, Costa Rica; from John M. Schmidt, Homewood, Illinois—14 specimens of snakes, South Dakota and Nebraska.

The Library:

Valuable books from Carnegie Institution, Washington, D.C., and from J. Francis Macbride, Chicago.

Boy Safety Leaders Visit Museum

More than 300 safety patrol boys, selected for merit from schools in many communities of Illinois and Indiana, were brought to Field Museum on May 11 under the auspices of the Chicago Motor Club. They were conducted on tours of the exhibits by guide-lecturers of the James Nelson and Anna Louise Raymond Foundation.

NEW MEMBERS

The following persons were elected to membership in Field Museum during the period from April 16 to May 15:

Associate Members

Hugo Dalmar, Jr., Mitchel Goldsmith, Madeline Magerstadt, E. F. McDonald, Jr., Paul C. Smith, Henry H. Straus, Dr. Austin H. Thurber.

Annual Members

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JUNE GUIDE-LECTURE TOURS FOR WEEK-DAY VISITORS

Conducted tours of exhibits, under the guidance of staff lecturers, are made every afternoon at 3 o'clock, except Saturdays, Sundays, and certain holidays. Following is the schedule of subjects and dates for June:

Thursday, June 1—General Tour; Friday—The Octopus and Other Sea Animals.

Week beginning June 5: Monday—North American Archaeology; Tuesday—General Tour; Wednesday—Malvina Hoffman Bronzes; Thursday—General Tour; Friday—Native American Plants.

Week beginning June 12: Monday—Prehistoric Life; Tuesday—General Tour; Wednesday—Snakes and Their Cousins; Thursday—General Tour; Friday—Eskimos and Their Neighbors.

Week beginning June 19: Monday—Jades of Many Lands; Tuesday—General Tour; Wednesday—Su-Lin and Other Rare Animals; Thursday—General Tour; Friday—Skeletons of Man and Beast.

Week beginning June 26: Monday—Egyptian Hall; Tuesday—General Tour; Wednesday—Moon and Meteorites; Thursday—General Tour; Friday—Wild Flowers of the Chicago Region.

Persons wishing to participate should apply at North Entrance. Tours are free. 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 by arrangement with the Director a week in advance.

MEMBERSHIP IN FIELD MUSEUM

Field Museum has several classes of Members. Annual Members contribute $10 annually. Associate Members pay $100 and are exempt from dues. Sustaining Members contribute $25 annually for six consecutive years, after which they become Associate Members and are exempt from all further dues. Life Members give $500 and are exempt from dues. Non-Resident Life Members pay $100, and Non-Resident Associate Members $50; both of these classes are also exempt from dues. The Non-Resident memberships are available only to persons residing fifty miles or more from Chicago. Those who give or devise to the Museum $1,000 to $100,000 are designated as Contributors, and those who give or devise $100,000 or more become Benefactors. Other memberships are Honorary, Patron, Corresponding and Corporate, 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.

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.

Contributions made within the taxable year not exceeding 15 per cent of the taxpayer's net income are allowable as deductions in computing net income for federal income tax purposes.

Endowments may be made to the Museum with the provision that an annuity be paid to the patron for life. These annuities are guaranteed against fluctuation in amount, and may reduce federal income taxes.

PRINTED BY FIELD MUSEUM PRESS

Field Museum News

Published Monthly by Field Museum of Natural History, Chicago

Vol. 10 JULY, 1939 No. 7

EXPEDITION DEPARTS TO COLLECT FAUNA OF SOUTH AMERICA'S FARTHEST AREA

A Field Museum expedition, to be known as the "Magellanic Expedition," will begin operations in July. It will work largely in the lower reaches of South America where continental land extends farther than anywhere else in the world. One of its prime objectives will be the collection of specimens and data to supplement the work of Charles Darwin in that territory. The expedition is sponsored by Mr. Stanley Field, President of the Museum.

Blackstone photo

Dr. Wilfred H. Osgood
Chief Curator of Zoology

Mr. Karl P. Schmidt, Curator of Amphibians and Reptiles, and his son, Mr. John Schmidt, field assistant, will leave Chicago July 1. Mr. Colin C. Sanborn, Curator of Mammals, will leave July 5. All three will sail July 7 from New York aboard the S. S. *Santa Rita* for Lima, Peru.

These men are the first contingent of the expedition. Later, probably about October, they will be joined by Dr. Wilfred H. Osgood, Chief Curator of the Department of Zoology.

The expedition will attempt to complete the now fragmentary knowledge of the fauna of the southern half of South America. All classes of animals will be sought—mammals, birds, reptiles, fishes, insects, marine invertebrates, etc.

Upon arrival in Lima, Mr. Schmidt and his companions will proceed through southern Peru to Arequipa and Lake Titicaca, where collecting will begin. Crossing the lake by steamer, they will enter Bolivia, and make collections in various localities. Their further penetration into the interior of South America will be made variously by airplane, rail, boat, pack animals, and afoot. After the arrival of Dr. Osgood the expedition will push onward through Chile down to the southernmost tip of the continent. It is in the region along the shores of the Straits of Magellan, and on the remote island of Tierra del Fuego, one of the windiest places in the world, that the most important research will be conducted.

"But little zoological exploration in this region has been done for more than one hundred years," Dr. Osgood asserts. "In 1834, Darwin collected in parts of it, during the famous cruise of the *Beagle*. Since that time it has been neglected. Although Darwin made some collections of the fauna, which are still preserved in the British Museum, there are many gaps which remain to be filled in available knowledge of the natural history of the region. The Darwin collections are not satisfactory from today's standards because, naturally, facilities and techniques for the collecting and preservation of specimens had not been developed in his time to the point since achieved. On the Field Museum expedition it is expected that data will be obtained which will make possible the completion and revision of present knowledge based on the Darwin collections. It may be confidently expected further that we shall obtain examples of species of animals still unknown or hitherto unrepresented in any collections.

"This region is far beyond the Equator, in the south temperate zone, where the climate is much like our own, and there are no dangerous tropical diseases, no poisonous snakes, and no blood-thirsty lions or tigers. The animals that do live there are not widely known and the number of species is not large, but among them are some of great peculiarity and much interest.

"Darwin was only 23 years old when he started on this great journey, and in the five years of continuous field work which followed, he laid the foundation for much of his later study. He not only proved himself to be a wonderfully accurate observer and a profound thinker, but also an energetic collector of natural history specimens. His collections in all branches of natural history subsequently furnished the basis for numerous scientific studies not only by himself but by various specialists, including many of the greatest zoologists, botanists and geologists of that time. Darwin's specimens, in this way, became standards of comparison, and even now a great part of our knowledge of the natural history of southern South America is based on them. Therefore, the special student whose problems enter this field has been obliged to go to London to examine them. This was not always convenient and would not be necessary if duplicate specimens were in American museums."

Colin C. Sanborn
Curator of Mammals

Moffett photo

Karl P. Schmidt
Curator of Amphibians and Reptiles

Although the expedition will be concerned primarily with assembling thousands of specimens for the Museum's extensive research collections, specimens will be sought also for addition to the public exhibits, and material may be obtained for a few habitat groups of important animals.

HISTORIC FOSSIL TURTLE

Mention was made in the May issue of FIELD MUSEUM NEWS of a collection of European fossils and minerals recently presented by Dr. Henry Field. The collection was assembled by the Misses Diana and Otteline Salisbury of Leicestershire, England, about 120 years ago. Certain fossil vertebrates included in this gift have recently been catalogued. Among these were a number of fragments of a turtle shell from England which seemed sufficiently numerous to warrant an attempt to fit them together. This has been done by Messrs. James H. Quinn and Orville Gilpin in the Museum's paleontological laboratories, with the result that a nearly complete carapace or upper shield has been obtained.

The turtle thus resurrected proved to belong to the genus *Trionyx*, one of the soft-shelled turtles. A closely related species lives today in the Chicago area. The fossil was found in Eocene deposits and is hence some 40,000,000 years old. The fact that so little change has taken place in such a period gives an idea of the conservatism of the turtle group. This specimen, belatedly assembled well over one hundred years after its finding, is one of the finest of its kind ever collected in England. —B.P.

AVERY BOTANICAL EXPEDITION RETURNS FROM GUATEMALA

By PAUL C. STANDLEY
CURATOR OF THE HERBARIUM

The botanical expedition to Guatemala in 1938–39, sponsored by Mr. Sewell Avery and conducted by the writer, had for its purpose the collection of data and specimens of plants to be used in preparation of a descriptive flora of that country. Six months, from November 19 to May 13, were spent in the field, and more than 15,000 numbers of plants, represented by perhaps twice as many herbarium specimens, were collected, so that the work may be regarded as highly successful. All except two of the country's twenty-two departments were visited.

It must not be inferred that the country was thoroughly explored, despite the many well-built highways that make almost every settled region of Guatemala easily accessible by automobile. The area of the republic is about 42,000 square miles, approximately that of the state of Kentucky, but the similarity in area is misleading. The mountainous nature of the country makes its exploration several times as difficult as that of one of our central states of equal extent.

Because of the large and varied area to be covered and the brief time available, intensive collecting was possible in only a few localities, and many large regions were merely viewed from a distance, in hurried passage along the roads. It was thus possible to gain a good idea of the general appearance and composition of the vegetation of the greater part of the country, but a full knowledge of all the species of plants composing the vegetation will require many more months or years of field work.

MANY VOLCANOES

Much collecting has been done previously in Guatemala by other botanists, and seventeen years ago the writer spent a short time there. The plants of a few limited regions were already rather well known. Some of these localities were revisited during the past winter, and excursions were made to many places where no collecting had been done previously.

The geography and climate of Guatemala are extremely varied. The western and southern parts of the republic contain many volcanoes, some of them more or less active, and other mountains, the highest peaks rising to 14,000 feet. The northern region is formed of non-volcanic rocks, chiefly limestone, and supports a conspicuously different flora. Some areas are arid, with varied displays of giant cacti and typically desert plants. Others, especially near the Atlantic coast, have a heavy rainfall and support a luxuriant rain forest. The central and western regions have generally six months of rain and six months of rainless weather. Temperature varies from the sometimes oppressive heat of the coasts to the almost equally excessive cold of the Altos or uplands. At many places above 7,500 feet frost is common, ice often is formed, and scant snow falls occasionally.

Guatemala lies well inside the tropics, but neither climate nor flora is wholly tropical. Indeed a great part of the vegetation of central and western Guatemala is clearly temperate or, at very high elevations, alpine. The commonest trees over most of the country are oaks and pines. Near Cobán the sweet gum or liquidambar abounds, with box-elder, willows, alders, poison sumac, red cedar, magnolia, and yellow jessamine. In the highest regions are magnificent forests of cypress (*Cupressus*) and fir.

FLOWERS IN PROFUSION

For three months the writer made headquarters in the picturesque and beautiful city of Antigua, twenty-five miles from Guatemala City. Excursions were made to many localities of the high central region, to the dry Oriente bordering Salvador, and to the Pacific coast. Collections were made on forested slopes of the three great central volcanoes, Agua, Fuego, and Acatenango, and also on the low but destructive volcano of Pacaya. In late November, at the end of the rainy season, this central upland affords a lavish display of brilliant flowers—pink and white tree dahlias, begonias, sunflowers, salvias, and dozens of others in every color. By late April the great displays of blossoms have passed, although it is possible to find quantities of flowers at every season. Orchids are none too plentiful in the highlands, or at least not conspicuous. Many of the trees are loaded with bromeliads or "air plants" showier than most orchids.

For a month the writer had headquarters in the Occidente, in Quezaltenango, at almost 8,000 feet. At this elevation in March the landscape is strangely reminiscent of that of Illinois at the same season—the same fields of corn stalks and wheat stubble, rough-coated cattle, heavily clothed people, and low houses from which gray smoke rises. In late March the mountains are beautifully green with the unfolding leaves of alders and oaks.

LITTLE EXPLORED REGION

From Quezaltenango excursions were made to the summit of the Sierra de los Cuchumatanes, above Huehuetenango, the white sand mountains of San Marcos, the summit of the Volcano of Santa María, Ayutla on the border of Chiapas, and the Pacific port of Champerico. Visits were made to the *bocacosta* lying at middle elevations between the uplands and the Pacific. Here, at 2,000 to 5,000 feet, where there is plenty of rain throughout the year, is found probably the most luxuriant and diversified vegetation of Guatemala. Moreover, it has been little explored by botanists, and the brief trips made there were tantalizing because it was clear that only a small number of the amazingly diversified plants could be collected. High upon the slopes of the Volcano of Zunil, at 8,000 to 9,000 feet, the tropical rain forest is exceedingly rich in species. The northern slopes of Santa María, on the other hand, proved disappointing because of their relative dryness.

RESIDENTS CONTRIBUTE AID

As on the writer's previous visits to Central America (this was the fifth), work was aided materially by local botanists and by other persons who took a sympathetic interest in the exploration. Many officials of the Guatemalan government gave the most courteous assistance and advice. Don Mariano Pacheco, Director-General of Agriculture, was particularly generous in his help and interest. His private garden of Guatemalan and exotic plants would delight any visitor wishing to see the high lights of Central American ornamental plants. Professor Ulises Rojas, Director of the Jardín Botánico, was a delightful companion on collecting trips in the Occidente, generous with his rich fund of knowledge of the Guatemalan flora. To Mr. and Mrs. B. B. Lewis, of Guatemala City, Mr. and Mrs. L. Lind Petersen, of Finca Zapote, and Mr. George B. Austin, of the United Fruit Company at Puerto Barrios, the writer is deeply indebted for hospitality and assistance in his work. Mr. Petersen presented to Field Museum a fine plank of the Pacific coast mahogany, to complete the Museum's mahogany exhibit. Special acknowledgment must be made to Dr. J. R. Johnston, Director of the Escuela Nacional de Agricultura, Chimaltenango, who accompanied the writer on many excursions, and contributed very largely, with his intimate knowledge of Guatemalan geography and vegetation, to the success of the expedition.

Lighting of Jades Improved

The recent introduction of the latest illuminating technique throughout the Hall of Chinese Jades (Hall 30) has greatly improved the exhibition of these ancient specimens of lapidary art. The former yellow lights distorted certain colors, especially that of the subtle blue jades which is particularly beautiful. That problem has now been solved, and many details of decorative carving are likewise better revealed. This is a valuable improvement in the cases showing small carvings of the Shang and Chou periods which extended roughly from 1400 to 250 B.C. During this earliest stage ornamentation of the surface of jade with line design was at its peak of perfection. With the new lights this decoration is now more clearly visible.—C.M.W.

Fluorescence of Petroleum

The brilliant fluorescence shown by petroleum and many of its products is illustrated by a specimen of crude oil and two of its products recently placed in the fluorescence exhibit in the Department of Geology (corridor between Halls 34 and 35).

SIX PROGRAMS FOR CHILDREN IN JULY AND AUGUST

A summer series of six programs of talking motion pictures for children will be presented at Field Museum on Thursday mornings, from July 6 to August 10 inclusive, by the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures. Animated cartoons by Walt Disney will be included on three of the programs, and several other novel feature pictures will be presented. The programs will begin at 10 A.M., and will be given in the James Simpson Theatre of the Museum. Admission is free, and children from all parts of Chicago and suburbs are invited. Following are the titles of the films to be presented on each program:

July 6—The Musical Farmer (Disney Cartoon); "Cimarron" (acted by chimpanzees); Hungarian Gypsy Dances; Grass—A Story of Persia.

July 13—William Tell—A Story of Switzerland.

July 20—Frolicking Fish (Disney cartoon); Footprints and Bicycles; Water Fun; Adventures of a Mongrel Pup.

July 27—The Gang (Boy Scout life).

August 3—The Busy Beavers (Disney cartoon); The Lovely Taj Mahal; The Navajo Demon; Babes in the Woods.

August 10—The Wedding of Palo (A Story of Eskimo Life in Greenland).

Fly Whisks

In Tibet the bushy tails of yaks are used to make fly whisks. In India the fly whisk is included among the insignia of royalty. Warriors of nomadic tribes in Central Asia attach fly whisks to the trappings of their horses as standards, and Chinese deities of Buddhistic origin frequently carry them in their hands as emblems of dignity. Some interesting specimens, collected in Tibet, are exhibited in Hall 32, Case 17.

A GIFT TO THE LIBRARY

A modern man practising an ancient art of prehistoric man was the late Fred Snare, flint-knapper, of Brandon, Suffolk, England. Of historic interest, therefore, is a collection of his correspondence, received by the Library of Field Museum, as a gift from Dr. Henry Field, Curator of Physical Anthropology. In the Department of Anthropology are a collection of Snare's flint-knapping tools, and samples of his work.

"As a craftsman, Snare was unsurpassed," asserts Dr. Field. "He alone was able to make small flint rings. He was the last of a family line of flint-knappers which dates back at least to the year 1066, for in Domesday Book one of his ancestors was ordered by William the Conqueror to repair a flint church wall. At the time of his death Snare was making gun flints on orders from Africa."

Dr. Field made Snare's acquaintance while conducting archaeological expeditions in Europe. Snare bequeathed his correspondence to Dr. Field.

SKELETON OF MOROPUS, STRANGE FOSSIL MAMMAL WITH CLAWED FEET, IS EXHIBITED

By ELMER S. RIGGS
CURATOR OF PALEONTOLOGY

A fossil skeleton of *Moropus*, a strange mammal related to the horse and the extinct Titanothere, but having claws on the feet in place of hoofs, has recently been placed on exhibition in Ernest R. Graham Hall (Hall 38).

This specimen was found in Nebraska where it had been preserved in a sandstone formation characteristic of the Great Plains region. The animal lived in the Miocene Age (about 20,000,000 years ago).

Moropus was as tall as a draft horse, but of a heavier and more massive build. Its head was about as large as that of a horse, but the eye was placed farther forward on the face, and the teeth were more like those of a rhinoceros. The neck was rather long, the body moderately heavy, the shoulders massive, and the leg bones heavy. The animal's unique feature is the structure of the foot. While related to such hoof-bearing animals as the horse and the extinct Titanotheres, *Moropus* walked upon heavy pads under the first joints of the toes, and was armed with stout claws similar to those of the great ground sloths. In fact, the first bones of this animal, found in 1877, were those of the foot and claw, and for this reason they were mistaken for bones of the ground sloth. In 1905 some specimens of jaws and vertebrae were found among a great accumulation of bones at the fossil quarries of Agate, Nebraska.

Moropus was a plant-eating animal. Its teeth were fitted for feeding upon leaves, twigs, and other vegetable matter. The great claws on the feet may have served to give the animal a firmer footing on sandy ground, but they were probably used also in digging in the ground for the roots and tubers which undoubtedly constituted a large part of the creature's food.

While *Moropus* is a member of the family Cholicotheridae which was widely distributed through Europe, Asia, and Africa in periods ranging from the Eocene to Pleistocene, our present knowledge would indicate that they lived only a short time in North America, and that they probably came to this continent as immigrants from Asia.

Moropus, and Contemporary Miocene Animals

The two animals at extreme right represent the strange fossil mammal with clawed feet which lived in Nebraska some 20,000,000 years ago, as science indicates it must have appeared in life. An articulated skeleton has been added to the exhibits in Ernest R. Graham Hall. The other creatures shown in this mural painting by Charles R. Knight, in the same hall, are (left to right): *Oxydactylus* or prehistoric camel; *Diceratherium*, a small species of rhinoceros; *Parahippus*, a tiny three-toed horse; and *Dinohyus*, the giant pig.

THE TRAVELS OF A BOTANIST IN VENEZUELAN INTERIOR

BY LLEWELYN WILLIAMS
CURATOR OF ECONOMIC BOTANY

(Editor's Note:—Mr. Williams, currently on leave of absence from the Museum to assist Dr. Henry Pittier, government botanist of Venezuela, in extensive exploration of that country, has sent the following account of his recent experiences.)

I have returned to Caracas after a four months' expedition to the Venezuelan Guayana, principally in the upper and lower reaches of the River Caura. This was the most difficult and dangerous trip I have yet undertaken, but was well worth the effort.

Collecting equipment was sent overland to Ciudad Bolivar, and I followed two weeks later, partly by road, chiefly by flying over

Tapping a Cow Tree

This photograph, made on an expedition to Costa Rica several years ago, shows a botanist obtaining "milk" from a tree similar (though of a different species) to that encountered by Curator Williams in Venezuela.

the "llanos" (extensive plains). It takes three days by road, but one can traverse the distance by air in two hours. In Ciudad Bolivar I was joined by Captain Felix Cardona, of the Venezuelan Frontier Commission. Because of the heavy load of equipment and provisions, we hired a sail boat. Sailing up the Orinoco for three days we reached the estuary of the Caura, then followed the latter for three more days to Las Trincheras, the last sizable village. There our cargo was transferred to "curiaras" (large canoes), and in these we then ascended the Caura, notorious for its many dangerous rapids, for two more weeks until we arrived at the Salto de Para, a large waterfall, where Cardona and I separated.

At one time our party included thirty-two individuals—seven Venezuelans (or "racionales" as they call themselves), seven Macuchies (Indians from the Grand Sabaña to the south), a Carib, a Jindus, and sixteen Maquiritares (also called Mayongkongs).

Two days before we arrived at the Salto de Para, it began to thunder and our oarsmen, the Macuchies Indians, told us this meant that "the Indians (meaning the Mayongkongs) were coming." The following morning as we moved up river, the Macuchies shouted, "Here come the Indians." We, *racionales*, could not spot the Maquiritares, but our forest-bred friends have a highly developed sense of sight and smell. The Macuchies were excited and one of them blew his shell. This was a sign of friendship and the Maquiritares, recognizing the call, advanced from their hiding places behind a large rock some 500 yards away. They advanced rapidly towards us in three canoes, led by their *caciques* (chieftains), Cardier, and Chauran. Cardier and his men decided immediately to return with us, but Chauran and his group insisted on continuing down river. However, when we reached the Salto de Para, Chauran arrived simultaneously. Asked why he had changed his mind he replied in one word: "*Canaima.*" In Indian lore this means the devil in the form of revenge, and Chauran and his followers had feared we would attack during the night to punish them for not returning with us.

CUSTOMS OF THE INDIANS

Except for a narrow loin cloth, dyed red with "achote," these Indians live in the nude. Both men and women bob their hair in a fashion practised since time immemorial. Another beautifying process, practised by both sexes, is plucking the eyelashes and eyebrows. The Mayongkongs are expert hunters, fishermen, and builders of canoes. Their principal weapon is the bow and arrow, but in late years they have adopted firearms, principally for defence. They have two great fears—the Salto de Para waterfall, and the Shirishana Indians, their bitter enemies who inhabit the region along the Brazilian frontier. Almost every year, during the dry season, these Shirishanas attack the Maquiritares, burn their huts, and carry off prisoners. Cases have been reported of groups of Shirishanas led by an old woman more ferocious and cruel than any known male *cacique*. The Maquiritares believe that the Salto de Para is inhabited by "Makoi," a form of devil. For this reason, while we were below the Salto they kept aloof and spoke little, but once they arrived above the falls they became congenial. Money has no value to them, and all business is done by barter, a hunting dog being traded for a canoe, for example.

For about three months I lived alone with the natives in the forest, cut off from the outside world. We had to shoot rapids, which is far more dangerous than ascending them, and fight the heat, rain, and malaria. But we came through without serious mishap, bringing a collection of thousands of herbarium specimens, about 400 samples of woods, and textile fibers, gums, resins, oils, and hundreds of photographs. This collection is the first of its kind so far made in the vast Venezuelan Guayana, although some famed botanists have visited parts of it.

The region is a botanist's paradise, whose variety of plant-life is amazing, ranging from tiny orchids with exquisite flowers to giant trees, often reaching 140 feet in height. Some of the trees have straight, cylindrical trunks, up to six feet in diameter and clear of branches up to about eighty feet. One of the most interesting of these trees is the *cajiman*, also called *vacuno*, or *palo de vaca*. Incisions in the bark of this "cow tree" yield a sweet latex. It is a common practice among those who travel through these forests to drink this milk. I have now done so myself and can vouch for its excellence. The best way to use it is to add five parts of water to one part of the latex, and boil slowly until a scum is produced. This can be added to coffee or tea without fear of any ill-effects. If there is no immediate need of using it in coffee, it forms an admirable material for caulking canoes. When the latex is boiled, without the addition of water, it coagulates readily, is pliable and can be kneaded into any desired shape. The pulp of the fruit provides an exceedingly sweet and savory food relished by man, as well as by birds and quadrupeds. "Cow trees" were first discovered by Alexander von Humboldt, and described by him 140 years ago.

Cow Tree in Museum

A trunk of the Guatemalan species, presented to Field Museum by the United Fruit Company, and exhibited in Hall of Foreign Woods (Hall 27).

EXHIBIT TRACES DEVELOPMENT OF SOUTHWEST POTTERY

By PAUL S. MARTIN
CHIEF CURATOR, DEPARTMENT OF ANTHROPOLOGY

The Story Behind Southwestern Pottery—so reads the label on an exhibit of a new type recently installed in the Southwestern Indian Hall (Hall 7). This exhibit is designed to show, in graphic form, the relationships existing among the varied pottery types in this rich archaeological field.

Horizontal lines on the exhibition screen, representing dates ranging from A.D. 500 to A.D. 1700, give chronological data on the specimens which are arranged also on vertical lines in accordance with their family or culture branches. The dated sequence indicates the changes and developments in the prehistoric cultures of the peoples who made these wares. Branches are divided into time phases, each of which includes several types of pottery, both plain and painted. In most instances, each phase is here represented only by its most typical ware.

This exhibit is planned on the basis of a classification system developed at Gila Pueblo, Globe, Arizona, but it is unique because it uses many whole pieces of pottery, instead of sherds alone.

Pottery, in its earliest form, was probably sun-dried. Learning to bake the pottery in a fire constituted the first advance in the potter's art. This fired pottery was plain and unpainted, and although it has been modified and manufactured for utilitarian purposes up to the present day, it is shown in this exhibit only where it is the sole type known at any given date. The final development was the addition of painted decoration, with which this exhibit is mainly concerned.

The two great peoples represented by specimens in the exhibit are the Hohokam, and the Basket Maker-Pueblo Indians. From the beginnings they made, there were developed the pottery types associated with such modern tribes as the Hopi, Acoma, Zuni, Puma, and Papago.

FLORIDA EXPEDITION COLLECTS MORE THAN 800 SPECIMENS

Approximately 800 specimens of land, fresh-water, and marine animals were collected by Dr. Fritz Haas, Curator of Lower Invertebrates, and Staff Taxidermist Leon L. Walters, during the first month of their current expedition in southern Florida, according to reports they have made to the Director. Included in the collections is material for use in proposed exhibits of certain kinds of crustaceans. Mr. Walters has made plaster molds of some of these in the field, so that when reproductions are eventually made they will have the advantage of being modeled from the equivalent of fresh specimens.

At the time of sending their reports, Messrs. Haas and Walters indicated that they had completed work in the vicinity of Englewood, Florida, ahead of schedule, and were about to proceed to Sanibel Island for further collecting and research.

Another $2,000 Contribution from Mrs. J. N. Raymond

For the second time since the beginning of this year, Mrs. James Nelson Raymond recently contributed $2,000 toward the support of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures, which she established in 1925 with an endowment of $500,000. Her previous 1939 gift, of the same amount, was made in February. The supplementary contributions of this type which Mrs. Raymond has frequently made in the years since her original foundation gift now total more than $67,000.

The work of the Raymond Foundation, so valuable to the school children of Chicago, is continuously being augmented and improved. In addition to its regular functions, the Foundation during July and August will present a special summer series of free motion picture programs for children, of which details will be found elsewhere in this issue of FIELD MUSEUM NEWS.

Mammals of the Chicago area are exhibited in an alcove south of the east entrance to Hall 17.

PALEONTOLOGICAL EXPEDITION REPORTS NOTABLE SUCCESS

Collections, remarkable for their size and variety, have been made by the paleontological expedition which has been working since April in Oligocene, Miocene, and Pliocene fossil beds of South Dakota. Mr. Paul O. McGrew, Assistant in Paleontology, who is leader of the party, reports that excavations in the vicinity of Big Spring Canyon have thus far yielded skulls, skeletons, and partial skeletons of extinct rhinoceroses, camels, three-toed horses, antelopes, dogs, a peccary, a horned rodent, a beaver, a sabertooth cat, and other creatures that inhabited the American west in prehistoric times, some as far back as forty million years ago. The country being explored is close to a Pine Ridge Indian reservation. Early work of the expedition was hampered by snow, and recently severe rainstorms have caused difficulties, but work has progressed satisfactorily despite these obstacles.

When work has been completed at the South Dakota sites, the party plans to transfer operations to a site near Agate, Nebraska. Mr. McGrew is accompanied by Mr. Orville Gilpin, of Chicago, and Mr. John Schmidt, of Homewood, Illinois.

The so-called double coconut of the Seychelles Islands, which has the largest seed in the plant kingdom, is shown in Hall 25.

FAMOUS FORGE FROM PHILIPPINES EXHIBITED AT MUSEUM

The people of the Saltan River valley are the most skillful iron workers in northern Luzon (Philippine Islands), and their products are widespread throughout the region. Perhaps the most famous forge was that of Balbalasang, which was secured by a Field Museum expedition and is shown here, as it is exhibited in Hall H, together with faithful representations of the people at their work. The people are of mixed blood, chiefly Kalinga, with some Igorot and Tinguian.

The smithies are small structures, with grass roofs and no sides. At one end is the bellows, consisting of two upright wooden cylinders in which pistons of wood packed with chicken feathers and corn husks are worked alternately up and down. Bamboo tubes lead out from the wooden block in which the cylinders stand, and come close together in a tube of fire clay which runs into the charcoal fire. Nearby is a stone anvil. The white hot metal, as it comes from the fire, is handled with iron pincers by the real smith, who holds it on the anvil while his helper wields the heavy stone hammer. After the initial shaping, the smith himself completes the work with the smaller iron hammer. Tempering is done by cooling the heated iron in the small bamboo trough of water. The woman is represented as having just brought water to the forge for this purpose.

Philippine Forge Group
Exhibit illustrating methods of skillful iron workers on the island of Luzon.

The weapons, completed and under construction, which are shown in the exhibit, were in the smithy at the time of its acquisition, and are the last objects that were made in it prior to its removal to Chicago.

FROM THE DIRECTOR'S DESK—

A Permanent World's Fair

At this time the interest of people throughout the country turns coastwise, east or west, to the world's fairs at New York and San Francisco. At either fair one may expect to see marvelous exhibits featuring new discoveries, new inventions, new architecture, and a general cross-section of things that interest man all over the world.

A few years ago a great world's fair was held in Chicago, and interest was so great that it was continued for a second year. At the same time a large proportion of out-of-town visitors came to Field Museum. The comments heard from them were in all cases complimentary. It might be of interest to see why those people who were interested in the world's fair were amazed and delighted with Field Museum.

Field Museum presents, not on rare occasions, but at all times, the finest display of the results of scientific investigation in the field of natural science. Field Museum, too, has gathered together from the far corners of the earth the choicest and rarest specimens and has prepared them for exhibition in a way that will educate and delight the visitor. Field Museum's exhibits are not prepared for a few days or for a single season, but rather to last as long as the material itself is of interest.

In its Hall of the Races of Mankind, Field Museum has gathered together typical examples of humanity throughout the earth today, done in enduring bronze through the talent of an eminent sculptor. This hall might be termed a permanent assembly of the representative peoples of the world.

In many halls Field Museum exhibits the ethnology of primitive peoples of today. Here the visitor may see the actual weapons of their warfare, the tools of their handicraft, samples of their art and their weaving, and most of the other primitive objects so essential to their daily lives. Many of these collections could not be bought at any price today, as they represent the life of these primitive peoples before the influence of European civilization came upon them. Primitive men today in most of the remote corners of the earth are using to some degree articles imported from Europe, America, or the industrial nations of Asia.

Mammals and birds, fishes and reptiles, trees and flowers, gems and minerals have been gathered from far and near—identified, labeled, and presented for your inspection. The association of natural things with their natural surroundings has been brought out clearly in many splendid habitat groups.

The collection of meteorites at Field Museum is unique in the number of falls represented. The appeal of these occasional arrivals from distant unknown places outside the earth needs no comment. Then, too, there are collections of gems and gemstones, cut and uncut, together with typical jewelry from all parts of the world. A separate hall contains Chinese jades of many dynasties. Even for those unacquainted with the values represented, these halls are a delight because of the sheer beauty of the specimens themselves.

Is it any wonder that Field Museum may be looked upon as a permanent world's fair, housing as it does priceless collections of world-wide origin?

—CLIFFORD C. GREGG, *Director*

Distinguished Visitors

Among distinguished visitors recently received at Field Museum are: Mr. Herbert N. Hale, Museum Director of the Public Library, Museum, and Art Gallery of South Australia, at Adelaide, who spent eight days inspecting Field Museum's building and equipment, and observing the educational methods employed here; Mr. Chauncey J. Hamlin, President of the Buffalo Museum of Science; Mr. Victor Fisher, Ethnologist of the Auckland (New Zealand) Museum; Dr. Herbert Friedmann, Curator of Birds at the United States National Museum, and President of the American Ornithologists' Union; Mr. A. J. van Rossem, Ornithologist of the California Institute of Technology, at Pasadena; Dr. D. Rubin de la Borbolla, Director, Escuela Nacional de Ciencias Biologicas, Mexico; Dr. T. H. Goodspeed, Professor of Botany at the University of California; Dr. Frank D. Kern, of Pennsylvania State College, who is one of the foremost specialists on fungi; Professor Harry W. Norris, of the zoological department, Grinnell College, Iowa; Dr. James P. Chapin, Curator of Old World Birds of the American Museum of Natural History, New York; Mrs. Gertrude Bass Warner, Director, and Mrs. Louis Colfax, of the University of Oregon Museum of Fine Arts, Eugene, Oregon.

Trustees Vote Honors to Two

Mr. Michael Lerner, well-known sportsman of New York City has been elected by the Board of Trustees to the Field Museum membership classification designated as Contributors, and Dr. Henri Humbert, noted French scientist, has been elected a Corresponding Member. The election of Mr. Lerner is in recognition of notable gifts he has made to the Museum, especially to the collections of the Division of Fishes. Professor Humbert is Director of the Laboratory of Phanerogams at the Muséum National d'Histoire Naturelle in Paris. He has accorded extremely valuable co-operation to Field Museum in connection with this institution's project for photographing type specimens of plants in European herbaria—a project which is proving to be of immense benefit to botanists throughout the world.

Oil Palm Specimen

A fruiting spadix of the American oil palm, collected in Panama by the late Professor A. C. Noé, who was Research Associate in Paleobotany for Field Museum, has been placed on exhibition in Hall 25, in conjunction with its economically more important relative, the African oil palm. Oil from the latter is widely used in the manufacture of soap.

A FEW FACTS ABOUT FIELD MUSEUM

Field Museum is open every day of the year (except Christmas and New Year's Day) during the hours indicated below:

November, December, January, February.....9 A.M. to 4 P.M.
March, April, and September, October.....9 A.M. to 5 P.M.
May, June, July, August....9 A.M. to 6 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 Museum's Library is open for reference daily except Saturday afternoon and Sunday.

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

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

Free courses of lectures for adults are presented in the James Simpson Theatre on Saturday afternoons (at 2:30 o'clock) in March, April, October, and November.

A Cafeteria serves visitors. Rooms are available also for those bringing their lunches.

Chicago Motor Coach Company No. 26 busses provide direct transportation to the Museum. Service is offered also by Surface Lines, Rapid Transit Lines (the "L"), interurban electric lines, and Illinois Central trains. There is ample free parking space for automobiles at the Museum.

EXHIBIT ILLUSTRATES LIFE OF CHINESE CHILDREN

By C. MARTIN WILBUR
CURATOR OF CHINESE ARCHAEOLOGY AND ETHNOLOGY

What does a Chinese school child look like, and what does he study today?

To answer these questions, particularly when asked by Chicago school children, Field Museum recently placed a new exhibit in Hall 32 (Case 38). To assure that the exhibition material would be authentic, the Museum asked Mrs. Elizabeth S. Stelle, who has lived for fifty years in intimate contact with the Chinese near Peiping, to secure complete outfits of used clothes, textbooks, and toys, together with class work and photographs, of two Chinese school children from middle-class families. Everything was in actual use when obtained.

The central characters of the new exhibit are Shih-pin Wu, a sixth-grade boy, and Chih-ping Wen, a fourth-grade girl. Both are natives of T'ung hsien, a typical old Chinese town about ten miles east of Peiping. Their art work—typically Chinese in its viewpoint—is shown in the back of the case. Small manikins are dressed with their clothes, while their illustrated school books, exercises, and native writing materials are all displayed. In the sixth grade Shih-pin Wu studies history, geography, reading in the Chinese classics, writing, nature study, and art. The Chinese girl in fourth grade concentrates on learning to read and write the difficult Chinese characters, but also studies hygiene, arithmetic, nature study, and art. T'ung hsien is in Japanese-occupied territory, yet it is entirely characteristic that the education of Chinese children continues as it has always continued in China during periods of economic and political stress. Photographs accompanying the exhibit show the children in their class rooms.

THINGS YOU MAY HAVE MISSED

Hummingbirds

Hummingbirds have long held popular appeal as the jewels of the bird world. Few birds equal them in brilliance of color and variety of form. Their minute size, dazzling hues, speed of flight, and courage in the defense of their nests all combine to increase their fascination.

More than six hundred species and races of hummingbirds are known to science. These range in size from the delicate vervain hummingbird of Jamaica, smallest of all birds, whose total length is just over two inches, to the giant hummingbird of the southern Andes, which attains eight and one-half inches. All are characterized by slender mandibles, weak feet, and rapidity of wing movement in flight which gives rise to the buzzing noise from which their name is derived.

Hummingbirds are most closely related anatomically to the swifts, but superficially resemble the Old World sunbirds by which they are rivaled in iridescence. The former, however, are restricted to the Americas, being most abundant in the Andes of Colombia and Ecuador. Only nineteen varieties occur north of Mexico, and of these only one, the ruby-throated hummingbird, is found east of the Mississippi River.

Twelve North American hummingbirds, including the colorful Anna's hummingbird of California shown in the accompanying illustration, may be seen in Hall 21 where more than one thousand North American birds are on display. —E.R.B.

Tiny Birds
Hummingbirds and nest as displayed in Field Museum's systematic ornithological collection in Hall 21.

Staff Notes

Mr. Henry Herpers has been appointed Assistant Curator of Geology, and will assume his duties in July. He is a graduate of the Massachusetts Institute of Technology, and specializes in chemistry.

Dr. Henry Field, Curator of Physical Anthropology, presented a paper on "Ancient and Modern Inhabitants of Iran" before the meeting of the Anthropology Section of the American Association for the Advancement of Science, at Milwaukee, on June 21.

Mr. L. Bryant Mather, Jr., Assistant Curator of Mineralogy, presented a paper before the convention of the Rocks and Minerals Association held at Peekskill, New York, on June 17. Recently Mr. Mather was elected a junior member of the American Institute of Mining and Metallurgical Engineers.

FIELD MUSEUM CO-OPERATES IN RECREATION PROGRAM

Field Museum participated in a conference on industrial recreation, sponsored by University College of Northwestern University, with the co-operation of the Adult Education Council and numerous other organizations interested in the better use of leisure time, held at the Hotel Sherman, Chicago, June 14 and 15. The conference was organized in three main divisions: sports and athletics, social activities and hobbies, and cultural activities.

Under the division of cultural activities, in a section devoted to museums, Field Museum was represented by a display of photographs and printed material designed to outline briefly the story told by its exhibits, and to suggest that in this institution there exist resources and facilities for recreation and fascinating studies in the arts and sciences.

Mr. Loren P. Woods, of the Museum staff, was in attendance during the period of the conference to answer questions and distribute information about the Museum.

EGYPTIAN BOAT IN MUSEUM AMONG FIVE OLDEST

Some of the fine points of marine architecture and shipbuilding, used to this day in the construction of yachts, were known and used by the ancient Egyptians 4,000 years ago. This is revealed by inspection of an ancient Egyptian boat on exhibition in the Hall of Egyptian Archaeology (Hall J) at Field Museum.

So far as is known, this boat is one of the five oldest now in existence. It was built during the Twelfth Dynasty, and was used in an important mortuary ceremony. Cedar, still considered one of the finest of woods for the building of small craft, was used in its construction, and its preservation through all these years is considered largely due to the selection of this timber. The boat is just a few inches under 32 feet in length, and it has a beam of 8 feet, and draft of 4 feet. These proportions are close to popular average sizes of modern motor cruisers and sailing yachts. In design of underwater body, midship section, and rake of the stern, the Egyptian vessel resembles closely many modern racers.

The boat was excavated near the Dahshur pyramid of Sesostris III, about twenty miles above Cairo, and several miles from the Nile. It had been buried after use in the mortuary ceremony.

Mr. Rudyerd Boulton, Curator of Birds, last month attended the annual meeting of the American Ornithologists' Union, held in Berkeley, California. Mr. Boulton is Treasurer of the organization, and Business manager of its quarterly journal, *The Auk*.

GIFTS TO THE MUSEUM

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

Department of Anthropology:

From the Estate of Murray B. Augur, Chicago—38 specimens of Plains Indian ethnological material, Kansas, Nebraska, Oklahoma, and Arizona.

Department of Botany:

From E. J. Stanton and Son, Inc., Los Angeles, Calif.—a plank of mahogany, Guatemala; from Dr. Stillman Wright, Logan, Utah—113 specimens of algae, Utah and Montana; from William A. Daily, Indianapolis, Ind.—27 specimens of algae, Indiana; from L. Lind Petersen, Escuintla, Guatemala—a mahogany board, Pacific coast of Guatemala; from Museo Nacional, Costa Rica—136 herbarium specimens, San José, Costa Rica; from Dr. Earl E. Sherff, Chicago—90 herbarium specimens, Hawaii; from Don Mariano Pacheco H., Guatemala City, Guatemala—a specimen of black wheat, Guatemala; from Professor A. O. Garrett, Salt Lake City, Utah—140 herbarium specimens, Utah.

Department of Geology:

From Henry Elsinga, Lead Hill, Ark.—5 geological specimens, Arkansas; from Structural Slate Company, Pan Argyl, Pa.—2 specimens of fabricated slate, Pennsylvania; from W. A. Blomstran, Lyon Mountain, N. Y.—a specimen of bisolite, New York; from T. E. Courthope, Retsof, N. Y.—a specimen of halite; from Peter Zodac, Peekskill, N. Y.—a mineral specimen, Pennsylvania; from Frank C. Hooper, North Creek, N. Y.—2 specimens of serendibite, New York; from T. F. Myners, Mineville, N. Y.—2 specimens of martite, New York; from Katherine S. Kniskern, Baltimore, Md.—4 mineral specimens, New York; from R. D. Butler, Bethlehem, Pa.—2 mineral specimens, Pennsylvania; from Nolan R. Best, Chicago—a box of thermoluminescent adularia sand, North Carolina; from Mrs. John Colvin, Chicago—a specimen of jasper and hematite, Wisconsin; from Loren P. Woods, Chicago—a specimen of goethite, Missouri; from R. J. Adams, Chicago—4 specimens of chalk, Kansas; from Dr. Henry Field, Chicago—3 minerals, Iraq; from Frank De Forest, Evergreen Park, Ill.—a dolphin skull, Florida.

Department of Zoology:

From H. E. Woodcock, Chicago—21 specimens of moths and butterflies, India, Europe, and New Mexico; from Bass Biological Laboratory, Englewood. Fla.—98 fish specimens, Florida; from Bob Allen and Jim Vonderheydt, Oak Park, Ill.—33 frogs and toads, Wisconsin; from Dr. Delzie Demaree, Monticello, Ark.—3 snakes, Arkansas; from Mrs. George Artamonoff, Chicago—a snake, Guatemala; from Professor C. L. Baker, Memphis, Tenn.—39 fish specimens, Tennessee; from Dr. H. H. Nelson, Chicago—63 bats, Egypt; from Dr. Julian A. Steyermark, Chicago—4 snakes and a frog, Missouri; from Loren P. Woods, Chicago—a snake, Indiana, and 2,000 fish specimens, Missouri; from H. C. Hanson, Decorah, Iowa—21 mammals, Iowa; from F. N. Bard, Highland Park, Ill.—a grizzly bear skull, British Columbia; from Mrs. Robb White, Thomasville, Ga.—a black snake, Georgia; from Phyllis Laybourne, Homewood, Ill.—two snakes, Michigan; from Ray Niles, Lake Geneva, Wis.—a large trout skull, Wisconsin; from Chicago Zoological Society, Brookfield, Ill.—18 specimens of mammals, birds, and reptiles; from Miss N. B. Mason, Davenport, Iowa—a great plains garter snake, Iowa; from Dr. Henry Field, Chicago—24 bats, Iraq.

The Library:

Valuable books from Dr. Albert B. Lewis and Dr. Henry Field, of Chicago.

PRINCIPAL WHEAT VARIETIES

More than one hundred varieties of wheat are grown in the United States. An exhibit in Hall 25 (Economic Botany) shows wild grasses related to the wheats, the primitive forms of cultivated wheat—spelt, einkorn and emmer—together with a display of the principal varieties of soft and hard wheats of the most important kinds: common wheats, durums, and club wheats. The term "club wheat" refers to the shape of the heads. The common wheats are soft varieties, used in breadmaking, either alone or mixed with flour of hard wheat. Of the latter, durum is the most widely known and is grown in the northwestern States. It gives a flour of the high gluten content required for the making of spaghetti and macaroni.

Displayed with these grain samples are specimens of wheat from ancient times. Some grains from the city of Jemdet Nasr, excavated in Iraq by the Field Museum–Oxford University Joint Expedition to Mesopotamia, are estimated to be 5,500 years old, and probably the most ancient in existence. They are charred as a result of a fire which destroyed Jemdet Nasr. Of similar interest are grains of wheat ("emmer") found in two Middle Kingdom (1900 B.C.) graves in Egypt. The graves were near the pyramid temple of King Ne-User-Re who reigned about 2600 B.C. at Abusir near Cairo.

NEW MEMBERS

The following persons were elected to membership in Field Museum during the period from May 16 to June 15:

Corresponding Members

Professor Henri Humbert

Contributors

Michael Lerner

Associate Members

Mrs. Ruthven Deane, John Fredric Kurfess, Charles Herbert Smith, Mrs. Theodore Stone, Mrs. Charles Ware.

Annual Members

Harry E. Abrahams, Alfred W. Bays, William L. Blundell, Mrs. Louise T. Bovingdon, Sydney P. Brown, Harry F. Brewer, George C. Buik, B. H. Bunn, Lester H. Forbes, Dr. Stanton A. Friedberg, Dr. Eleanor I. Leslie, Rev. F. J. Magner, Harold B. Myers, Sumner S. Sollitt, Mrs. Lewis J. Solomon, John H. Southman.

GUIDE-LECTURE TOURS

During July and August conducted tours of the exhibits, under the guidance of staff lecturers, will be given on a special schedule, as follows:

Mondays: 11 A.M., Plant Life Exhibits; 3 P.M., General Tour of Exhibition Halls.

Tuesdays: 11 A.M., Halls of Primitive and Civilized Peoples; 3 P.M., General Tour of Exhibition Halls.

Wednesdays: 11 A.M., Animal Groups; 3 P.M., General Tour of Exhibition Halls.

Thursdays: 11 A.M. and 3 P.M., General Tours of Exhibition Halls.

Fridays: 11 A.M., Minerals and Prehistoric Life; 3 P.M., General Tour of Exhibition Halls.

There are no tours given on Saturdays, Sundays, or on July Fourth.

Persons wishing to participate in the tours should apply at the North Entrance. The tours are free, and no gratuities are to be proffered. Guide-lecturer's services for special tours by parties of ten or more are available free of charge by arrangement with the Director a week in advance.

800 Books Added to Library

An addition of some 800 volumes has accrued to the Library of Field Museum as a result of the bequest to the Museum of the late Mrs. Carrie Ryerson. The books are largely botanical and zoological in subject matter, but include also works on travel and more general subjects.

MEMBERSHIP IN FIELD MUSEUM

Field Museum has several classes of Members. Annual Members contribute $10 annually. Associate Members pay $100 and are exempt from dues. Sustaining Members contribute $25 annually for six consecutive years, after which they become Associate Members and are exempt from all further dues. Life Members give $500 and are exempt from dues. Non-Resident Life Members pay $100, and Non-Resident Associate Members $50; both of these classes are also exempt from dues. The Non-Resident memberships are available only to persons residing fifty miles or more from Chicago. Those who give or devise to the Museum $1,000 to $100,000 are designated as Contributors, and those who give or devise $100,000 or more become Benefactors. Other memberships are Honorary, Patron, Corresponding and Corporate, 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.

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.

Contributions made within the taxable year not exceeding 15 per cent of the taxpayer's net income are allowable as deductions in computing net income for federal income tax purposes.

Endowments may be made to the Museum with the provision that an annuity be paid to the patron for life. These annuities are guaranteed against fluctuation in amount, and may reduce federal income taxes.

PRINTED BY FIELD MUSEUM PRESS

Field Museum News

Published Monthly by Field Museum of Natural History, Chicago

Vol. 10 AUGUST, 1939 No. 8

"WHAT'S IN A NAME?"—COMMON TERMS FOR ANIMALS ARE OFTEN MISLEADING

By H. B. HARTE
PUBLIC RELATIONS COUNSEL

"A rose is a rose is a rose is a rose."—Gertrude Stein.

But a robin's not a robin not a robin not a robin,
A sparrow's not a sparrow not a sparrow not a sparrow
And et cetera's not et cetera not etc. not etc.—
So, if things are not what they are, which they aren't what are they?

Truly, things are not what they seem, or at least what they're called, in the Animal Kingdom. The nomenclature of birds and beasts is so confused that residents of different regions of this country use the same names for entirely unlike creatures. Zoologists at Field Museum, when consulted by laymen, must frequently disregard the names their visitors or correspondents use, and try to establish identifications from other information cited.

Called a Gopher in Illinois—
—but properly it should be called a thirteen-lined ground aquirrel. It is quite common in the Chicago area.

Who is to blame for this chaotic condition in naming the creatures of the earth and sky? The pioneers!—the hardy pioneers, worthy in so many respects, are the culprits. In settling America they encountered many new birds and animals, and carelessly gave them the names of other creatures they had known at home. The wrong names adhered, and are now so well established that they are actually more right, in a utilitarian sense, than the correct names. In fact, confusion twice confounded would result from any serious attempt now to give the right names to all the wrongly named animals.

PARADOXES IN BIRD NAMES

Here are some of the paradoxes in bird names, pointed out by Mr. Rudyerd Boulton, Curator of Birds:

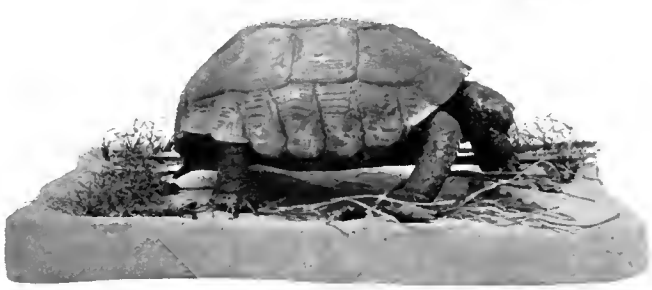
The bird commonly called a robin is not a robin, but a thrush. A real robin is a small British bird, one-third the size of our so-called robin, and only distantly related although superficially alike in having a red breast.

The real partridge is European, and has been introduced in some places in America where it is often called the "hunky" from its proper name, Hungarian partridge. Our bob-white is called partridge in the south, and the ruffed grouse is called partridge in Canada. In the middle west the bob-white often is called a quail, which is confusing because the true quail is a European bird that migrates to Africa. Just to make things a little more complicated, our ruffed grouse is sometimes called pheasant in the east—a term that is properly applied to the long-tailed "ringneck" introduced from Asia.

What we call a warbler does not belong to the true warbler family at all. The true warblers are Old World birds. America has only one native species of warbler, but it is called a blue-gray gnat-catcher instead of a warbler.

Our so-called oriole is really a blackbird, unrelated to the true orioles which are an Old World family unrepresented in the western hemisphere. Likewise, our meadowlark actually is a blackbird. However, America's only true lark is, for a change, called prairie horned lark—someone slipped and failed to give it a wrong name.

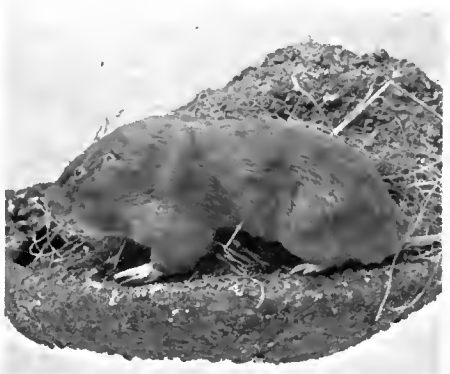
Even that common little street gamin, the English (or house) sparrow is not a sparrow by any means—it is a species of weaver-bird, an immigrant first brought from Europe in 1850.



This Turtle is a Gopher, Too—
— in the common zoological nomenclature generally employed by natives of Florida, who call the mammalian gopher a salamander, and the real salamander an eel.

The wood ibis of Florida is not an ibis, but a stork. There are also true ibises in Florida, but they with customary contrariness are called, instead, white curlews, which they likewise really are not.

Also in Florida they have a turtle which they call a gopher, says Mr. Karl P. Schmidt, Curator of Amphibians and Reptiles. They have a gopher (the little mammal that we call gopher in the north) and they call that a salamander. They have a true salamander and they call that a "Congo eel." They have real eels and—believe it or not!—they actually *call* them *eels*.



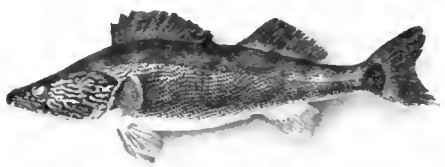
A True Gopher—the Pocket Gopher
In Florida, however, they call it a salamander, and call the true amphibian salamander a "Congo eel."

MAMMALS ALSO IN CONFUSION

Mr. Colin C. Sanborn, Curator of Mammals, contributes the note that what is called a prairie dog in the west is a ground squirrel, and in Illinois we call a ground squirrel a gopher, but out west again they have a real gopher that they call a gopher, of all things, and a ground squirrel that they call a ground squirrel. What we call a ground-hog is no relative of the pig, but is also a ground squirrel or woodchuck. Then, of course, there is the classic misnomer pointed out to every school child—the American buffalo which is not a buffalo but a bison, very distinctive from the true buffaloes of Africa and Asia. Most confusing is the case of the moose and the elk, adds Dr. Wilfred H. Osgood, Chief Curator of Zoology, for the moose is closely related to the Old World elk and our so-called elk is not an elk at all but a true round-horned deer related to the European red deer and Asiatic deer. It should be called

wapiti—a name given to it by the Indians.

For the devotees of Izaak Walton, there are also many and curious anomalies, says Mr. Alfred C. Weed, Curator of Fishes. The wall-eyed pike of Wisconsin and Michigan waters is called a salmon and a trout in the Susquehanna region down east, a pickerel in Canada, and in Florida, where they always seem to go to extremes, the same fish is a "snook." The black bass is a sunfish, not a true bass, and the big-mouthed variety of bass is called a trout in the south. The sea trout is a charr in Labrador, and a croaker along the coast from New Jersey to the Gulf of Mexico.



What Do You Call This Fish?

In Wisconsin and Michigan it is known as the wall-eyed pike, but it is known both as a salmon and a trout down east in the Susquehanna region, while it is called a pickerel in Canada, and—in Florida—a "snook."

EXHIBIT REVEALS PERFECTION OF CHINESE POTTERS

By C. MARTIN WILBUR

CURATOR OF CHINESE ARCHAEOLOGY AND ETHNOLOGY

The best ceramic products of Chinese potters of the seventeenth and eighteenth centuries have no rival anywhere in the world if we judge by artistic beauty or technical perfection. Their surprising accomplishments were due to at least two important factors: experience and specialization. Ch'ing porcelain was the culmination of centuries of accidental and experimental discoveries, and accumulated tradition and skill. Superb technique was possible because of intense specialization in which every process—from the mixing of the clay to the final firing—was in the hands of a different expert. The imperial kiln-city of Ching-te Chen resembled in many ways a modern factory in which each small process is in the hands of especially trained men.

EXHIBIT IN HALL 24

Through a bequest of Mrs. George T. (Frances Gaylord) Smith, Field Museum acquired a collection of white porcelain which confirms the above comments. The collection is exhibited in George T. and Frances Gaylord Smith Hall (Hall 24), in case 32. The eleven small pieces, though not all of the finest quality produced at imperial kilns, illustrate a variety of decorative techniques which make no use of color. Three Buddhist figures, of the type of porcelain known as *blanc de chine*, show the sculptural possibilities of ceramics. This is especially true of the larger figure of Bodhidharma sitting in serene meditation with his robes gathered around him.

A modified type of the sculpture technique is decoration in relief. Two libation cups have dragons in full round clambering over the sides. That these dragons came through the inferno of the kiln without wilting commands admiration. In lower relief is the ornamentation of a small brush-holder shaped like a joint of bamboo. On its sides is a charming scene of a man in a bamboo grove, sleeping over an open book—as he sits astride a water buffalo! This specimen is signed by a famous nineteenth century potter named Wang Ping-jung. The sides of another brush-holder show a lily pond with swimming ducks. In this, the decoration itself forms the body of the container, and the spaces between lily pads are left open, which makes it seem as though one were actually looking down into a pond on which leaves are floating.

SPECIAL LIGHTING AIDS STUDY

This open work treatment leads to another technique shown in two beautiful bowls at the back of the case. A floral design was pierced through the biscuit before the bowls were glazed. After glazing and firing, the pierced design became translucent, as the glaze filled the cut-out floral design like glass in a window. Finally, another bowl displays translucent and relief decoration combined. A special light for this piece may be turned on and off by the visitor, thus permitting him to study the bowl either under normal light or by a light concentrated inside it. The technique of making this bowl is very interesting. It was first shaped on the potter's wheel and allowed to dry out naturally to a leathery toughness. Then an expert carefully ground it down to paper thinness on a lathe to make it translucent. Next an artist used a white slip, of paste-like consistency, to paint two spirited dragons on the sides of the bowl. Finally it was dipped in glaze and fired. Thus, although the bowl is translucent, the dragons between the biscuit and the glaze are opaque. They seem to soar like shadows against a cloud, which is indeed the proper occupation of dragons.

Fig Tree Sheltered Rome's Founders

The fig tree, a native of western Asia, was probably introduced into Italy by Greek colonists. Romulus and Remus are said to have been suckled by the she-wolf under the *Ficus ruminalis*.

Giant Sea Bean

A huge sea bean, so large that it might have come from the beanstalk of Jack the Giant Killer's giant, is exhibited in the Hall of Plant Life (Hall 29, Case 857), Department of Botany. This type of bean, which grows to a length of four feet, is the fruit of a large woody climber, and is native to many tropical regions. Its seeds are often transported by the Gulf Stream.

PALEONTOLOGICAL EXPEDITION LEAVES FOR COLORADO

The Paleontological Expedition to Western Colorado left Chicago on July 17 for a three and a half months' stay in the field. The personnel consists of Mr. Bryan Patterson, Assistant Curator of Paleontology, and Mr. James H. Quinn, Assistant in Paleontology. Volunteers are expected to join the party for short periods. Previous expeditions from the Museum have operated in this region during 1932, 1933, and 1937, so the present party will be continuing a well established program. Important collections have already resulted from this work, and notable additions to knowledge have been made.

The field of operations lies in Mesa, Garfield, and Gunnison Counties, where an extensive series of formations belonging to various periods and eras in the earth's history is exposed. The work will be carried on mainly in late Paleocene and early Eocene deposits (the opening epochs of the Age of Mammals), with some attention also being paid to the late Cretaceous formations (the closing period of the Age of Reptiles). The main objective of the expedition is to collect fossil mammals from the Paleocene and Eocene. Specimens from these early horizons are of great interest to students of mammalian evolution. The dinosaurs and other reptiles that had previously dominated the earth were but a short time extinct (geologically speaking), and the mammals were just getting well under way. Many groups that no longer survive were flourishing, and several of the dominant mammalian types of the present time were represented by exceedingly primitive ancestors. Thus, for example, the horses of the early Eocene were small creatures no larger than foxes, and they possessed four toes in contrast to the modern horse's one.

In addition to the work on vertebrates, attention will be paid to geological observations, and to the collecting of fossil plants. It is hoped that by means of the latter it will be possible to make somewhat more precise age determinations and correlations of the late Cretaceous formations than has hitherto been done.

THINGS YOU MAY HAVE MISSED

A Rain God

To an enlightened person it seems ridiculous to believe that an idol carved from a tree trunk could influence rainfall or other natural phenomena. But when the coincidences surrounding the acquisition of a wooden rain god from a South Pacific island, now on exhibition at Field Museum (Polynesian collection, Hall F) are considered, it is easy to see how similar coincidences would appear to the minds of primitive tribesmen as cause and effect. In the same way the common superstitions of our own people, such as those associated with the number "13," black cats, broken mirrors, and rabbits' feet, persist because coincidences sometimes seem to confirm their validity.

Field Museum's rain god is one of four which were preserved in a sacred place in the valley of Atuona, on the island of Hivaoa, one of the French-owned Marquesas group. Dr. Ralph Linton (formerly Assistant Curator of Oceanic and Malayan Ethnology at Field Museum, now Professor of Anthropology at Columbia University), learned of the idols during an expedition. He found them surrounded by the bones of about twenty-five tribesmen who had been offered as human sacrifices. A problem confronted the explorer in seeking to acquire and remove the revered objects in the face of certain opposition from the Atuona tribe.

However, opportunity was presented by a dispute between two natives over ownership of the land on which the gods were located. Thinking that Dr. Linton could not take them away, and believing that a paper from a white man would help in court (both as a legal document and by its supposed magical power), each native secretly offered the gods to the anthropologist if he would give a receipt. Each thought this would indicate that Dr. Linton believed him to be the rightful owner. Dr. Linton gave each a receipt, and thus acquired clear title whichever way the case might be decided. Dr. Linton then sought to remove the four heavy idols by employing porters from another island—members of a tribe whose gods were different, and who were therefore not subject to the Hivaoa *tabus*. In the dead of night these men carried the idols to Dr. Linton's camp. But the Hivaoa people learned what had happened, and a native boy warned Dr. Linton of impending trouble.

Telling about his experiences later, Dr. Linton said:

"Half an hour after the gods arrived there was a downpour of rain that became heavier and heavier, lasting about twenty-four hours. The river on the island rose rapidly, and the natives were badly frightened. It was all due, they insisted, to the wrath of the disturbed gods. They said the gods would continue the rain until the river flooded, washing the entire village, and all its inhabitants into the sea. The tribesmen were becoming menacing. Something had to be done to calm them. I called to the elders, and before them I addressed the gods in the tribal language. I told the wooden idols that they were mistaken as to my motives—I was merely moving them to the island of Hawaii, regarded as a sort of Olympus of all native gods, where they would be more comfortable. But, I threatened, if the rain continued much longer, I would tie them to coconut trees, where they would be impotent and unhappy gods. This speech placated the excited tribesmen, and,

Marquesan Rainmaker

This carved wooden idol was believed by tribesmen of the island of Hivaoa in the South Pacific to control the fall, or lack of fall, of rain. It is now on exhibition in the Polynesian collection in Hall F at Field Museum.

strangely enough, half an hour later the rain stopped, and the river subsided. Thus the native faith was sustained.

"I managed to get the idols loaded on a schooner and sailed away. Three are now in a museum at Honolulu. The fourth arrived in Chicago at a time when the city and all the middle west had had a drought for weeks. The day the god was uncrated at Field Museum, rainstorms started, lasting several days. The story of this rain reached farming districts which had not yet had relief. Immediately a farmer in Iowa requested a loan of the god to bring rain and save his crops. Similar requests followed. Needless to say, however, the Museum never granted the loan."

TWO PROGRAMS FOR CHILDREN TO BE GIVEN IN AUGUST

The James Nelson and Anna Louise Raymond Foundation will present the final two programs of motion pictures in its summer series for children at Field Museum during August. The programs are as follows:

Thursday, August 3, 10 a.m.—The Busy Beavers (cartoon by Walt Disney); The Lovely Taj Mahal; The Navajo Demon; Babes in the Woods.

Thursday, August 10, 10 a.m.—The Wedding of Palo (A Story of Eskimo Life in Greenland).

The programs will be given in the James Simpson Theatre of the Museum. Admission is free, and children from all parts of Chicago and suburbs are invited. They may come alone, accompanied by adults, or in groups from clubs, community centers, etc.

POISON IVY IN CENTRAL AMERICA

While conducting the recent Sewell Avery Botanical Expedition to Guatemala, the writer was assured by Mr. and Mrs. B. B. Lewis, of Guatemala City, that poison ivy (*Rhus Toxieodendron*) grew in the central mountains of that country. Since, in North America, poison ivy has not been reliably reported south of the Mexican state of Oaxaca, it seemed quite safe to deny its possible existence anywhere in Central America. Facetious comment regarding the ease with which Central American plants might be confused by the amateur with only remotely similar ones of the United States was met by a repetition of the statement.

Mrs. Lewis, an enthusiastic and critical student and collector of Guatemalan orchids, has now forwarded to Field Museum a specimen of poison ivy, with the information that after collecting it, in spite of every precaution, she exhibited the customary effects of contact with the plant. The specimen was obtained near San Juan Sacatepéquez, not far from Guatemala City, and represents an extension of range far southeastward from that previously known.

Once again a botanist is embarrassed by too confident generalization regarding plant range, although based upon apparently quite safe presumption. The Central American flora continues to furnish so many surprises that it deserves a tribute like that paid to Africa by Pliny—that something new always could be expected from that mysterious continent. —PAUL C. STANDLEY

Additions to Fluorescent Minerals

The display of fluorescent minerals located in the corridor between Halls 34 and 35 in the Department of Geology has been improved by the installation of new specimens. Many of these glow under the ultra-violet light with colors more varied and brilliant than any hitherto exhibited there.

AMERICAN LOTUS, FAMED PLANT OF GRASS LAKE, ILLINOIS, IS ERRATIC IN DISTRIBUTION

By PAUL C. STANDLEY
CURATOR OF THE HERBARIUM

In a collection of plants sent recently to Field Museum by Brother Elias of Barranquilla, Colombia, is the first specimen of the American lotus (*Nelumbo pentapetala*) that the writer has ever seen from South America. It comes from the lower valley of the Magdalena River, from which the plant had, however, been reported previously.

The American lotus, a plant quite different from the classic lotus of the Nile, although of the same family, is of exceptional interest from the standpoint of distribution. In the Chicago region it is rare, and it is widely believed that it is known only from the celebrated locality of Grass Lake, northwest of Chicago. Every August, many thousands of people visit that lake to see this showy plant in blossom. Each season Field Museum receives inquiries regarding the plant and its distribution, for it has often been stated by the uninformed that Grass Lake is the only known locality for the lotus, or that it is the only American locality at which the Egyptian lotus is found. Both of these statements must be labeled altogether erroneous.

Illustration by courtesy of Antioch (Illinois) Lions Club

Part of Lotus Beds at Grass Lake

These showy plants are at their best in August, when thousands of persons visit this celebrated locality, which is easily reached from Chicago by automobile or other means of transportation. The round trip may be made in a day.

As a matter of fact, the American lotus has a wide distribution in North America, west to Nebraska, Missouri, and Texas, and eastward to Florida and the Atlantic coast. However, its occurrence is so erratic as to arouse speculation. Even in the vicinity of Chicago it probably is not confined to Grass Lake. Indeed, I have been told by an old settler that formerly it was extremely abundant in the Calumet River and its marshes, but has been destroyed, apparently by industrial operations.

It is generally common in certain extensive regions such as along the flood plain of the Missouri and Mississippi rivers in Missouri, where there are many miles of swampland crowded with it. It seems probable that the plant may be a native primarily of the Mississippi Valley. In the eastern states, as well as in some regions of the central ones, the plant is quite as localized as in the Chicago region. I recall that near the city of Washington, D.C., it is known in only one locality, but there it is plentiful. The same is true in many other eastern regions.

This erratic distribution is believed to have arisen from the fact that the plant was a food staple of the Indians, who ate the seeds and also the very thick and succulent rootstocks. Doubtless on their travels they carried the small, hard seeds, which, if they are like those of their Asiatic relatives, have greater longevity than any other seeds known, from one place to another, to plant them for food. Except by human intervention, the seeds probably are not easily diffused, and it thus happens that in one region, lotus plants are found now in a single lake or pond, although many others equally suitable for growth may be near-by.

The American lotus is not confined, indeed, to the United States, but its occurrence elsewhere is so strange as to cause further speculation. It is known from Cuba and the Dominican Republic, and from Mexico, both in the Tampico region and far away in the State of Sinaloa. Far south of there it abounds in Lake Yojoa in central Honduras. Its next jump is to the lower part of the Magdalena Valley in distant Colombia. Of course, it is not improbable that it might be found in intervening areas, but so far, if one may depend upon records, it has not, and it is a large and conspicuous plant not easily overlooked.

It is dangerous to venture theories regarding plant distribution. At best, these are matters of speculation. The lotus is so abundant in the Mississippi Valley that one would suppose that to be its center of dispersal. It may well be that the colonies in Mexico and Honduras descended from seeds carried thither by Indian merchants hundreds of years ago. Such merchants are known to have traveled on foot for great distances, and a journey from Texas or Oklahoma to Mexico and Honduras is quite within reason. How the plant reached the Magdalena Valley is less easily explained.

PLANT SPECIMENS ENDURE CENTURIES

The lotus brings to mind another interesting subject. Botanists often are asked how long a pressed and dried herbarium specimen will last. A herbarium, appropriately called in early botanical literature a *hortus siccus*—dry garden—is a rather recent device; but well preserved specimens three hundred years old, and probably some that are considerably older, exist. More than that, I have seen dried garlands taken from Egyptian tombs about 4,000 years old. These garlands had been moderately pressed, whether during their long storage or after their removal in modern times, I do not know. At any rate, the lotus leaves and flowers in them, while discolored and faded, as are most very old herbarium specimens, preserved perfectly their form and texture, and were not inferior in preservation to ordinary herbarium specimens ten years old. Despite the fact that they had been stored in sealed tombs, they must nevertheless have been accessible to ordinary atmospheric changes. It therefore is evident that no limit can be placed on the time for which a herbarium specimen, moderately well protected, may be preserved. There is no material reason why the specimens now in the Herbarium of Field Museum should not be still in existence and useful for study three thousand years from now.

Research on Asterism

Studies of the cause of asterism (the appearance of a luminous star) in gems, carried out by Dr. Albert J. Walcott in the Department of Geology at Field Museum, are attracting much favorable attention from those interested in gemmology. Fine examples of these stars appear in sapphire, garnet, and crystal in the gem room (H. N. Higinbotham Hall—Hall 31).

The principal commercial woods of the Amazon Valley are displayed in Hall 27.

THREE LARGE COLLECTIONS OF REPTILES RECEIVED

A collection of more than 1,500 specimens of lizards of the genus *Sceloporus* has been received in the Department of Zoology from Dr. Hobart M. Smith, Fellow of the National Research Council. This acquisition results from an arrangement whereby Field Museum Press will publish Dr. Smith's monographic revision of the lizards of this genus in the Zoological Series of the publications of this institution. The Museum accession comprises about one-half of the collection upon which Dr. Smith's research is primarily based, and includes nine type specimens and 125 paratypes.

The lizards in question form a North American group in which active evolution of species and subspecies seems to be in progress. The genus has consequently offered problems of especial difficulty to the taxonomist. Dr. Smith's successful treatment of these problems rests on one hand on an exceptionally comprehensive and detailed examination of all known specimens in American museums, and on the other is due to his extensive field studies during four successive expeditions to Mexico, which have carried him into nearly every state of that country. Dr. Smith is now in Mexico for renewed studies of reptiles and amphibians under a grant of the Walter Rathbone Bacon Scholarship of the Smithsonian Institution.

The interest of Field Museum's Division of Reptiles in Mexican problems is still further stimulated by the receipt of several hundred specimens of reptiles from Mr. Ernest G. Marsh, Jr., of the University of Texas, who is conducting a survey of the vertebrate animals of the state of Coahuila. His collection has been deposited in the Museum for determination and study, a share of it to remain permanently in the reference collection here.

A third considerable addition to the Museum's reference collections of reptiles and amphibians from Mexico resulted from the recent purchase of more than 600 specimens collected by Mr. Harry Hoogstraal, a student at the University of Illinois. His specimens come from Cerro Potosi, in Nuevo Leon, a high point in the eastern escarpment of the Mexican Plateau, about midway between the United States border and the high mountains near Mexico City. They afford important new information on distribution of Mexican forms. —K. P. S.

Ornamental Copper Ore

Some varieties of copper ore are of such a beautiful blue or green color that the more perfect pieces are often used as ornamental stones and carved in the shape of vases, ink wells, table tops, and other articles. A special case in Frederick J. V. Skiff Hall (Hall 37) is devoted to a display of specimens of these types of ore, as they appear when first brought from the mine except for small polished sections showing their adaptability to ornamental uses. Most popular is green malachite, which is a basic carbonate of copper. Another basic carbonate is azurite, characterized by its rich blue color. Azurite is used less for carving because it is more difficult to obtain suitable pieces. The green silicate of copper, chrysocolla, is also used for ornamental purposes although not so frequently as malachite. The exhibit includes also a basic sulphate of copper known as brochantite, which is shown as an example of copper ores which are highly attractive in color but unfortunately are not durable enough for such use.

MUSEUM GUARDS' UNIFORMS ARE NOTABLY IMPROVED

Comfort, coolness, and a better appearance are emphasized in the new uniforms currently being worn by the guards at Field Museum. The high military collar, which was a feature of every uniform worn since the founding of the Museum, has been discarded in favor of the open lapel collar.

The New and the Old

Captain E. S. Abbey of the Museum guards, on the left, in the new blue uniform with gold braid, and white summer cap; and Sergeant David Conwill in the uniform which has been used for many years past.

The color has been changed from the severe military olive drab to blues of harmonizing shades for coat and trousers. Gold buttons and gold braid complete the ensemble. The cap for summer wear is topped in white.

Crystal balls, and carvings of rock crystal, some of them interesting from a historical standpoint, are included in the gem room (H. N. Higinbotham Hall—Hall 31).

6,000 INVERTEBRATE SPECIMENS COLLECTED IN FLORIDA

The Field Museum expedition which has been collecting marine animals and other invertebrates along the Atlantic and Gulf coasts of Florida since early in May, has completed its work. Dr. Fritz Haas, Curator of Lower Invertebrates, and Staff Taxidermist Leon L. Walters, who conducted the expedition, have returned to the Museum. More than 6,000 specimens, representing the most important features of the invertebrate life forms native to the region, were collected. On Sanibel Island, Dr. Haas conducted notable researches on the relationships between the various types of fauna and the environmental conditions in which they are found. He also investigated the role of molluscan life in building up land through the accumulation of shells.

One of the main objectives of the expedition was the collecting of material and data for a proposed habitat exhibit of the loggerhead turtle. This material was collected on Sanibel Island, and plaster molds were made which will form the basis for lifelike reproductions. Mr. Walters was fortunate in being able to observe the entire nesting procedure—the turtle leaving the water, digging the hole, laying its eggs, and covering them with sand. The entire process required only fifty-five minutes.

The expedition was extended the utmost co-operation by the Bass Biological Laboratories of Englewood, Florida, and by other agencies and individuals as well.

Food from Orchid Tubers

Salep is a farinaceous meal obtained from the tubers of several terrestrial orchids, of European and Asiatic species. The meal is separated by macerating the bulbs in water. It contains a substance called *bassorine*, which is said to contain more nutritive matter than any other vegetable product, one ounce per diem being sufficient to sustain a man. Large quantities of salep are prepared in Macedonia and Greece, but the finest comes from Turkey. In the Himalaya and Cashmere many species of bulbous-rooted orchids yield salep, which is used as food by the natives.

FROM THE DIRECTOR'S DESK—

Expeditions

From time to time Field Museum and other museums, as well as leading universities throughout the world, announce expeditions to some remote country, stating their objectives, their hopes, and to some extent, their plans. Many thoughtful people look beyond the announcement and question in their own minds what values may come forth to justify the expenditure of time, money, and effort, and the possible endangering of lives in such projects. It is certainly true that unless the ultimate values are greater than the expenditures, all expeditionary work should be discontinued.

The purpose of an expedition, like the purpose of a research museum or university, is to advance knowledge. The great value of expeditions lies not only in the materials brought back but in the lessons learned or in the lessons that may be learned by careful subsequent study and classification of the specimens obtained.

Darwin's celebrated cruise on the *Beagle* brought back very little in the way of material values, but contributed largely to the formation of ideas which have had a tremendous and revolutionizing effect on man's understanding of his own place in a natural world.

A museum expedition is not primarily concerned with material values, as the purpose of the museum is to discover, to classify, and to give to a civilized world the results of its study. There is often a lapse of many years between the discovery of new trees, new herbs, new resins or gums, and their ultimate utilization in industry. It is not the purpose of the museum to point to the utilization of its knowledge, but to be ever ready to supply the basic facts which industry may use.

The purpose of the museum is to give out knowledge for knowledge's own sake. Whether its collections are used for the study of industrial scientists who seek to make a profit, by scholars who seek to solve some problem of research, or by casual visitors who seek recreation and enjoyment is not of primary concern to a museum. The only real concern is that the collections be available and that they be used. To measure the value of an expedition would be equivalent to measuring the value of education, culture, and scientific knowledge.

The privations of expeditionary leaders have been a matter of great interest and concern to the entire world. Some expeditions have gone forth to discover new lands to make nations great. Some have gone forth to spread religious beliefs. Some have gone forth to locate raw materials which may be used in industry to build private fortunes of industrial communities. But the museum expedition goes forth for a different purpose—a purpose which is identical with the purpose of the museum itself—to discover facts which will add to the sum total of human knowledge and understanding.

—CLIFFORD C. GREGG, *Director*

STAFF NOTES

The paleontological expedition to the fossil beds of South Dakota, led by Mr. Paul O. McGrew, Assistant in Paleontology, recently completed its work and returned to the Museum with a large collection of fossil mammal specimens.

Mr. Rudyerd Boulton, Curator of Birds, will leave for New York about August 1 to spend several weeks in special research on the collections of birds from Angola (Portuguese West Africa) at the American Museum of Natural History.

Mr. C. Martin Wilbur, Curator of Chinese Archaeology and Ethnology, has been elected Secretary of the American Friends of China. The late Dr. Berthold Laufer, former Curator of Anthropology, was the first Secretary of the society and held that office for many years until his death.

Dr. Julian A. Steyermark, Assistant Curator of the Herbarium, returned recently from a two weeks collecting trip in Missouri. He obtained about 800 specimens of plants for the Museum Herbarium. Recently Dr. Steyermark lectured on the flora of Missouri before the Garden Club of Barrington, Illinois.

Mr. Emmet R. Blake, Assistant Curator of Birds, has been honored by election to full membership in the American Ornithologists' Union.

DISTINGUISHED VISITORS

Among distinguished visitors recently received at Field Museum are: Mr. Edward P. Henderson, Curator of Applied Geology at the United States National Museum, Washington, D. C.; Professor V. Gordon Childe, noted anthropologist of the University of Edinburgh, Scotland; Mr. William H. Phelps, ornithologist, of Caracas, Venezuela; Mr. W. A. Daily, a specialist in cryptogams, Department of Botany, University of Cincinnati; Mr. William Gilbert, a worker on algae, connected with the Department of Botany, University of Michigan, as well as the Marine Biological Laboratory, Woods Hole, Massachusetts; Dr. G. T. Velasquez, Professor of Botany, University of the Philippines, Manila; Dr. R. N. Webster, Professor of Botany, Middlebury College, Middlebury, Vermont; Dr. R. T. Wareham, of Ohio State University, Columbus; and Mr. Lloyd Weaver, of the Marine Biological Laboratory, Woods Hole, Massachusetts, and the Department of Botany, Columbia University, New York. The six last named have been studying collections in Field Museum's cryptogamic herbarium.

A Correction

Professor Samuel J. Record, Dean of the School of Forestry at Yale University (and Research Associate in Wood Technology for Field Museum), points out that the caption accompanying a picture under the heading "Tapping a Cow Tree" on page 4 of the July FIELD MUSEUM NEWS, incorrectly indicated that this tree was of the Costa Rican species. The photograph was made on an expedition to Guatemala, not Costa Rica, Professor Record states.

A FEW FACTS ABOUT FIELD MUSEUM

Field Museum is open every day of the year (except Christmas and New Year'a Day) during the hours indicated below:

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

Admission is free to Members on all daya. Other adults are admitted free on Thursdaya, Saturdays, and Sundaya; 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 Museum'a Library is open for reference daily except Saturday afternoon and Sunday.

Traveling exhibits are circulated in the achools of Chicago by the N. W. Harris Public School Extension Department of the Muaeum.

Lectures at achools, and special entertainments and tours for children at the Museum, are provided by the James Nelaon and Anna Louise Raymond Foundation for Public School and Children's Lectures.

Free courses of lectures for adults are presented in the James Simpson Theatre on Saturday afternoons (at 2:30 o'clock) in March, April, October, and November.

A Cafeteria serves visitors. Rooms are available alao for those bringing their lunches.

Chicago Motor Coach Company No. 26 bussea provide direct transportation to the Museum. Service is offered alao by Surface Lines, Rapid Tranait Lines (the "L"), interurban electric lines, and Illinois Central trains. There is ample free parking apace for automobiles at the Museum.

AFRICAN FISHING CUSTOMS

By WILFRID D. HAMBLY
CURATOR OF AFRICAN ETHNOLOGY

A Negro of the Ovimbundu tribe of Portuguese West Africa has a great advantage over the modern fisherman in highly civilized countries. If the fish are not biting well, the latter tries another kind of expensive fly, makes another cast, but without much hope.

The Negro approaches his problem with all the optimism that magic can give. His primitive equipment consists only of a line of thin bark at the end of which is a sharp stalk of grass on which a fat grub is impaled. But with this meager outfit he never doubts success, for he softly sings his spell: "O fish, come and take your good thing. Do not send the little fish to spoil the good bait. Better you come and take the good thing with all your strength." Among the Ovimbundu, fishing with the line is practiced only by men. Women push baskets against the stream, or use poison which is scattered on the surface of the water.

In order to make fish-poison, the tuberous roots of a wild plant are soaked in water until scum rises to the top. The solid part of the poison is not given, because it would sink and the fish which had eaten it would remain at the bottom of the river. Therefore, only the scum of this poisonous infusion is thrown in the water. The stupefied and gasping fish remain at the surface, whereupon they are seized by women who transfer them to gourds or baskets worn around their necks. Usually poison is used only in the dry season when the rivers are shallow.

Sometimes there is fishing by means of a weir which has an opening in the middle. A basket or trap is placed opposite this gap in the weir in order to catch the fish as they come through the aperture. Spearing of fish, shooting them with bow and arrow, and fishing by torchlight to attract the fish to the surface, are all methods known among African Negroes. The method varies according to the tribe, the season, and the sex of the angler. In Hall D, Case 6, is a model of a bark canoe such as is used by fishermen of the Vachokwe tribe in eastern Angola.

RUBBER TECHNIQUE DEVELOPED FOR BRAIN CASTS

Getting inside the skull of a fossil animal dead some millions of years to find out what kind of a brain it had is a difficult problem.

Occasionally, weathering of the surface bones of a skull may expose a natural cast of the brain, formed by sand or silt sifting into the cranial cavity and hardening there. Such casts reproduce with fidelity the shape of the brain cavity as it existed in the living animal. These are rare finds, however, and often difficult of identification. Various methods, therefore, of producing artificial casts have been tried.

Perhaps the most successful of these is the liquid rubber technique, recently developed by Assistant Curator Bryan Patterson and Assistant James Quinn of Field Museum's Division of Paleontology. The liquid rubber is poured into the cavity, rolled about and drained. After the first coat has dried, another is added, and then a third or fourth application. When thoroughly dry, the flexibility of the rubber permits it to be pulled from the cavity intact with very little risk of damage to the skull. This cast is then filled with plaster to retain its shape while a mold is being made as a preliminary to the permanent plaster casts. These molds give very accurate casts with minute detail, sometimes even showing details of the cranial circulation.

The casts obtained are used in the research work that is carried on in the Museum's laboratories. They are of the greatest importance as an aid in determining the relationships of many puzzling types of extinct mammals.

Hemp Comes from a Species of Banana

Manila fiber, usually known as manila hemp, and used in rope-making, is derived from a species of banana plant, not of the edible species, but another of the same genus, *Musa textilis*, of the Philippine Islands. The fiber is obtained from the stalk and leaf bases, by heating, tearing, boiling, and combing the material. The innermost part of the flower stalk is employed for fine fabrics, shawls, and the beautiful "drawn work" of the Filipinos.

THE OLDEST HANDLE

By HENRY FIELD
CURATOR OF PHYSICAL ANTHROPOLOGY

A Crô-Magnon craftsman who lived in southwestern France some thirty thousand years ago invented what is thought to be the first handled tool.

From the Middle Aurignacian levels at Tarté, in the Haute-Garonne district of France, Mr. Jean Cazedessus, well-known French archaeologist of that region, excavated a small horn handle in which a flint blade had apparently been inserted. This object, the oldest horn handle in the world, is on exhibition in Case 4 in the Hall of the Stone Age of the Old World (Hall C).

No doubt Crô-Magnon artisans had tried wooden handles, only to find that they split after being exposed to water, ice, and snow. We can even imagine their going through the childish experiment of tying handles to their flint blades, with fibers or leather thongs. But the puny instrument created by such efforts would have been no match for the tough skin of the reindeer or the great cave bear, and yet those skins were an important protection against an icy Aurignacian winter. So necessity mothered one of her earliest inventions. The strong horn of a reindeer's antler was made into a handle which has borne the test of centuries. Ask any backwoodsman today to show you his hunting knife. It will almost certainly have a horn handle.

The oldest handle exhibited in Hall C is much shorter than that of a modern knife, but it also carried a stubbier blade—a blade of chipped flint instead of tempered steel.

THE ROCKY MOUNTAIN GOAT—A PICTURESQUE AMERICAN MAMMAL

Mountain goats are found on the higher, almost inaccessible slopes of the mountains of northwestern North America, but they are most numerous in British Columbia. They are remarkably sure-footed and fearless in traversing high precipitous slopes above timberline, where they feed on brush grass, lichens, moss, and stunted vegetation.

Despite their goat-like appearance, they are not true goats, but are somewhat related in structure to the antelopes. Between the males and females there is no prominent difference. Although keen-sighted and difficult to approach, they are somewhat stupid animals. Living in high, nearly inaccessible places that can be reached only by the most intrepid sportsman, they are thus so well protected by Nature that they are not rapidly decreasing in number like some other animals.

In the group shown in the accompanying illustration are three males and two females, of the northern variety, which were collected by the Marshall Field Expedition to British Columbia. This exhibit is in the Hall of North American Mammals (Hall 16). The scene represented is typical of the beautiful Kootenay District in British Columbia.

Sure-footed Climbers

Rocky Mountain goats—a habitat group in Hall 16. They are not true goats, being somewhat related to the antelopes in structural characteristics.

FISH SKELETONS

By D. DWIGHT DAVIS
ASSISTANT CURATOR OF ANATOMY AND OSTEOLOGY

Among the osteological exhibits in Hall 19 is a screen, recently installed, on which are displayed many types of fish skeletons, worthy of study because they reveal such marked variations from the general form of vertebrate skeletons. These variations are due to the fact that swimming involves mechanical principles quite different from those which govern walking and running. In most fishes the whole body undergoes, while swimming, wave-like movements which are strongest in the tail. These require a long, flexible backbone, and a strong, immovable skull to receive the thrust from the backbone. Important as accessory propellors are the fins. The pectoral fins correspond to the arms of a human being, the pelvic fins to the legs.

Adaptation of the fish's respiratory system to under-water conditions has resulted in a complex gill structure, which is also better understood by studying the bony framework by which it is suspended from the skull.

Fishes have developed an astonishing number of forms. Many of them are so curiously shaped that they are scarcely recognizable as fishes at first glance. Among such may be mentioned the sea horses, the rays, and the bat fishes. Naturally, these modifications of the body have strongly affected the skeleton, and it is often difficult to identify some of the bones composing it.

The skeletons of fishes demonstrate strikingly that evolution from a "lower" to a "higher" form does not always mean an increase in mechanical complexity. A codfish, which is relatively low in the vertebrate scale, has sixty-eight bones in its skull, while man, at the top of the scale, has only twenty-two. Mechanical perfection often may be brought about by simplification of a structure, as is shown frequently in the development of human inventions as well as in biological development. Useless "parts" are eliminated, and more perfect design produces a simpler but more efficient machine. Although fishes are well adapted to the sort of life they live, and their smooth carefully streamlined bodies are often cited as examples of nature's mechanical adaptability, many improvements and refinements have been introduced in other animals that have evolved later.

In attempts to reconstruct the long pedigree that leads to the human body in its present form, the sharks are among the most noteworthy of all animals. They have retained a remarkable number of features that were found in the early ancestors of vertebrates. Sharks are therefore often referred to as "living fossils," and their structure, has been studied in great detail.

The fish skeletons on exhibition were prepared and mounted by Mr. Edmond N. Gueret, Curator of Anatomy and Osteology.

GUIDE-LECTURE TOURS

During August conducted tours of the exhibits, under the guidance of staff lecturers, will be given on a special schedule, as follows:

Mondays: 11 A.M., Plant Life Exhibits; 3 P.M., General Tour of Exhibition Halls.

Tuesdays: 11 A.M., Halls of Primitive and Civilized Peoples; 3 P.M., General Tour of Exhibition Halls.

Wednesdays: 11 A.M., Animal Groups; 3 P.M., General Tour of Exhibition Halls.

Thursdays: 11 A.M. and 3 P.M., General Tours of Exhibition Halls.

Fridays: 11 A.M., Minerals and Prehistoric Life; 3 P.M., General Tour of Exhibition Halls.

There are no tours given on Saturdays or Sundays.

Persons wishing to participate in the tours should apply at the North Entrance. The tours are free. Guide-lecturer's services for special tours by parties of ten or more are available free of charge by arrangement with the Director a week in advance.

Pyramid Builders Ate Onions

In ancient Egypt onions and garlic were established articles of food. During the building of the great pyramid of Cheops, says Herodotus, 1,600 talents of silver were spent on radishes, onions, and garlic for the workmen, as may be read from inscriptions in Egyptian characters on the pyramid itself.

GIFTS TO THE MUSEUM

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

Department of Anthropology:

From Frank Watkins, Chicago—complete suit of Japanese armor, composed of 14 separate parts; from Dr. Henry Field, Chicago—3 human skulls, Iraq.

Department of Botany:

From Professor L. A. Kenoyer, Kalamazoo, Mich.—620 herbarium specimens, Mexico; from Harde LeSueur, Austin, Tex.—600 herbarium specimens, Mexico; from Servicio Botánico, Caracas, Venezuela—161 herbarium specimens, Venezuela; from Professor C. L. Wilson, Hanover, N.H.—255 herbarium specimens, Guatemala; from James Zetek, Balboa, Canal Zone—35 herbarium specimens, Panama; from Dr. Delzie Demaree, Monticello, Ark.—228 herbarium specimens, Arkansas; from Estate of Mrs. George A. Butler, Chicago—256 bryophytes and lichens, Japan, New Hampshire, and northwest United States; from Don Ignacio J. Aguilar G., Guatemala City, Guatemala—355 herbarium specimens.

Department of Geology:

From Howell Taylor, Lebanon, Syria—5 minerals and 3 invertebrate fossils, Syria; from John R. Winterbotham, Chicago—a specimen of fossil fish and one of silicified wood, Wyoming and Connecticut; from D. P. Swett, Mina, Nev.—a specimen of gold, silver, lead, and zinc ore, Nevada.

Department of Zoology:

From E. N. Gueret, Chicago—4 mammal skeletons, New York; from John G. Shedd Aquarium, Chicago—61 fish specimens, Hawaii and Samoa; from H. H. Dodge, Columbus, Ohio—a beetle (*paratype*), Minnesota; from William D. Field, Lawrence, Kan.—2 butterflies (*paratypes*), Kansas; from W. J. Beecher, Chicago—11 small mammal skins and skulls, Tennessee; from John M. Schmidt, Homewood, Ill.—29 rodents, South Dakota; from Dr. C. L. Turner, Evanston, Ill.—87 tadpoles, Mexico; from Mrs. Robb White, Thomasville, Ga.—a garter snake, Georgia; from Messrs. Burton and Kurfess, Hinsdale, Ill.—26 reptiles and amphibians, Illinois; from E. Gustav J. Falck, Chicago—39 reptiles and amphibians, southeastern Missouri; from Dr. Henry Field, Chicago—441 specimens of snails and shells, 50 fishes, and 151 insects, Iraq; from Chicago Zoological Society, Brookfield, Ill.—an alligator, a snake, 2 black bear cubs, and 19 specimens of birds and small mammals.

NEW MEMBERS

The following persons were elected to membership in Field Museum during the period from June 16 to July 14:

Associate Members

Mrs. A. M. Barrett, Mrs. Hugo Dalmar, David W. Davidson, H. S. Demaree, Gaylord Donnelley.

Annual Members

Paul H. Bonfield, David Borowitz, Mrs. Robert H. Cabell, Mrs. Joseph J. Cavanagh, J. A. Cobbey, Archie T. Coburn, Ralph W. Condee, Dr. John F. Delph, Joseph Foard Gettrust, Mrs. G. S. Grochowski, Albert G. Joseph, Dr. Jarold Kemp, Karl E. Lofquist, Bruce Parsons, John H. Porter, Theodore W. Robinson, Jr., Harold A. Smith, Barnard S. Solar, Mrs. Samuel A. Stein, Mrs. Hannah Sternath, Thomas J. Thomas, John O. Todd.

MEMBERSHIP IN FIELD MUSEUM

Field Museum has several classes of Members. Annual Members contribute $10 annually. Associate Members pay $100 and are exempt from dues. Sustaining Members contribute $25 annually for six consecutive years, after which they become Associate Members and are exempt from all further dues. Life Members give $500 and are exempt from dues. Non-Resident Life Members pay $100, and Non-Resident Associate Members $50; both of these classes are also exempt from dues. The Non-Resident memberships are available only to persons residing fifty miles or more from Chicago. Those who give or devise to the Museum $1,000 to $100,000 are designated as Contributors, and those who give or devise $100,000 or more become Benefactors. Other memberships are Honorary, Patron, Corresponding and Corporate, 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.

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.

Contributions made within the taxable year not exceeding 15 per cent of the taxpayer's net income are allowable as deductions in computing net income for federal income tax purposes.

Endowments may be made to the Museum with the provision that an annuity be paid to the patron for life. These annuities are guaranteed against fluctuation in amount, and may reduce federal income taxes.

PRINTED BY FIELD MUSEUM PRESS

Field Museum News

Published Monthly by Field Museum of Natural History, Chicago

Vol. 10 SEPTEMBER, 1939 No. 9

RHEA, LARGEST BIRD OF WESTERN HEMISPHERE, DISPLAYED IN ITS HABITAT

By EMMET R. BLAKE
ASSISTANT CURATOR OF BIRDS

Largest and most characteristic of all the birds which inhabit the vast pampas of southern Brazil and Argentina is the rhea, or so-called South American ostrich. True ostriches have never existed in the western hemisphere, being represented there by this smaller but somewhat similar flightless bird, which exceeds in size all other birds of either North or South America.

An opportunity to collect rheas and suitable accessories for a habitat group was presented in 1937 by the Stanley Field Zoological Expedition to British Guiana and Brazil, under the leadership of the writer. After completing work in Guiana, I sailed direct to Trinidad, British West Indies. There I obtained additional supplies and equipment deposited in advance for my use in Brazil, and proceeded by steamer to Rio de Janeiro, whence I went inland.

Latest Addition to Hall of Birds

The rhea, sometimes (but improperly) called "the South American ostrich," as shown in habitat exhibit recently installed in Hall 20. Either male or female attends the nest on the ground, but only one bird remains on watch at a time. Observe the two young rheas just hatching from eggs. As many as 60 eggs occur in one nest.

Rheas occupy an extensive range in central and southern South America. The two species and six varieties known are distributed over most of the grasslands south of the Amazon River, being restricted primarily by forests. They are particularly abundant on the *campo* of Matto Grosso in southwestern Brazil, a region bearing a striking resemblance to portions of our middle-west, and like them devoted primarily to cattle raising. The rolling plains, studded with island-like woodlands, appear limitless and extend southward many hundreds of miles.

The preparation of specimens and field studies for a major natural habitat group is tedious and complicated at best, but work on the rhea was greatly facilitated by officials of the Brazil Land, Cattle and Packing Company. Through the courtesy of Messrs. W. Andrews and J. D. Fleming, I was permitted to make the necessary collections at the Fazenda Capao Bonita, a company ranch more than a thousand miles west of Rio de Janeiro. It was a happy choice, for nowhere in Matto Grosso are rheas more numerous than in this attractive country which is known locally as the "Beautiful Copse."

Most of my journey into the interior was made by rail from São Paulo, a large and prosperous city sometimes called the Chicago of South America because of its extensive meat packing industry and varied manufactures. Leaving São Paulo and the rugged hills of the coastal range behind, the train bears westward through a picturesque undulating country covered with coffee plantations. The berry-laden trees extend in orderly rows mile on mile as far as the eye can reach, with only an occasional hacienda and drying compound to relieve the monotony.

An antiquated narrow-gauge railway, having its terminus on the Bolivian frontier, conveys one across the far-flung reaches of Matto Grosso. For the most part the right of way passes through a drab and desolate country, sun-baked and sparsely wooded. The crude conveniences aboard the train afforded variety, but scarcely lessened the tedium of the trip. Bunks were built solidly into the cars, and one was reduced to lounging in them for the duration of the sweltering journey. Insofar as my travel experience goes, the only square railway wheel in regular use was the one which supported the car beneath my bunk; a novelty which not only thwarted sleep, but also added zest to the orderly consumption of soup.

Campo Grande, sprawling capital of Matto Grosso, was reached three days after entraining at São Paulo. Several days were occupied there with the reorganization of expedition equipment for the final stage of the trip. As a military outpost, a market, and the capital of an immense cattle kingdom, Campo Grande is of considerable importance and interest. Traditions and customs of the unfenced, lawless range linger even though modern progress is now in full swing. Swarthy, bespurred *campanheiros*, hard-bitten and fresh from the ranches, supplied the expected frontier atmosphere, and each evening the populace turned out *en masse* to promenade the village square in approved Latin-American style. Incongruous, however, were the blaring radios, the honking trucks, and flaming posters extravagantly proclaiming the cuteness of Shirley Temple!

A truck ride of about seventy-five miles over the plains south of Campo Grande brought me to the Fazenda Capao Bonita, objective of the expedition. There I was greeted by Senhor Carlos Buytendorp, the genial and efficient manager, whose interest and enthusiastic participation in my collecting activities assured their success. Headquarters were established in Senhor Buytendorp's home where every facility was thoughtfully provided for my comfort and convenience.

Capao Bonita occupies a grassy plateau drained by the headwaters of the Vaccaria River, a tributary of the Rio Parana. Although several hundred square miles are included in the ranch, I was surprised to

find that it is considered only moderately large as Brazilian ranches go. Today much of the cattle range in Matto Grosso is enclosed in fences, but these scarcely mar the landscape in a country where a single pasture may be ten miles wide.

Rheas are protected by popular sentiment in Matto Grosso and proved to be very abundant at Capao Bonita. None were nesting when I arrived early in September, but each day small flocks could be observed stalking across the *campo* in search of edible herbs and berries. The flocks generally included a male and several females, sometimes accompanied by a few juveniles of the previous year.

The first weeks of my visit were spent making general zoological collections and in preserving some of the numerous flowering plants for use in the rhea exhibit. September below the equator is early spring and at that season the *campo* becomes a veritable garden. With so much interesting material available, one's chief difficulty is in deciding what to eliminate rather than what to collect. Several hundred miles were covered by truck and horseback in studying the rheas and their most characteristic habitat for reproduction in Field Museum.

RUNNING BIRDS LASSOED

Most strenuous of all, however, was the actual collecting of the adult rheas. Although flightless, and fairly tame when unmolested, they are amazingly fleet of foot when pursued. Several methods were tried, but the use of a light automobile truck proved most effective. On several occasions the racing birds were clocked at better than forty miles an hour. Rheas are no respecters of trails or motor trucks, and when pursued they always seek the roughest terrain. Only the steady nerves and practiced hand of Don Carlos, who favors the brakeless car, avoided disaster on the mad dashes across miles of prairie pitted with armadillo holes and studded with countless termite nests. A native cowboy accompanying us rode the radiator and lassoed several of the birds, but I relied on my shotgun.

Bird-life on the *campo* is surprisingly varied and abundant. Scarcely less spectacular than the rhea is the cariama, a long-legged bird which bears a superficial resemblance to the secretary-bird of Africa. Of great interest anatomically, cariamas are the nearest living relatives of the prehistoric Phororhacos, an enormous bird which lived in the same region more than 8,000,000 years ago. Tinamous, burrowing owls, caracaras and many lesser birds contribute to the ornithological interest of the grasslands.

MANY EGGS IN NESTS

The first rhea nest, containing thirty spotless white eggs, was found and collected early in October. Each flock prepares and deposits its eggs in a single crude nest built upon the ground on the open *campo*. As many as sixty eggs have been recorded in a single nest, but the usual number is twenty or thirty. Males as well as females take part in the incubation, but only one bird attends the nest at a time. When not on duty, the others range widely while feeding on herbs and berries, or occasional reptiles, but carefully avoid the nesting site. Young birds join the flock soon after hatching.

The birds collected by the expedition are now exhibited in a natural habitat group in Hall 20. They were mounted by Staff Taxidermist John W. Moyer, and the background was painted by Staff Artist Arthur G. Rueckert.

CULTIVATED BLUEBERRIES

By PAUL C. STANDLEY
CURATOR OF THE HERBARIUM

Luscious blueberries from wild bushes have long been a favorite fruit in the United States. They are almost exclusively American—the European blueberries, if such the European species of *Vaccinium* may be called, have quite different and generally inferior fruits. It is only in very recent years that cultivated blueberries have reached the Chicago market, and in 1939 they have been far more plentiful than ever before. The cultivated plants are mostly descendants of strains established by Miss Elizabeth White, of New Jersey, through selection of wild bushes with exceptionally large berries.

At the end of July the writer and Assistant Curator Julian A. Steyermark visited the region of South Haven, Michigan, an important center of blueberry culture. The handsome cellophane-covered boxes of carefully graded Michigan fruit, twice as large as that of wild plants, have formed a tempting display this summer in most of the Chicago food shops.

The field visited consisted of seventy-two acres, and there are many other large plantings in the vicinity of South Haven. The bushes, all of the "high bush" (*Vaccinium corymbosum*) type, are four to five feet high, planted in hilled rows in sand that often is covered with water. The abundance of fruit was astonishing to one familiar with wild bushes. The branches were loaded with large, dense masses of blue fruits suggesting bunches of grapes.

Many native American fruits long ago became economically important, among them strawberries, some of the cultivated plums, raspberries, dewberries, and all the grapes grown in the eastern states. It was scarcely to be expected that at this late date another native fruit would become commercially important, but the blueberry already has established itself. It is noteworthy that Michigan berries are being shipped to the Atlantic coast, where they originated, because they are in season after the eastern crop has been exhausted.

FOSSIL BISON AGAIN EXHIBITED

A skeleton of a large male bison of the extinct species *Bison antiquus* from the asphaltum pools of Los Angeles, California, has been returned to exhibition in Ernest R. Graham Hall (Hall 38). This specimen, and three others, were exhibited in the open some years ago, but suffered so much from thoughtless handling by the public that they had to be removed. The bison skeleton is now protected in an individual case.

Bison antiquus is an extinct species which was common in the western United States during the Glacial Period. Fossils of it are found most abundantly in the tar pools of Rancho La Brea near Los Angeles. There, crude asphaltum, seeping up through the rocks of Miocene age, accumulated in pools at the surface. This formed a death trap, concealed by surface water during the rainy season, or by blown sand and dust during the dry season. Bison and other animals entering these pools, either in quest of water or unwarily for other causes, were caught in the mass of tarry asphaltum, and perished there. Later, their bones became saturated with the asphaltum and so were preserved. As the gas from the asphaltum evaporated and the latter became solid and covered over with earth, large masses of bones were preserved. Nearly 100 species of extinct animals and birds of all sizes and habits have been found in these old tar pools.—E. S. R.

Tree Snails from Florida

Field Museum has just received, as a gift from Mr. G. J. Kessen, of Sanibel Island, Florida, several specimens of the beautiful Sandy Key tree snails. Originally Sanibel Island had no tree snails. The stock from which these snails descended was collected on Sandy Key on the east coast of Florida by Mr. Kessen and transferred to Sanibel Island on the west coast in 1921. Since then the original Sandy Key snails have been destroyed, probably by the 1929 hurricane.

Firmly established on Sanibel Island, it is pleasant to contemplate that such an interesting form of life has been preserved from extinction and may ultimately be again transplanted to its original home.—L.L.W.

EXPEDITION FINDS NEW RUINS ON AN OLD SPANISH TRAIL

By PAUL S. MARTIN
CHIEF CURATOR, DEPARTMENT OF ANTHROPOLOGY

About four hundred years ago the Spanish explorer, Francisco Vasquez de Coronado, journeyed through the Mogollon and San Francisco mountains in western New Mexico on his famous march to find the fabulous "Seven Cities of Cibola" whose streets were supposed to have been exclusively occupied by gold and silversmiths. Coronado failed to find the treasures for which he had traveled so far; but he unwittingly passed within a few hundred feet of some ancient Indian villages which had been lying silent and deserted even then for more than seven hundred years. These villages are now being explored by the Field Museum Archaeological Expedition to the Southwest, under the direction of the writer.

Ancient Pit-House

One of the sites of ancient Indian habitation being excavated in the Mogollon Mountains of New Mexico by the Field Museum Archaeological Expedition to the Southwest. This structure, 34 feet in diameter, is the largest of its type known in this area. Features are a tunneled entry, and a fire pit. While the date of the pit-house has not yet been determined, Dr. Paul S. Martin, leader of the expedition, believes it was built prior to A.D. 750.

MEAGER TRACES OF SITE

Even if Coronado and his men had marched directly over the spot where these early villages lie buried, it is doubtful whether he or any of his men would have known it. The reason for this is that only the most minute traces of human occupation remain. There are no ruined walls to see because the Indians of long ago did not build houses above ground. There are no large mounds of accumulated rubbish, ashes, and broken dishes because these villages were lived in for only a short time and then abandoned. The only clue for the archaeologist is the presence of small pieces of broken pottery lying scattered on the ground. These pottery fragments, about the size of a man's thumbnail, are brown and look exactly like the natural gravelly pebbles of the terrain. It took more than a week for the writer and his assistants, Messrs. Joe Weckler and Hugh Pigg, to locate these particular ruins, and even the local pot hunters were surprised for they did not know of the existence of this very ancient and primitive village. But the Museum party knew, from archaeological experience, that where there are pottery fragments, there are almost sure to be houses, even though they cannot be seen.

A few days' digging proved the correctness of this hypothesis, for soon the walls and floor of a large pit-house were discovered. A pit-house is just what the term implies—a pit dug in the ground and used as a dwelling or as a place for celebrating ceremonies.

When this pit-house was completely dug out—an arduous task which required about ten days' work because the clay fill was extremely tough—it was found to be thirty-four feet in diameter, one of the largest ever excavated in this region. The features within this structure are few—a firepit, three pits apparently used for storage, a short tunnel which served as an entryway, and five troughed depressions near the walls. The purpose of these depressions is unknown, but it is thought that logs may have been placed in them for support of the roof.

It is believed that this large pit structure was used only for ceremonies because it is larger than most pit houses, and too large for one family. Furthermore, there were very few ashes in the firepit—a fact which bespeaks few fires and therefore little cooking. Also no tools or household objects, such as cooking and water-storage vessels, were anywhere in evidence.

LITTLE-KNOWN CULTURE

The Mogollon culture, which is now being investigated by the Field Museum expedition, is one of the three main archaeological divisions of the Southwestern area, the other two being the Pueblo and the Hohokam. Nothing is known about the earliest phases of this Mogollon culture, and it is because of this great archaeological gap that the Museum undertook this necessary research.

Thus far the expedition personnel have found several very precious clues concerning the age and development of the Mogollon culture. However, as the facts thus far accumulated have not yet been digested, it is too early to make any positive statements.

MESSRS. TRAYLOR AND ANDREWS TO COLLECT IN MEXICO

Resuming the zoological collecting undertaken for Field Museum in 1938, Mr. Melvin Traylor, Jr., of Chicago, and Mr. Wyllys Andrews, of Washington, D.C., returned to Mexico early in August for five months of field work on the Yucatan Peninsula. Mr. Traylor is concerned primarily with the collecting of birds and small mammals, while Mr. Andrews will divide his time between reptile collecting and archaeological research.

After several weeks of preparation in Mexico City, Messrs. Traylor and Andrews plan to fly to Chichen Itza, Yucatan, the scene of last year's activities and the locale of important archaeological discoveries by the Carnegie Institute. Later the party will proceed overland into the interior of Campeche where a general collection of vertebrates will be made.

Although Field Museum possesses extensive zoological collections from various parts of Central America, Mexico itself is relatively poorly represented. It is expected that the field work now under way will go far towards filling important gaps in the Museum's research collections.

Change in Visiting Hours Begins September 5

Field Museum visiting hours, which have been 9 A.M. to 6 P.M. daily during the summer months, will change to the autumn schedule—9 A.M. to 5 P.M.—on Tuesday, September 5, the day after Labor Day. These hours will continue until October 31. On November 1 the winter hours, 9 A.M. to 4 P.M., will go into effect.

FIELD MUSEUM OBTAINS FIRST IRON METEORITE EVER REPORTED FROM STATE OF IOWA

By SHARAT K. ROY
CURATOR OF GEOLOGY

A new siderite, or iron meteorite, to be called the Mapleton meteorite, was recently purchased by the Museum from Mr. Harvey Meevers, of Mapleton, Iowa. This is the first iron meteorite to be reported from that state.

Previous to the discovery of this iron, four other meteorites were known from Iowa, three of which were aerolites or stone meteorites, and one a meso-siderite (or variety of iron-stone meteorite).

The Mapleton (Iowa) Meteorite

Mr. Sharat K. Roy, Curator of Geology, inspecting recent addition to Field Museum's meteorite collection (which in number of falls represented is the world's most comprehensive). This celestial visitor, despite its comparatively small mass, weighs 108 pounds, due to its composition of iron (stone meteorites are much bulkier in proportion to weight). Inset shows an enlarged section of a fragment, etched with acid in the laboratory to bring out Widmanatätten figures proving it is of extra-terrestrial origin—the earth's iron does not react the same way.

The meteorite just acquired was accidentally found by Mr. Meevers on June 17, 1939, in his cornfield. It was said to have been struck by his cultivator. The location of the find is in Cooper Township, Monona County, Iowa, on the east side of a rather steep hill, a little less than four miles east-northeast of Mapleton.

The date and time of the fall of the meteorite are not known. However, it is well to point out here that the meteorite, although it has suffered oxidation which has considerably altered and destroyed the fusion crust, is remarkably well preserved, and because of this excellent state of preservation it may be assumed that the fall took place in recent decades. Ordinarily, iron meteorites, particularly those rich in chlorine, when exposed to the atmosphere, oxidize and disintegrate very rapidly. The source of chlorine is the mineral lawrencite, a compound of iron and chlorine which is present in small quantities in many iron meteorites.

Apparently the meteorite does not represent the original mass. It appears to have been broken, but the disruption must have taken place at a considerable altitude while it still had high velocity. This is evidenced by the presence of elongated furrow-like depressions or pittings on the broken side which could not have been formed under reduced velocity. In its present state, the meteorite, which probably does not represent much more than one-half of the original mass, weighs 49 kilograms (108 pounds). Its greatest length, breadth, and height are 17½ inches, 9⅞ inches, and 6¼ inches respectively. The general shape, as preserved, is difficult to describe, for it does not conform to any of the characteristic forms of meteorites. Roughly, it has a sub-semicircular outline and may be said to have the appearance of a low conoid cut vertically near the center. One side of it is plano-convex, the other a very low truncated cone with the apex slightly away from the center.

The point of this reduced cone is not present and presumably was broken off during disruption of the mass, for it does not show the usual smooth surface, but is pitted. The slopes of the cone are unequal and considerably damaged and deformed. The pittings of the plano-convex side, some of which are merged into one another, are larger and more circular, but shallower than those of the opposite side. This is to be expected, for the plano-convex side is the rear of the meteorite and was thus less exposed to heat and friction of the atmosphere. The conical side or the front of the mass has many elongated pittings, more or less radially arranged on the slopes and edges of the cone, evidence of the passing of air currents from the apex of the cone during its passage through the atmosphere.

STRUCTURE IS STUDIED

The structure of the meteorite was brought to view by etching the polished surface of a small fragment of the mass. In most iron meteorites etching brings out certain octahedral figures, called Widmanstätten figures, after their discoverer. These are made up of thin plates or lamellae parallel to the faces of an octahedron, such as might be formed by putting two Egyptian pyramids base to base. The lamellae are composed of two different nickel-iron alloys, named respectively kamacite and taenite. Angular interstices called fields, between intersecting lamellae, may be filled with a third kind of nickel-iron alloy known as plessite. Meteorites made up of nickel-iron which exhibit these three alloys are known as octahedral meteorites or simply octahedrites. The octahedrites are subdivided into three main groups, fine—medium, or coarse—depending on the thickness of the lamellae, which vary from a fraction of one to several millimeters. The Mapleton meteorite contains all three alloys mentioned above and exhibits medium-sized lamellae. It is, therefore, a medium octahedrite.

The information given here is the result of preliminary examination only.

CHINESE MONEY BELTS

A collection of Chinese money belts, beautifully embroidered with glass beads of various colors in intricate designs, mounted on leather, is on exhibition in Hall 32 (Case No. 30). The beads are of cut glass, and each is sewed on separately. The belts thus exemplify not only fine artistry, but the exercise of extreme patience in delicate hand work. The designs are all characteristically Chinese, consisting of flowers, birds, deer, bats, goldfish, carp, and butterflies. In a few there are human figures. The magpie, a bird of lucky omen to the Chinese, appears frequently. Ornamental forms of the character "shou," Chinese symbol of longevity, are conspicuous, indicating the universal desire among the Chinese to attain long life.

The belts are provided with silver buckles which have embossed figures of lions and dragons, and sometimes a gold-plated central panel. On the inside of the belts are their reason for being—pockets for the safe carrying of money. Most of the specimens were made during the last hundred years, and come from the south of China. The collection contains also spectacle cases, ornaments for beds, and slippers, all of which are ornamented with the same type of bead work. This material was acquired by the Museum in a gift from the late Mrs. George T. Smith, of Chicago.

A single crystal of beryl which weighs a thousand pounds is displayed in Stanley Field Hall (Case 18).

Diamonds, specimens of the rocks in which they are found, and minerals associated with them, form an exhibit in Hall 36.

MEDICINE MEN OF THE INDIANS PRESCRIBED WITCH HAZEL

Witch hazel extract, long accepted in medical and domestic practice as a reputable sedative for the relief of pain and inflammation, and as a mild antiseptic, had its origin as a remedy in the magic of the medicine men of North American Indians, according to Dr. Julian A. Steyermark, Assistant Curator of the Herbarium at Field Museum.

In the Hall of Plant Life (Hall 29) is a branch of the witch hazel shrub in full flower and leaf, reproduced from nature, and a model of a flower of the plant enlarged to illustrate its characteristics. Also shown are specimens of its bark and leaves, and of allied plants.

The Indians were the first to use the bark and leaves of the witch hazel plant to alleviate pain, under the direction of their tribal medicine men who accompanied treatment with magical incantations, Dr. Steyermark says. The white invaders of the American continent learned of their efficacy from the Indians, and today millions of households always have on hand a bottle of extract obtained from the bark and leaves by modern pharmaceutical manufacturing methods.

The name "witch hazel" has its origin in superstition. The shrub has unusual living habits, as it blooms in the autumn, often after frosts have come, and ripens its fruit in the spring. This phenomenon, contrary to the behavior of most plants, gave rise to an idea that the plant was supernatural, and caused it to be invested, in the minds of the superstitious, with many peculiar powers—hence the name, "*witch* hazel," a plant regarded as capable of the sorceries of a witch. There are several species of witch hazel trees and shrubs, each with a number of varieties, growing throughout the northern temperate zones of the Old and New World.

THINGS YOU MAY HAVE MISSED

Formation of Peat Shown in Model

A model representing a small lake of glacial origin which is filled with peat formed from the swamps and pond vegetation growing in it is on exhibition in Hall 36 in the Department of Geology. Such lakes, in all stages of filling, and the marshes and even fairly dry meadows which indicate their former sites, are numerous in the Chicago region and also in the lake country of northwestern Illinois, Michigan, Wisconsin, and Minnesota.

The original lake bottom composed of stony glacial clay, or "till," may be seen in the model. The till is covered with a thick bed of other clay deposited from the muddy water of the lake. Above this clay lie beds of dark brown peat and partially decomposed vegetation which grows in the lake. The light-colored bed near the center of the model is "marl," a limy substance formed by the deposition of carbonate of lime from solution in the water around the stems of certain algae, the life processes of which bring about this deposition. Beds of shell marl—limy deposits formed from the accumulations of shells on the bottom of such lakes—do not appear in this model, as the conditions in the lake represented do not favor the formation of such deposits. In some lakes marl deposits are often entirely absent.

Model of Peat Bog

Down to the line representing the surface of the lake water it shows the scene a traveler would see; below this line it represents, in cross-section, the underwater conditions which cause formation of peat.

The vegetation from which the peat is derived grows in the lake in well-defined zones. The more important of these zones are: (1) a zone of algae; (2) a zone of floating weeds, such as bladderwort; (3) a zone of floating bog which is a mat of sedges and rushes with clear water below; (4) a zone of grasses, sedges, and shrubs occupying the inner part of the filled-in edge of the lake; (5) a zone of tamaracks and spruces. At the edge of the swamp area is a depression which is wetter than the tamarack and most of the sedge zones. The depression marks the original shore line of the lake and is called a "fosse." The chief sources of peat in these local lakes and bogs are sedges and rushes. In many parts of the world peat is formed largely from the swamp moss known as sphagnum.

Source of Digitalis

The foxglove, a member of the figwort family, is a biennial plant which during its first year produces a rosette of leaves at the ground, and in its second season develops a stem two to four feet high with large leaves and conspicuous purple bell-shaped flowers. The leaves are used in preparing digitalis, a drug used as a cardiac tonic in some forms of heart disease. A native of northern Europe, the plant is widely cultivated. It is found in old-fashioned gardens in the United States and has become naturalized in certain sections of this country. A specimen is exhibited in Hall 29.

SILENT TRADE

By WILFRID D. HAMBLY
CURATOR OF AFRICAN ETHNOLOGY

In these days of keen competition, in which bargaining may sometimes be none too scrupulous, it is interesting to look back to the period some 2,500 years ago when the "silent trade" took place on the northwest coast of Africa, as described by the Greek historian Herodotus.

Merchants from the ancient Phoenician city of Carthage, on the north African coast, sailed regularly through the Strait of Gibraltar, then known as the Pillars of Hercules. They unloaded their wares, and having disposed them in an orderly fashion along the beach, returned to their ships where they raised a dense smoke as a signal to tribes ashore. The natives of that part of the African coast responded to the signal, and disdaining any temptation to dishonesty, laid a quantity of gold near the goods. The natives thereupon withdrew to a safe distance.

Then the Carthaginians would come ashore, and appraise the gold. If it was not a satisfactory payment, they would return to their ships. The natives would then advance again, and if they thought the goods were worth more they would add a small quantity of gold dust to the pile already offered.

Again the Carthaginians would land, and if the amount of gold was satisfactory, they would take it away. The natives would then advance and collect the merchandise.

Herodotus says: "Neither party deals unfairly by the other; for the Carthaginians never touch the gold till it comes up to the worth of their goods, nor do the natives ever carry off the goods until the gold is taken away."

THE HEIGHT OF PRECAUTION—

—is exemplified by one animal which always enters its home backwards. This suspicious creature, which fears to take its eyes from the direction of possible approach of enemies as it goes into its burrow, is the African warthog, of which a group is on exhibition in Carl E. Akeley Memorial Hall (Hall 22). The specimens were collected in Somaliland.

The warthog is about as far removed from beauty as a creature can be. One writer has described it as "more like the incarnation of some hideous dream than any other extant animal." It is a cousin of the domestic pig, and gets its name from warty protuberances on its face. These are especially marked in the male. Both sexes have tusks, those of the male being larger. Zoologists state that warthogs are not ferocious unless wounded or hard pressed, when they may slash viciously with their tusks. The neck of a warthog is so short that the animal cannot turn its head very far, and when it wants to look back quickly it raises its snout straight up in the air.

FROM THE DIRECTOR'S DESK—

The Museum Library

Even to the most regular of our Field Museum visitors one of the greatest educational facilities of the Museum is practically unknown. The vast collections on display are familiar to all visitors who care to come and see. Many of them appreciate that the study collections not on exhibition must be even greater in extent than those selected for display. Many do not know, however, that Field Museum has among its assets an excellent collection of literature covering anthropology and natural history, which makes possible the careful study of specimens, and which is available not only to the institution's own staff but to any serious minded person.

A librarian could tell you that Chicago contains many splendid collections of books in highly specialized groupings. There are law libraries, medical libraries, libraries concerned only with architecture, with art, with music, with science. One of these libraries, outstanding in its field, is housed at the Museum. Perhaps it might be more accurate to state that four of these libraries are at Field Museum, for there are comprehensive libraries on anthropology, botany, geology, and zoology. Each year almost 3,000 volumes are added to the shelves of the Library —volumes coming from all parts of the world where scientific research on lines within the scope of Field Museum is carried on. Any library, to be of most value, must be kept up to date. Research in natural history may be greatly aided by the study of books a century old, but conclusions can properly be reached only with a study of the latest findings by contemporary scientists. Often days of research, including not only the study of specimens but the study of printed records as well, are necessary in the production of a very few Museum labels. That is necessary because Field Museum labels *must* carry correct information—it would be highly improper for a leading educational institution to disseminate information which was not accurate in every detail so far as it is possible to determine.

It should be emphasized that Field Museum Library is available not only to the advanced scientist. It is, in fact, consulted from time to time by people from all walks of life, by those engaged in many businesses, trades, or professions. A woman may come to Field Museum for information to include in a talk she expects to give at the next Tuesday afternoon session of her neighborhood club. A child comes to the Library asking about a bird he saw in his back yard, or a caterpillar taken from a plant in his mother's garden. A man planning his vacation comes to Field Museum Library to ask about the geological formations of the countryside he expects to visit. A high school student wants special information to improve the term paper he is preparing.

To all of these people, and to all others who want the information which anthropologists and natural scientists have recorded in books and pamphlets, Field Museum Library extends its welcome.

—CLIFFORD C. GREGG, *Director*

Four New Trustees Elected

At a recent meeting of the Board of Trustees of Field Museum, four prominent Chicago civic leaders were elected to membership on the Board. They are: Mr. Lester Armour, Mr. William McCormick Blair, Mr. Walter J. Cummings, and Mr. Albert H. Wetten. They fill vacancies caused by deaths and resignations which have occurred during a period of more than two years past, and the Museum now has for the first time in many months a full membership of twenty-one Trustees, which is the maximum number provided by the By-laws of the institution.

Distinguished Visitors

Among distinguished visitors recently received at Field Museum are: Mrs. Oscar Straus, of New York, who sponsored the Straus West African Expedition of Field Museum in 1934, which resulted in large and important collections for the Department of Zoology, including outstanding material used in the preparation of several beautiful habitat groups in the Hall of Birds; Miss Florence Guggenheim Straus, who accompanied Mrs. Straus; Mr. Stewart Springer, of the Bass Biological Laboratories, Englewood, Florida, who has frequently made the facilities of his organization available to Field Museum collectors; Dr. Ruth Patrick, of the Academy of Natural Sciences, Philadelphia, and Professor Charles Hodge, of Temple University, both of whom have been making studies in Field Museum's cryptogamic herbarium; Mr. Theodore Sizer, Associate Director, Gallery of Fine Arts, Yale University; Professor C. N. Gould, of Santa Fe, New Mexico, head of the Southwest Division of the United States National Park Service; Mrs. V. Goschen—de Watteville, of Berne, Switzerland, who with her father conducted an expedition to Central Africa which resulted in extremely important zoological collections for the Natural History Museum of Berne; Miss Martha Van Bomberghen of Brussels, member of the Conseil de Direction of the Institut Belge des Hautes Etudes Chinoises, Secretary of the Société Belge d'Etudes Orientales, and Editor of *Mélanges Chinoises et Bouddiques;* Dr. E. J. Lindgren, well-known anthropologist of Cambridge University, and Honorary Editor of *Man.*

Staff Notes

Dr. Henry Field, Curator of Physical Anthropology, is spending several weeks at Harvard University where he is engaged in special research in connection with data required for a forthcoming publication on the physical anthropology of Iraq. One of his consultants is Dr. Ernest Hooton.

Mr. Sharat K. Roy, Curator of Geology, gave a radio lecture on Meteorites over Station WCFL on August 18.

Staff Taxidermist C. J. Albrecht recently has lectured on Field Museum expeditions before audiences at the University of Minnesota, and three state teachers' colleges. He has also spoken on several radio broadcasts devoted to Museum topics.

A FEW FACTS ABOUT FIELD MUSEUM

Field Museum is open every day of the year (except Christmas and New Year's Day) during the hours indicated below:

November, December, January, February.....9 A.M. to 4 P.M.
March, April, and September, October.....9 A.M. to 5 P.M.
May, June, July, August....9 A.M. to 6 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 Museum's Library is open for reference daily except Saturday afternoon and Sunday.

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

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

Free courses of lectures for adults are presented in the James Simpson Theatre on Saturday afternoons (at 2:30 o'clock) in March, April, October, and November.

A Cafeteria serves visitors. Rooms are available also for those bringing their lunches.

Chicago Motor Coach Company No. 26 busses provide direct transportation to the Museum. Service is offered also by Surface Lines, Rapid Transit Lines (the "L"), interurban electric lines, and Illinois Central trains. There is ample free parking space for automobiles at the Museum.

ZOOLOGIST EDMUND HELLER DIES ON WEST COAST

Mr. Edmund Heller, formerly a member of Field Museum's staff and active in the conduct of various zoological expeditions for this institution, died in San Francisco July 18, at the age of 64. Mr. Heller had a long and distinguished career as a naturalist and traveler. When quite a young man, he was employed by the Museum as zoological collector and was in the field continuously from 1901 to 1905, working in the western United States and Mexico. In the fall of 1905 he went with Carl Akeley to British East Africa (now Kenya Colony) and made an important collection of the small mammals of the region, including the types of many new species and a number of rare animals not previously represented in American museums.

In 1909 he was selected as one of the naturalists to accompany former President Theodore Roosevelt on his famous expedition to Africa for the Smithsonian Institution. On this trip he was conspicuously successful and, on returning, devoted considerable time to the preparation of his share, which was a large one, of the great two-volume work, *Life Histories of African Game Animals*, by Roosevelt and Heller. This was his most important publication; numerous shorter papers, however, also appeared under his capable authorship.

At various times he was connected with the United States Biological Survey, the Smithsonian Institution, the American Museum of Natural History, and the Museum of Vertebrate Zoology of the University of California. During the war, he accompanied Mr. Paul Rainey to Asia on work connected with the federal Intelligence Service. In 1921, he again joined the staff of Field Museum and, in 1922–23, conducted a lengthy expedition in Peru. In 1924–26, he worked in central Africa for the Museum and, in 1927, he left to become Director of the Washington Park Zoo at Milwaukee. Some years later he went to San Francisco as Director of the Fleishhacker Zoo in Golden Gate Park, the position he held at the time of his death.

In number of specimens collected, and in the breadth and variety of the field covered, Heller must be ranked as one of the greatest zoological collectors of all time. Of mammals alone, nearly 9,000 of his specimens are in Field Museum, and practically all other large American institutions also have large numbers. —W. H. O.

Ferns Used as Food

Ferns, which are generally considered only as ornamental plants, are important as food producing plants in some countries, particularly in New Zealand, Australia, and islands of the Pacific. The underground stem, or rhizome, of the bracken contains a quantity of mucilage and starch. In some parts of Europe it is prepared by pounding, washing, and then mixing it with meal to make bread in time of scarcity. With the introduction of corn and potatoes, however, this practice is becoming discarded.

PLANTS FROM ANCIENT SEEDS IN FULL FLOWER

In the May, 1938, issue of FIELD MUSEUM NEWS there appeared an account of the germination, in the Department of Botany at Field Museum, of some seeds of pink lotus of the Orient (*Nelumbium Nelumbo*) estimated to be 300 to 500 years old. Within a few weeks one of these ancient seeds developed a shoot seven and a half inches in length, at which time it was transferred to the Garfield Park Conservatory for growing.

There, in the care of Mr. August Koch, Chief Horticulturist of the Conservatory, the lotus plant continued to grow and last year within a few months of its germination it produced a number of small floating leaves. After passing the winter in storage its growth was resumed in the spring of this year. Floating leaves were again produced. Then there appeared the erect leaves characteristic of the lotus, and, in the middle of summer, several of the large pink flowers of the species followed in close succession.

The plant, believed to represent the longest duration of delayed germination on record, is now on public view at the Conservatory of Garfield Park where it forms a unique exhibit.

Plant from Centuries-old Seed

Pink lotus of the Orient, in full bloom at Garfield Park Conservatory a little more than a year after its germination in the botanical laboratories at Field Museum from seeds estimated to be three to five hundred years old. It is believed to represent the longest instance on record of auch delayed flowering.

Flax is Oldest Textile Plant

Common flax (*Linum usitatissimum L.*), is first on the list of textile plants, as the one of which we have the oldest historic record. It formed both the garments and grave clothes of the inhabitants of ancient Egypt. The cere-cloth which envelops Egyptian mummies consists of fiber of flax.

A PROJECT TO IMPROVE BIRD COLLECTIONS

The magnificent systematic series of mounted North American birds exhibited in Hall 21 is being still further amplified and improved by the inclusion of freshly collected nesting and natural habitat accessories which give more lifelike results.

Numbering more than a thousand specimens arranged systematically to reveal family relationships, the exhibit includes most of the species and better known geographical races of birds occurring north of Mexico. Discarding, as unimaginative and obsolete, the well-known "T" type of perch often used by museums, every specimen is mounted upon a branch, rock, tussock, or other natural element suggestive of the birds' environment.

The additions now being made carry the illusion still further and when complete will include actual nests and eggs of many common species. Planned as a long-time project which may continue several seasons, the actual collecting of specimens and accessories is under way in a series of week-end field trips by Mr. Frank H. Letl, Preparator of Accessories, and Mr. Emmet R. Blake, Assistant Curator of Birds.

Floyd T. Smith, Collector, is Dead

Members of the Museum's Department of Zoology were saddened by news of the recent death of Mr. Floyd T. Smith, of New York, noted Asiatic explorer. Mr. Smith was leader of the Marshall Field Zoological Expedition to China for Field Museum in 1931, and at various times conducted other important field work for this institution. The 1931 expedition in particular was highly successful, resulting in the acquisition of several thousand specimens of mammals, birds, fishes, reptiles, and amphibians. The beautiful habitat group of the rare Asiatic takin in William V. Kelley Hall (Hall 17) is composed of specimens collected by Mr. Smith.

GIFTS TO THE MUSEUM

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

Department of Anthropology:

From Thorne Donnelley, Chicago—3 drums, Haiti; from Loran D. Gayton, Chicago—2 human skulls and a femur, Illinois; from Mrs. George A. Carpenter, Chicago—pottery jar, Bizen ware, more than 100 years old, Japan.

Department of Botany:

From Garfield Park Conservatory, Chicago—109 herbarium specimens; from Jardim Botanico, Rio de Janeiro, Brazil—26 specimens of plants, Brazil; from Serviço de Botanica e Agronomia, São Paulo, Brazil—43 herbarium specimens, Brazil; from Bill Bauer, Webster Groves, Mo.—40 herbarium specimens, Missouri; from William L. McCart, Denton, Tex.—104 herbarium specimens, Texas; from Dr. Ralph Voris, Springfield, Mo.—13 herbarium specimens and one wood specimen, Missouri; from C. M Palmer, Indianapolis, Ind.—7 specimens of algae, California, Indiana, and North Carolina; from William A. Daily, Indianapolis, Ind.—4 specimens of algae, Indiana; from Servicio Botánico, Ministerio de Agricultura y Cría, Caracas, Venezuela—199 herbarium specimens, Venezuela; from Dr. Delzie Demaree, Monticello, Ark.—32 specimens of Compositae, chiefly California and Oregon; from Centro Nacional de Agricultura, San Pedro Montes de Oca, Costa Rica—65 herbarium specimens, Costa Rica; from Miss Charlotte C. Ellis, Mancos, Colo.—34 herbarium specimens, Colorado; from Professor W. R. Hatch, Hanover, N. H.—135 herbarium specimens, Costa Rica; from Gordon Pearsall, River Forest, Ill.—1,154 herbarium specimens, Illinois, Indiana, Wisconsin, Colorado, and Massachusetts; from Dr. Earl E. Sherff, Chicago—146 herbarium specimens, Hawaii.

Department of Geology:

From Hermann C. Benke, Chicago—one mineral and 2 rock specimens, Iowa and Ontario; from Edward Grabill, Chicago—5 sandstone and 6 porphyry specimens, Wyoming; from Frank Von Drasek, Cicero, Ill.—29 specimens of minerals, Arkansas; from F. C. Worth, Chicago—one ore and 2 mineral specimens, Wisconsin and Pennsylvania; from Charles C. Merrill, Buhl, Idaho—a specimen of chalcedony geode, Idaho; from John Winterbotham, Chicago—a specimen of coral sand, Bermuda; from Stanley Field, Chicago—5 invertebrate fossils, Florida; from Henry Herpers, Chicago—4 invertebrate fossils, Wisconsin; from L. Bryant Mather, Jr., Chicago—22 invertebrate fossils, Wisconsin; from Clarence Bachelor, Chicago—a fossil coral, Michigan; from Harry Changnon, Chicago—10 invertebrate fossils; from Miss Anne H. Snyder, Kenosha, Wis.—4 invertebrate fossils, Wisconsin; from Don Eldredge, Chicago—5 invertebrate fossils, Wisconsin.

Department of Zoology:

From Robert A. Burton, Evanston, Ill.—15 frogs, toads, and snakes, Illinois and Indiana; from Loren P. Woods, Evanston, Ill.—1,001 fish specimens and 202 specimens of lower invertebrates, South Carolina; from H. E. Woodcock, Chicago—20 butterflies and 3 moths, France; from Chicago Zoological Society, Brookfield, Ill.—12 birds and 2 lizards; from George A. Larrissey, Chicago—a snake, Illinois; from John M. Schmidt, Homewood, Ill.—42 snakes, turtles, lizards, frogs, and toads, South Dakota; from Bass Biological Laboratory, Englewood, Fla.—2 shark specimens, near South Carolina; from Mrs. Rob White, Thomasville, Ga.—5 insects, Georgia; from H. H. Hagey, Madison, Wis.—a bird, Wisconsin; from H. B. Conover, Chicago—4 birds, Illinois and Colombia; from Eugene G. J. Falck, Chicago—77 fresh-water mollusks and 30 fresh-water clams, Missouri and Illinois; from John Boyd, Southern Pines, N. C.—15 butterflies, Virginia; from C. M. Barber, Hot Springs, Ark.—a domestic goat skeleton, Arkansas.

SPECIAL NOTICE

All Members of Field Museum who have changed their residence, 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.

Plants That Die in Flowering

There are in the plant kingdom various groups of plants which live for many years before flowering, and die subsequent to the first production of fruit and seed. Most striking examples of this kind are century plants, bamboos, and *Corypha* palms. The whole of the extensive bamboo jungle flowers at the same time, and it is recorded that in India the quantity of seed has at times prevented famines. However, the dying of the stems causes a scarcity of wood for house building.

NEW MEMBERS

The following persons were elected to membership in Field Museum during the period from July 15 to August 15:

Corporate Members

Lester Armour, William McCormick Blair, Walter J. Cummings, Albert H. Wetten.

Associate Members

Harold M. Florsheim, Mrs. Frank W. Howes, Peter F. McNamee.

Non-Resident Associate Members

Harvey Meevers

Annual Members

Ross J. Beatty, Jr., Matthew G. Becker, Irving Berman, Dr. Merrick R. Breck, Miss Marion Clark, Miss Anita de Mars, Thomas C. Dennehy, Jr., Elmer E. Frodin, Dr. Norris J. Heckel, J. A. Hiller, H. H. James, Hathaway G. Kemper, Miss Alice E. Maddock, Mrs. Samuel K. Markman, Alfred H. Oelkers, Nate H. Sherman, Clinton F. Smith, James A. Thomas and Horace O. Wetmore.

SEPTEMBER LECTURE TOURS

Conducted tours of exhibits, under the guidance of staff lecturers, are made every afternoon at 3 o'clock except Saturdays, Sundays, and certain holidays. Following is the schedule of subjects and dates for September:

Friday, September 1—Animal Habitat Groups.

Week beginning September 4: Monday—Labor Day holiday, *no tour;* Tuesday—General Tour; Wednesday—Hall of Races of Man; Thursday—General Tour; Friday—Mummies and Other Ancient Burials.

Week beginning September 11: Monday—Dinosaurs and Their Cousins; Tuesday—General Tour; Wednesday—Men of the Old Stone Age; Thursday—General Tour; Friday—The Story of Plants.

Week beginning September 18: Monday—The Octopus and Other Sea Animals; Tuesday—General Tour; Wednesday—Asia, Its Peoples and Cultures; Thursday—General Tour; Friday—The Moon and the Meteorites.

Week beginning September 25: Monday—Native American Plants; Tuesday—General Tour; Wednesday—Indians of South and Central America; Thursday—General Tour; Friday—Birds, Past and Present.

Persons wishing to participate should apply at North Entrance. Tours are free. 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 by arrangement with the Director a week in advance.

MEMBERSHIP IN FIELD MUSEUM

Field Museum has several classes of Members. Annual Members contribute $10 annually. Associate Members pay $100 and are exempt from dues. Sustaining Members contribute $25 annually for six consecutive years, after which they become Associate Members and are exempt from all further dues. Life Members give $500 and are exempt from dues. Non-Resident Life Members pay $100, and Non-Resident Associate Members $50; both of these classes are also exempt from dues. The Non-Resident memberships are available only to persons residing fifty miles or more from Chicago. Those who give or devise to the Museum $1,000 to $100,000 are designated as Contributors, and those who give or devise $100,000 or more become Benefactors. Other memberships are Honorary, Patron, Corresponding and Corporate, 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.

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.

Contributions made within the taxable year not exceeding 15 per cent of the taxpayer's net income are allowable as deductions in computing net income for federal income tax purposes.

Endowments may be made to the Museum with the provision that an annuity be paid to the patron for life. These annuities are guaranteed against fluctuation in amount, and may reduce federal income taxes.

PRINTED BY FIELD MUSEUM PRESS

Field Museum News

Published Monthly by Field Museum of Natural History, Chicago

Vol. 10 OCTOBER, 1939 No. 10

LECTURES FOR ADULTS, AND PROGRAMS FOR CHILDREN, TO BEGIN OCTOBER 7

Noted Speakers Will Appear on Saturday Afternoons

Field Museum's seventy-second free course of illustrated lectures on science and travel for adults will begin October 7. Well-known scientists, naturalists, and explorers have been engaged to tell of their achievements. All except one of the lectures will be illustrated with motion pictures, and, in the case of the exception, stereopticon slides will be used. The lectures will be given each Saturday afternoon throughout October and November, in the James Simpson Theatre of the Museum. All will begin at 2:30 o'clock. Admission is restricted to adults.

Following is the complete schedule of dates, subjects and speakers:

October 7—A NATURALIST'S DIARY.
Karl Maslowski, Cincinnati, Ohio.

Mr. Maslowski will present a remarkable motion picture film in natural colors, giving intimate views of plant life, and bird and animal activities throughout the year. Courtship, feeding, incubation, flight and care of the young are a few of the many subjects illustrated by the films. Mr. Maslowski, formerly Curator of Birds of the Cincinnati Society of Natural History, and well-known as a college instructor, lecturer, writer, and photographer, is well qualified to explain in an interesting manner the actions and habits of the creatures shown in his films.

October 14—THROUGH AFRICA UNARMED.
Lewis N. Cotlow, New York.

Mr. Cotlow is the winner of the 1938 gold medal awarded by the Adventurers' Club of New York for the year's outstanding adventure. His lecture, and the accompanying films, tell the story of a one man expedition up the Nile, across the Sudan, and down the length of Africa. Armed only with his cameras and a penknife, he traveled through the lion country, the haunts of the Pygmies as well as the domain of a tribe characterized as the world's tallest people, the various habitats of giant gorillas, and many other fascinating regions. His films record the life of flamingoes, hippos, elephants, the rare okapi, crocodiles, and many other animals.

North American Otters

Their life story will be told, in lecture and motion pictures, by Mr. C. J. Albrecht on October 21—the third lecture in Field Museum's Autumn Course. These animals are among the most difficult of wild creatures to photograph, and they are rapidly becoming rare. They make excellent pets, and can be used as hunters and retrievers.

October 21—THE LIFE STORY OF THE OTTER.
C. J. Albrecht, Chicago.

Mr. Albrecht, a staff taxidermist at Field Museum, who has been a member of many of this institution's expeditions, has made a unique motion picture film of the otter's life. He shows all phases of this interesting little animal's existence, having photographed it even from underwater in a submarine diving bell. Other scenes in his film show this amazing animal in all seasons and all characteristic activities. Well qualified as a naturalist, Mr. Albrecht's observations, as well as his pictures, provide an interesting story about the otter's life, which has probably never been so completely studied before.

(*Continued on page 2, column 1*)

Motion Pictures are Offered by Raymond Foundation

The James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures will present a series of eight free programs of motion pictures for children on Saturday mornings during October and November. Included on the programs are films relating to natural history, travel, and American history. On two programs animated cartoons will also be shown. A special program to be given on October 28, "Fun With Don Heaton in the Wild West," will feature a lecture by Mr. Heaton who will appear in person. Most of the films will have talking and other sound effects.

There will be two showings of the pictures on each program, one beginning at 10 A.M., and one at 11. Children from all parts of Chicago and suburbs are invited, and no tickets are required for admission. The Museum is prepared to receive large groups from schools and other organizations, as well as individual children coming alone or accompanied by parents or adults.

The following schedule shows the titles of the films to be presented on each program:

October 7—Jolly Little Elves (cartoon); The 17-year Locust; Humming Birds at Home; Plants and Animals Prepare for Winter.

October 14—Gathering of the Clan; Boxing with Kangaroos; Columbus: *a.* At the Court of Isabella; *b.* Landing on American Shores.

October 21—Animal Aristocracy; The "Father of Waters"; Romantic Mexico.

October 28—Fun with Don Heaton in the Wild West (Mr. Heaton in person).

(*Continued on page 2, column 3*)

MAMMOTH FOUND WITH ELK AT WESTERN SPRINGS, ILL.

A report reached Field Museum recently that extensive excavations by WPA workers at Western Springs, Illinois, had uncovered a number of fossil bones. Mr. Paul O. McGrew, of the Museum's paleontology staff, accompanied by Dr. E. C. Olson, of the University of Chicago, after a trip to the site of the excavation, identified the bones as a rib and a foot bone of *Parelephas jeffersoni*, the species of mammoth common to the Mississippi valley region immediately after the final retreat of the ice sheet which covered all of this part of North America during Pleistocene time.

Other bones uncovered were those of an elk, possibly of a modern species. Positive identification must wait for more complete material, but if these bones are those of a modern elk it would indicate that *Parelephas jeffersoni* ranged into relatively recent times. The date of extinction of elephants in North America has always been of interest because of the fact that certain Indian mounds are built in a conventionalized elephant outline, and this was taken by some investigators to indicate that Indians and elephants were, at least for a brief period, contemporaneous.

AUTUMN LECTURES FOR ADULTS TO OPEN OCTOBER 7

(*Continued from page 1, column 2*)

October 28—WINGS FROM THE NORTH.

Martin K. Bovey, Concord, Massachusetts.

Three trips to the wilderness region of Hudson Bay, and six weeks of color photography, were required to make the thrilling motion pictures shown in Mr. Bovey's films. During the course of this work Mr. and Mrs. Bovey lived with five Indian families. Among the striking features of the film are great flocks of ducks and geese dropping on set wings toward the mud decoys of the Indian hunters, and Cree women plucking the geese and smoking them for their winter food. Mr. Bovey, a former instructor at Harvard University, once served with the Biological Survey in the Arizona deserts. In recent years he has made profound studies of the natural history of various regions of Canada.

November 4—WONDERS OF PLANT LIFE.

Arthur C. Pillsbury, Berkeley, California.

Mr. Pillsbury, by means of highly developed special equipment for the taking of "lapse time pictures" of plant life, in natural color, shows his audience in a few minutes' unreeling of his films everything that happens in the life of a plant during the course of several days. Thus one is able to see step by step the development from bud to full flowering. Further refinements in his equipment enable him to show living cells and cell division in various forms of microscopic life.

November 11—WHAT IS BIBLICAL ARCHAEOLOGY AND WHY?

Dr. Nelson Glueck, Director of American School of Oriental Research, Jerusalem.

Dr. Glueck last year began the work of uncovering King Solomon's seaport at the north end of the Red Sea. With a knowledge of Palestinian history approached by few other scholars, he is qualified to establish relationships between new archaeological finds and historical records. The lecture will be illustrated with stereopticon slides showing Dr. Glueck's recent excavations.

November 18—THE TUNDRA SPEAKS.

Dr. Arthur C. Twomey, Carnegie Museum.

Dr. Twomey recently returned from a nine months' expedition to the interior of Ungava and the Bellcher Islands of Hudson Bay. In colored motion pictures he records a trip by airplane to the Great Whale River, and by dogteam and other modes of travel to the Arctic. He shows pictures of the striking flowers and nesting migratory birds of the far north, as well as seals, white whales, and walrus. Polar bear hunts by the Eskimos are another feature.

November 25—STRATOSPHERE EXPLORATION.

Major Chester L. Fordney, Great Lakes, Illinois.

Major Fordney has been farther away from the earth than almost any other man, having accompanied Lieutenant-Commander Settle of the United States Navy on the stratosphere flight made from Akron, Ohio, on November 20, 1933, when a new world's altitude record of 61,237 feet was established. The landing was made in the marshes of the southern part of New Jersey. As a United States Marine Corps officer, Major Fordney has had an adventurous career in many parts of the world, but his journey into the unknown of the stratosphere, which he will relate in his lecture and illustrate with motion picture films, exceeds in thrills all of his other experiences.

No tickets are necessary for admission to these lectures. *A section of the Theatre is reserved for Members of the Museum, each of whom is entitled to two reserved seats on request.* Requests for these seats may be made in advance by telephone (Wabash 9410) or in writing, and seats will be held in the Member's name until 2:30 o'clock on the day of the lecture. All reserved seats not claimed by 2:30 o'clock will be made available to the general public.

Three Additions Made to Exhibit of Horned and Hoofed Mammals

Three excellent mounted mammals have been added to the systematic series of horned and hoofed animals in George M. Pullman Hall (Hall 13). They are a chamois, a topi, and a specimen of Hunter's antelope. The chamois comes from Yugoslavia, and is a gift from Dr. Sholar Wencel, of Peru, Illinois. It fills a gap which has long existed in the Museum's collection. Now rare in the Alps, the chamois is still common in other high mountains of Europe.

The topi, an antelope from Molo, Kenya Colony, is the East African representative of the brighter colored korrigum antelope of West Africa. Hunter's antelope, from the Tana Valley, Kenya Colony, is a rare species, allied to the topi, and resembling the hartebeests. The Museum's specimen was collected several years ago by the White-Coats African Expedition.

All three animals were prepared for exhibition by Staff Taxidermist Julius Friesser.

CHILDREN'S PROGRAMS OFFERED BY RAYMOND FOUNDATION

(*Continued from page 1, column 3*)

November 4—Land of the Giants; Sea Going Thrills on the *Wander Bird;* Oriental Methods of Traveling; Glimpses of Old China.

November 11—Armistice Day Program: Famous Dixie Land Spirituals; The Pilgrims Land at Plymouth; The Signing of the Declaration of Independence; The Moon and Its Features.

November 18—Hunting Musk Ox with the Polar Eskimos; Eskimo Life in Southern Greenland; Nanook and His Family; In the Land of the Reindeer.

November 25—Winter (cartoon); Learning to Ski; Sonja Henie, the Champion Skater; International Ice Patrol; The Nass River Indians.

BOTANICAL EXPEDITION LEAVES FOR GUATEMALAN FIELD

A six months' expedition to make a comprehensive collection of the plants of Guatemala for Field Museum is being undertaken by Dr. Julian A. Steyermark, Assistant Curator of the Herbarium, who sailed September 27 on the steamship *Ulua* from New Orleans.

The expedition is sponsored by Mr. Stanley Field, President of the Museum. Among the regions where exploration is contemplated is the little known Oriente area in the departments of Chiquimula, Jutiapa, and Jalapa. The desert area around Zacapa will be worked in the rainy season, and Dr. Steyermark expects to find a number of unusual species of plants. The expedition then plans to move into the Sierra Madre region of western Guatemala, in the departments of San Marcos and Huehuetenango. Particular attention will be devoted to the flora of the Tajumulco volcano, and collecting is also planned in the district around Mazatenango.

The work of this expedition will supplement that undertaken last year by Curator Paul C. Standley, leader of the Sewell Avery Botanical Expedition of Field Museum. In addition to collecting specimens, data will be obtained for inclusion in the flora of Guatemala which Mr. Standley and Dr. Steyermark are preparing for publication.

THE GIRAFFE IN HISTORY

Lorenzo de Medici had a giraffe in his menagerie at Florence in the fifteenth century. The animal was the subject of much curiosity at the royal court, and it aroused the envy of Anne de Beaujeu, daughter of Louis XI of France. She had dreams of owning a giraffe of her own, and finally alleged that Lorenzo had promised her his. In a letter addressed to him on April 14, 1489, she wrote:

"You know that you advised me in writing that you would send me the giraffe, and although I am sure you will keep your promise, I beg you nevertheless to deliver the animal to me and send it this way, so that you may understand the affection I have for it; for this is the beast of the world that I have the greatest desire to see. And if there is anything on this side I can do for you, I shall apply myself to it with all my heart. God be with you and guard you.

"Anne de France."

However, the Medicean was deaf to this plea, and kept his giraffe. "Breach of promise suits were not yet instituted at that time," is the comment of the late Dr. Berthold Laufer, former Curator of Anthropology at Field Museum, in relating this story in *The Giraffe in History and Art*, an illustrated leaflet in the Museum's Anthropological Series Many other strange and interesting anecdotes about giraffes, brought to light by Dr. Laufer's researches, are included in this book which is one of the most fascinating and delightful of the author's many contributions to literature.

The leaflet traces the history of the relation of giraffes to the life of men from the earliest recorded times. One chapter is devoted to a zoological discussion of the animal. Others tell of the impressions the giraffe made on the peoples of ancient Egypt, primitive Africa, Arabia, Persia, China, India, ancient Rome, Constantinople, and Europe during the Middle Ages, the Renaissance, and the nineteenth century.

The costliness of giraffes is one of the many interesting facts revealed in the book. Before the 1914–18 World War, one of these gentle beasts could be purchased for the comparatively reasonable price of $1,500 to $2,000, but after that war the price range rose to between $5,000 and $7,500 or more. The transportation difficulties presented by the long neck of a giraffe are a large factor in causing the high price.

Among the Arabs, the book reveals, many superstitions arose about the giraffe. An Arab diviner is quoted as writing: "A giraffe seen in a dream indicates a financial calamity. Sometimes it signifies a respectable or a beautiful woman, or the receipt of strange news to come from the direction from which the animal is seen. There is, however, no good in the news. When a giraffe appears in a dream to enter a country or town, no gain is to be obtained from it, for it augurs a calamity to your property; there is no guaranty for the safety of a friend, a spouse, or a wife whom you may want to take through your homestead. A giraffe in a dream may be interpreted to mean a wife who is not faithful to her husband."

By the Chinese, on the other hand, the giraffe was regarded as an auspicious omen, the book indicates.

Many curious theories held in various countries as to the giraffe's origin are recounted. It was ascribed variously as a hybrid of a panther and a camel—or a camel mare and a male hyena whose mongrel offspring mated with a wild cow and produced in the third generation a giraffe—and to other such queer matings. From these beliefs various forms of the word "camelopard" were derived to describe it.

Dr. Laufer shows further: that part of the tribute of war paid to King Tutenkhamon by the Nubians consisted of giraffes; that Chinese emperors of the fifteenth century treasured live giraffes presented to them as gifts; that Julius Caesar in 46 B.C. proudly displayed Rome's first giraffe in a triumphal procession; that Ethiopian women wore giraffe hair and tails as ornaments; and that the first live giraffe to arrive in France, in 1826, had a marked effect on fashions, was glorified in poems and paintings, and even became a political symbol.

The Giraffe in History and Art, by Berthold Laufer. (Field Museum Anthropology Leaflet 27.) 100 pages, 9 collotype plates, 1 vignette, 23 text-figures. $.60

Tutenkhamon's Giraffe

Tribute, in form of animal, for presentation to ancient ruler of Egyptians. (Sketch, from Dr. Laufer's book, after Nina de Garvis Davies.)

Specimens of European red deer are exhibited in George M. Pullman Hall (Hall 13). This deer is the famed stag of early European history.

MAGELLANIC PARTY REPORTS; DR. OSGOOD TO SAIL

Reports from the advance party of Field Museum's Magellanic Expedition, which began operations in July, indicate good success in southern Peru where Curators Colin C. Sanborn and Karl P. Schmidt have been working at very high altitudes in the region southwest of Lake Titicaca. They have secured series of mammals, birds, and amphibians belonging to species not found elsewhere in South America and wholly unrepresented in the collections of American museums. Among them are a number of handsome, long-haired, and particolored rodents which have become especially adapted to life on the chilly windswept punas of the mountain tops. In this region mammalian life appears to thrive at greater altitudes than anywhere else in the world.

Dr. Wilfred H. Osgood, Chief Curator of the Department of Zoology, expects to sail from New York October 6 aboard the steamship *Santa Lucia*. He will join the party in southern Peru, and proceed thence via central Chile to the Straits of Magellan for extensive work which will continue through the southern summer season.

EXTINCT MOOSE FROM ANTIOCH

Various bones of the skeleton of an extinct moose, *Cervalces*, have been received at Field Museum from Antioch, Illinois. Mr. Charles N. Ackerman, a Member of the Museum, who is engaged in dredging operations in the peat beds bordering on Grass Lake, found these bones in the dump heap brought up by his dredge. The dredging operations extend to a depth of eighteen feet below the water level, and it is probable that the bones were preserved in the lower layers of the peat bog. Other species of extinct animals have been encountered from time to time at this place.

Cervalces is an extinct moose somewhat larger than the Alaskan moose and decidedly larger than the Canadian moose which ranged about the lake region. The animal is distinguished from the living moose by its antlers which are intermediate in structure between those of a moose and the wapiti. This animal is best known from a skeleton found in New Jersey, but other evidences of its presence have been recorded from a bog spring at Minooka, Illinois, from Beecher and Alton, Illinois, from Oakland City, Indiana, and Big Bone Lick, Kentucky. These occurrences show that this extinct moose had a wide distribution through the Great Lakes Region and through the central states after the retreat of the Great Glacier.—E. S. R.

As many as 500 extension lectures are given in the schools of Chicago during a year by lecturers of the James Nelson and Anna Louise Raymond Foundation.

ANCIENT CHINESE BRONZE TYPE REVEALS SOME OF THE HISTORY OF PRINTING

By C. MARTIN WILBUR
CURATOR OF CHINESE ARCHAEOLOGY AND ETHNOLOGY

Eleven old pieces of movable type, cast in bronze in Korea, but made to print Chinese characters, have recently been presented to Field Museum by Mr. Thomas E. Donnelley, of a well-known printing and publishing firm in Chicago. They have a particular interest at this time because they are almost as old as the European invention of metal type cast in molds. The five hundredth anniversary of that important invention is to be celebrated by the printing industry in 1940. The Chinese could celebrate an anniversary for the same invention at least half a century earlier, and could further point to their invention of movable type made of wood, or baked in clay, several centuries previously.

Chinese Printers

Setting type by hand in the Chinese imperial printing office, about 1773. Three men at the back of the room are finding characters filed in drawers. The men in foreground are engaged in examining pages of type and reading proof.

Two interesting facts stand out:

The Chinese invention of metal type cast in molds, though chronologically earlier, had no known influence on the European invention. A common knowledge of certain preliminary essentials for type printing, such as paper and block printing, together with similar needs in the two cultures, seem to have produced similar results thousands of miles apart within the same century.

Secondly, the same invention had radically different developments in the two areas. In Europe the transition from block printing to printing from type cast in molds covered about a century; the new technique developed and spread rapidly to scores of cities; block printing quickly went out of use. In China the process was otherwise. There the Chinese were extensively printing charms, calendars, and religious and secular books in the eighth and ninth centuries. Experiments with movable wooden or baked clay types did not quickly produce a general shift to metal type cast in molds. And even after the development and wide use of that technique, which seems more advanced and logical from our point of view, block printing continued to be used in China side by side with movable type printing down to our day.

Why did the two cultures treat the invention in entirely different ways? Perhaps an answer can be found in the specimens of Korean-made Chinese type now on exhibition in Field Museum (Hall 32, Case 27).

These types seem to be about the same age as the ones used by Gutenberg for the famous Vulgate Bible of 1456. They are thought to come from Korean fonts dating 1452 and 1455. Of two sizes, they measure respectively a little more and a little less than half an inch square at the shoulder, i.e., just below the printing face, and the body is about 5/8 of an inch high, which is about one-third as high as modern type. The larger ones average 10.2 grams in weight. They are hollowed on the bottom to give a firmer attachment to the melted wax in which they fitted in the bottom of the chase when set. Two styles of calligraphy are represented. All of the type have become green from age, and some are badly corroded or so clogged with ancient ink that the characters cannot be deciphered. Others could still be used in printing today.

Apparently it was not long after the process of casting type was developed in China that it spread to Korea where it was enthusiastically adopted. Under royal encouragement the official casting of type and the printing of books therefrom began about 1400—the earliest official date being 1403. Several hundred thousand type were cast from the first molds. Three different royal fonts are recorded before 1440, the accepted date for the invention of the type mold in Europe, and about half a million type had been produced. In fact so many fonts are recorded as having been made in Korea during the fifteenth and succeeding centuries, with several recastings from some of the famous sets of molds, that it is impossible to determine the date of a specimen without a close check between the type and printed books of which the date of printing and specific font are known. This information is available only in Seoul, the former royal capital of Korea. Our attribution comes from the collector, Dr. James S. Gale, who lived for forty years in Korea, and was one of the greatest missionary-scholars. He carefully studied the whole problem of early Korean movable type.

WORDS, NOT LETTERS, REPRESENTED

It is significant that our type was cast under imperial patronage for the specific purpose of extensive printing of all sorts of books. From the molds of 1455 more than 150,000 type were cast, and nearly two tons of bronze must have been used, not counting waste. Now 150,000 type is not a large number for hand-set book printing, though it would undoubtedly have been counted large in Europe at the time. A very small font of Chinese characters in Field Museum contains about 120,000 type. But this figure covers approximately 3,000 different kinds of type, all of the same point size, with no upper or lower case, and only about ten punctuation marks. Each of the three thousand different kinds of type represents a separate *word*, as opposed to separate *letters* in Western fonts. For Chinese is not an alphabetic language. Herein lies a tremendous difference, and herein may probably be found one explanation for the fact that movable type failed to drive out block printing in China.

Three thousand words represent only a small vocabulary. To publish its most recent book using only a little Chinese type it was necessary for Field Museum to borrow a number of words not among the 3,000 in its font. The standard Chinese-English dictionary contains 14,000 words. To set it the printers had to have that many different type available. Any Chinese book on history, literature, or philosophy would draw on a vocabulary even larger.

COMPOSITOR'S TASK A HARD ONE

With a font of ten to fifteen thousand different words in a single point size, and having an adequate number of duplicates of the most common words, the typesetter is faced with a serious problem to find the desired words for a single page of text. It has been estimated that in order to hand-set a single page of a Chinese newspaper—in which the vocabulary is purposely limited and the type are scientifically arranged on the basis of frequency of occurrence—a typesetter has to walk *three miles* between his cases. No really adequate type-setting

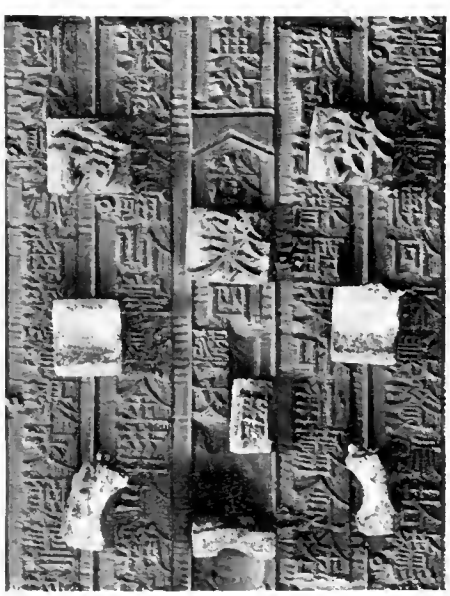
machine for Chinese has been produced despite years of experimentation.

This situation, then, helps to explain why wood-block printing held certain advantages over movable type printing in China, and why the Chinese did not follow the same path as European printers. In the wood-block method a page of text is written by hand on thin paper which is then pasted face down on a prepared board. The writing shows through the paper in reverse, and a carver simply cuts away the wood about an eighth of an inch wherever there is no writing. From this point on the process of printing was exactly the same as the process with movable type. It was a hand job without a press, which the Chinese failed to invent. Indeed the wood-block had certain advantages: the type could not come loose, as in the crude Chinese type chase; there was less possibility of typographical error; and new editions could be printed over and over from the old blocks till they were worn out or lost.

WOODEN TYPE ALSO RECEIVED

Since most Chinese printing establishments in the past were small and were not printing a wide range of books, an investment in a huge font of type was either prohibitive or unnecessary. It would be wrong to create the impression, however, that the Chinese neglected movable type. For the printing of imperial editions of important books the imperial printing office used extensive fonts of cast metal type as well as carved wooden type of which hundreds of thousands were cut *by hand!*

In Mr. Donnelley's gift there were also thirty small hand-cut wooden type, of recent Korean make. The accompanying illustration, taken from a Chinese book describing the imperial printing office of 1773—a book recently acquired by the Library of Field Museum—shows how type was set by hand and makes clear what a laborious process this must have been. A modern Chinese typesetter with his banks of type around him, has only the advantage of scientific arrangement of the characters to lessen the drudgery of his chores.



Ancient Type

Nine specimens of bronze movable type made in Korea during the fifteenth century to print Chinese books. The type have been photographed lying on a wood block cut to print a whole page, which is an alternative method. The three top specimens are face up; the half-size type in the middle is for printing footnotes; the five type on back or sides show groove in bottom for attachment to wax in bottom of chase.

MUSEUM ACQUIRES COLLECTION OF 50,000 AMERICAN BIRDS

Field Museum recently acquired the well-known Bishop collection of more than 50,000 North American birds, one of the largest and most important collections ever assembled, and the last of its kind which had not passed to a public institution.

The negotiations to obtain this collection were recently completed by Dr. Wilfred H. Osgood, Chief Curator of the Department of Zoology, on a visit to Dr. Louis B. Bishop at Pasadena, California. Dr. Osgood is an old friend of Dr. Bishop's, and in 1899 they conducted an expedition together to the Yukon and Alaska.

Field Museum has already obtained possession of the major part of the collection which had been housed at New Haven, Connecticut. A further part will remain in Los Angeles where, during the rest of his life, Dr. Bishop will continue research upon it, and further work towards its improvement.

The Bishop collection includes representatives of nearly all known forms of birds found in every section of North America north of Mexico. Formation of this collection represents forty years of constant and intensive effort, both on the part of Dr. Bishop and numerous professional ornithologists who have been associated with him at various times. According to Mr. Rudyerd Boulton, Curator of Birds, who has made a careful inspection of the collection, the specimens are distinctly superior to the average in quality of preparation. An important item is the inclusion of thirty type-specimens. "Type-specimen" is the scientific term for the original representative of a species to be collected, which thus forms a basis for the description of that species to which all other specimens are referred for identification. Included also are specimens of various birds which are now extinct, such as the Carolina parakeet, the Guadalupe flicker and petrel, heath hen, Eskimo curlew, and passenger pigeon. Many others are of species which have become very scarce and difficult to obtain.

To date, Field Museum's principal efforts in ornithological research have been devoted to the birds of Central and South America, Africa, and other foreign localities. The North American field had been left largely to other institutions, although Field Museum did have a collection which is extensive enough to be regarded as important. Addition of this new collection fills a large gap in the Division of Ornithology, and gives the institution one of the most comprehensive North American bird collections either in this country or abroad. It is estimated by Dr. Osgood that the collection had cost its former owner nearly $100,000, and it is doubtful if it could be reproduced at this time for twice that figure.

The acquisition of the Bishop collection is of tremendous importance to scientists and to students of zoology, because of the unusual research opportunities it affords. For this purpose it is especially valuable because the birds of North America have been more intensively studied than those of any other part of the world, and a detailed knowledge of them is fundamental to all ornithological research in evolution, variation, and all theoretical fields of biology.

Dr. Bishop is one of the few surviving American ornithologists who began studies of American birds in the very active period of the "nineties" and formed private collections rivalling in size and importance those of public institutions. Other famous collections include that of William Brewster, which is now in the Museum of Comparative Zoology, Cambridge, Massachusetts; and that of Jonathan Dwight, which is now in the American Museum of Natural History in New York.

Dr. Bishop was born in New Haven, Connecticut where he graduated from Yale and continued studies in medicine in the special field of pediatrics which he expected to follow professionally. His passion for ornithology, however, led him to relinquish other interests and devote his entire life to collecting and studying birds. In his early years he made numerous trips to North Dakota and the Middle West, to eastern Canada and, in 1899, to the Yukon River and Alaska. In 1917 he removed to Pasadena, California, and continued his interests there. An important collection of birds' nests and eggs, assembled by him, is now in the Peabody Museum of Yale University.

Death is the Penalty for Seeing New Guinea Masked Man

Each family of Tami in the Huon Gulf, New Guinea, has the right to use one or more masks of a type known as *tago*. Each *tago* has a special name, and is distinguished by certain definite characteristics. The masks represent spirits which are supposed to visit the village at the time the masked figures appear. The man wearing the mask is completely covered by a sago leaf dress, and under no circumstances may he be seen or recognized by any woman, child, or uninitiated person. Should this happen by accident, the observer is killed. Examples of *tago* are on exhibition in Joseph N. Field Hall (Hall A), on the Museum's ground floor.

Field Museum of Natural History
FOUNDED BY MARSHALL FIELD, 1893
Roosevelt Road and Field Drive, Chicago

FIELD MUSEUM NEWS
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H. B. HARTE.....*Managing Editor*

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

FROM THE DIRECTOR'S DESK—

Field Museum Pension Plan

For many years it has been the desire of the management of Field Museum to establish a pension plan which might insure a regular retirement income for faithful employees after their period of active service had been completed. As early as 1916, Mr. Stanley Field, President of the Museum, established a Museum Employees' Pension Fund, the proceeds of which gave to the employees the benefit of insurance protection for their dependents. While this benefit was greatly prized at the Museum, it was still felt by those responsible for the operation of the institution that the employee himself was entitled to protection and leisure in his declining years, as well as some security for his dependents.

Recently Mr. Marshall Field, a Trustee of the Museum who always has been deeply interested in the welfare of the employees, provided the means by which such a pension plan might be established, and on July 1, 1939, the Plan was instituted through a contract with the Metropolitan Life Insurance Company. Under the Plan each employee pays approximately 4% of his salary to the Pension Fund. The Museum contributes a much larger sum, and with the combined contributions purchases annuities amounting to 1½% of the employee's salary for each year of his membership in the Plan. Annuities for past service, amounting to 1% of the current salary for each year of service prior to the beginning of the Plan, will be purchased by the Museum without employee contribution. Normal retirement ages have been set at 65 years for men and 60 years for women. Retirement will automatically occur at those ages unless the Board of Trustees requests that the employee continue longer in service, which invitation he may accept or decline.

It is impossible under any circumstances for an employee or his estate to receive from the Plan less than he has put into it. Upon leaving the Museum prior to retirement, the employee is entitled to the return of his money with interest compounded annually at the rate of 2½%. In the event of the death of an employee either prior to or subsequent to retirement, his estate is entitled to his entire contribution with interest compounded annually.

Another provision protecting the interest of the employee who leaves the institution after more than ten years of membership in the Pension Plan, is the so-called "vested interest" provision. This provides that an employee after ten years of membership is entitled to receive at retirement age the full benefits of the pension thus far purchased for him by both his own and the Museum's contributions.

The wide-spread approval of the employees is indicated by unanimous acceptance on the part of those eligible. Both the management and the employees rejoice in the assurance that a lifetime of faithful service at the Museum may be followed by leisure and freedom from financial worries in the later years of life.

—CLIFFORD C. GREGG, *Director*

Fish and Reptile Experts Meet at Museum

Field Museum was one of three Chicago scientific institutions which acted as hosts to delegates attending the annual meeting of the American Society of Ichthyologists and Herpetologists, September 13–16. At the opening meeting an address of welcome was made by Director Clifford C. Gregg. Meetings on succeeding days were held at the John G. Shedd Aquarium and the Chicago Academy of Sciences, with a banquet at the Medinah Athletic Club. Several reels of motion pictures made by Mr. Walter H. Chute, Director of the Shedd Aquarium, were shown. Open house was held at Locy Hall, Northwestern University. This was the first meeting of the society held in Chicago since 1922. Special exhibits for the visitors were arranged at Field Museum and the other host institutions.

Important Fossil Collections Reported by Expedition

A number of important fossil finds by the Field Museum Paleontological Expedition to Western Colorado were recently reported by its leader, Mr. Bryan Patterson, Assistant Curator of Paleontology. Outstanding is the skeleton of a prehistoric animal of the family Taeniodontia. This is a small group of early hoofed mammals—forerunners of a similar but larger creature excavated by Mr. Patterson in 1933 and known as *Barylambda*. The present specimen, Mr. Patterson states, may constitute a new genus.

Other specimens collected by the present expedition include multituberculates (a group of small rodent-like animals characterized by many cone-like prominences on their teeth), and prehistoric turtles. Work has been begun on the excavation of a fossil crocodile, and a large collection of small fossil animals has been made.

Staff Notes

Dr. Julian A. Steyermark, Assistant Curator of the Herbarium, and Mr. Loren P. Woods, of the Raymond Foundation staff, recently made a short trip to collect plants and fishes in a number of Missouri springs. Mr. Woods brought back 4,000 specimens of fishes, which are to be added to the Museum's collection. Dr. Steyermark collected several hundred specimens of plants. Among the plants is one new to Missouri, found several hundred miles north of its previously known range in the United States.

Assistant Taxidermist Edgar G. Laybourne has resigned to accept a position in Hawaii.

Mr. J. Francis Macbride, Associate Curator of the Herbarium, who has been conducting a botanical project for Field Museum in Europe since 1929, is currently at work in Geneva, Switzerland, and is believed to be safe from war hazards in that neutral country. During most of the past year his activities have centered in Paris.

A FEW FACTS ABOUT FIELD MUSEUM

Field Museum is open every day of the year (except Christmas and New Year's Day) during the hours indicated below:

November, December, January, February ....9 A.M. to 4 P.M.
March, April, and September, October ...9 A.M. to 5 P.M.
May, June, July, August.9 A.M. to 6 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 Museum's Library is open for reference daily except Saturday afternoon and Sunday.

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

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

Free courses of lectures for adults are presented in the James Simpson Theatre on Saturday afternoons (at 2:30 o'clock) in March, April, October, and November.

A Cafeteria serves visitors. Rooms are available also for those bringing their lunches.

Chicago Motor Coach Company No. 26 busses provide direct transportation to the Museum. Service is offered also by Surface Lines, Rapid Transit Lines (the "L"), interurban electric lines, and Illinois Central trains. There is ample free parking space for automobiles at the Museum.

THE HUMBOLDT CURRENT

By KARL P. SCHMIDT
CURATOR OF AMPHIBIANS AND REPTILES

(Editor's Note: Mr. Schmidt at present is in South America as a member of the Magellanic Expedition of Field Museum. The following article, written aboard ship en route to Lima, has just been received from him.)

The sudden change of temperature encountered as one's ship passes the Gulf of Guayaquil and rounds Cape Blanco, the westernmost point of Peru, is one of the surprises of a voyage to western South America from the north. The oppressive heat of the Canal Zone and of the Colombian port of Buenaventura is only a little relieved at sea, where the daily temperature range is from about 82° to 90°. As the ship enters Peruvian waters the temperature drops more than ten degrees, to a daily range of 70° to 76°. Coats and sweaters make their appearance on deck, and covers are required at night. We find ourselves in the climate dominated by the cold Humboldt Current, the major oceanographic feature of the southeastern Pacific.

Alexander von Humboldt, first of the great scientific travelers, described the geographic effects of the vast current of cold water named for him. The Humboldt Current turns out to be a phenomenon very different from the more familiar river-like ocean currents, like our Atlantic Gulf Stream. On the western borders of the continents, in the middle latitudes, the steady trade winds drive the surface waters of the ocean before them, and the water thus removed is replaced by vertically upwelling waters from the depths of the ocean. The slow creep of the glacial waters from the poles maintains the bottom waters of all oceans at temperatures near freezing, and an upwelling current accordingly draws on this source of cold.

JUNGLE CHANGES TO DESERT

The upwelling strip of cold water along the coast of Chile and southern Peru is about forty miles wide, and as it accumulates it flows away northward, becoming river-like as it is deflected westward by the trend of the Peruvian coast to wash the shores of the equatorial Galapagos Islands before it is swamped by the warm waters of the tropics.

The effect of the Humboldt Current on the adjacent tropical coasts is profound. Instead of the forest and jungle of Panama and the Colombian coast, which one naturally associates with the tropics, the Peruvian coast is a desert of barren cliffs and hills, often so extremely arid that not a spear of vegetation is to be seen for miles. The cool winds coming in from the Pacific are warmed as they reach the heated land, and since this increase in temperature increases their capacity for moisture, no rain falls near the coast—winds from the east have had to drop their moisture in crossing the Andean ranges. The result is the Chilean and Peruvian desert coast, which contrasts as remarkably with the jungles and rain forests proper to the tropics as does the temperature at sea with the familiar connotation of the word tropical.

The biological effects of the upwelling oceanic waters are of even greater importance than the effect on the adjacent land. Every living surface creature in this part of the vast Pacific must die, and sinking slowly to the bottom, must slowly decay and leave the simple chemical compounds so vital to the growth of plant life. But since plants in general require sunlight, and since sunlight penetrates only a few hundred feet of the upper stratum of the ocean, this vast store of accumulating plant food is withdrawn from the normal plant-animal-plant circulation.

THE WEB OF LIFE REVEALED

In the strip of upwelling water along the South American coast, this stored-up nitrogen and phosphorus is brought into the lighted zone, where it becomes available to plants, while the coldness of the water, with its increased capacity for carbon dioxide and oxygen is an additional factor to both plants and animals. With a basic and inexhaustible food supply, the microscopic plants of the open ocean flourish in inconceivable numbers, and the stalked algae along the coast grow to an unparalleled size. As on land, the plant life of the sea in its turn forms the basic food supply of animals. Microscopic animals feed on the myriad diatoms, to be eaten in turn by large though still minute crustaceans and other floating animals. These are fed upon by the smaller fishes, which become the food of the larger fishes and other marine creatures. Myriads of sea birds are attracted by the never-failing food supply, and sharks, sea lions, and whales end this greatest of all "food chains." We may even add man, with his fisheries, to this series; and it must be remembered that New England sailors frequented these waters for generations in search of whales.

Climate, plant life, animal life, and human relations to the environment are all interrelated and dependent in last analysis on the revolution of the earth (which produces the winds and ocean currents), and the earth's intake of sunlight. But it is only in a few regions like the Peruvian coast that the major outlines of the vast complex web of life are so simplified that we can trace cause and effect backward to the physical sources.

THINGS YOU MAY HAVE MISSED

A Rolling Stove

A way of taking a coal or charcoal fire right to bed with one on chilly nights, without endangering either oneself or the bedclothes, was devised by an ingenious Chinese hundreds of years ago. It was done by means of a cleverly contrived bed-warmer, which might be described as a rolling stove. An example dating from the seventeenth century is to be seen in the Chinese collections in George T. and Frances Gaylord Smith Hall (Hall 24, Case 24).

The device consists of a hollow sphere of brass, cut out in rosette-like designs to let air in and heat out. The sphere is composed of halves which may be fastened together for use, or separated for loading. Utilizing the same principle upon which a ship's compass is suspended on gimbals so that in whatever direction the ship may pitch or roll the compass face always comes to normal level, a round brass bowl is suspended on two hoops inside the sphere, one hoop within and perpendicular to the other. The outer hoop is riveted to two lugs, projecting from the inside of the lower hemisphere, and the inner loop moves on a pivot which connects it with the outer hoop. The bowl, which holds the burning coal or charcoal, is encircled by the inner loop.

Chinese Bedwarmer

The tops of the brazier, and of the gimbal-supported fire bowl, have been removed to show the ingenious construction of this device for safely taking a coal or charcoal fire to bed where it can be rolled around.

After the halves of the sphere are fastened together, it may be rolled or kicked about at will, and the fire-laden bowl swings freely and independently of the sphere's motion, never turning upside down. The Chinese styled the device "brazier-reclining-on-the-mattress" and "brazier-in-the-bed-clothes." Its original invention is believed to go back to a clever mechanician who lived in the first century of our era.

The late Dr. Berthold Laufer, former Curator of the Department of Anthropology, pointed out that the suspension principle used, known as "Cardan's suspension" through the erroneous attribution of its invention to Girolamo Cardano, scientific and philosophical dilettante who lived in Italy from 1501 to 1576, thus was actually known hundreds of years before him. Not only the ancient Chinese used it, but it was known to the earlier Hellenic mechanicians of the Alexandrian epoch.

GIFTS TO THE MUSEUM

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

Department of Anthropology:

From George Commons, Oak Park, Ill.—a human skeleton from gravel mound, Illinois; from the late Mrs. A. I. Ludlow, Cleveland, Ohio—112 ethnological specimens, Korea; from Charles B. Harbaugh, Jr., Chicago—a pair of Sioux sandals, a hippo tusk, and a small knife, United States and Africa.

Department of Botany:

From George Moore, Lebanon, Mo.—38 herbarium specimens, Missouri; from Dr. César Vargas C., Cuzco, Peru—95 herbarium specimens, Peru; from Rev. Brother Apolinar-Maria, Bogotá, Colombia—145 herbarium specimens, Colombia; from Bill Bauer, Webster Grove, Mo.—220 herbarium specimens, Missouri; from Dr. George H. Fuller, Springfield, Ill.—133 herbarium specimens, Illinois; from Centro Nacional de Agricultura, San Pedro Montes de Oca, Costa Rica—34 herbarium specimens, Costa Rica; from Professor J. Soukup, Puno, Peru—28 herbarium specimens, Peru; from Rev. Brother H. Daniel, Medellin, Colombia—35 herbarium specimens, Colombia; from W. A. Daily, Indianapolis, Ind.—20 specimens of algae, Indiana; from Mrs. Cloyd B. Stiffler, Chicago—14 specimens of mosses and algae, Michigan, Pennsylvania, and Illinois; from Dr. Harold C. Bold, New York—218 specimens of algae, North and South Carolina, Georgia, and Tennessee; from Dr. O. L. Inman, Yellow Springs, Ohio—10 specimens of algae, California and Nevada; from Miss Cora Shoop, Chicago—74 specimens of cryptogams, Missouri; from Donald Richards, Chicago—25 specimens of algae and mosses.

Department of Geology:

From Nolan R. Best, Chicago—2 specimens nepheline, Canada; from Loren P. Woods, Evanston, Ill.—5 specimens minerals; from R. J. Vintrup, Chicago—8 specimens minerals, South Dakota; from Charles N. Ackerman, Antioch, Ill.—vertebra and bones of fore and hind legs and feet of *Cervalces*, Illinois; from Oscar U. Zerk, Kenosha, Wis.—7 polished slices of agates, Arizona, Oregon, and Montana.

Department of Zoology:

From Ben Cascard, Chicago—2 birdskins, Indiana; from Colonel Richard Meinertzhagen, London, England—14 miscellaneous African birds; from Loren P. Woods, Evanston, Ill.—23 preserved specimens of embryonic domestic chicks, small mammals, etc.; from Schwab Brothers, Muscatine, Iowa—a bamboo partridge, Iowa; from Seymour Levy, Chicago—a lesser yellowlegs, Illinois; from Karl Plath, Chicago—a purple Guiana parrot; from The Charleston Museum, Charleston, S. C.—11 small fishes; from David W. Owens, Flossmoor, Ill.—11 amphibians and a snake, Illinois; from R. R. Robertson, Chicago—a platypus skin, Australia or Tasmania; from Mrs. Robb White, Thomasville, Ga.—5 snakes and 6 insects, Georgia; from Eugene G. J. Falck, Chicago—737 shells, 57 crayfish, 156 frogs, 4 toads, a turtle, and a salamander, Missouri; from Chicago Zoological Society, Brookfield, Ill.—7 birds; from John Kurfess, Hinsdale, Ill.—a common shrew, Illinois; from Mrs. Mabel Bowers, Chicago—a red bat, Illinois; from G. J. Kessen, Sanibel Island, Fla.—10 shells, Florida; from Dr. Henry Field, Chicago—100 shells, 43 crabs, and a sponge, Maine.

The Library:

Valuable books from Carnegie Institution, Washington, D. C.; Hallwyl Museum, Stockholm, Sweden; South African Department of Native Affairs, Pretoria; and Dr. Henry Field, Dr. Albert B. Lewis, Elmer S. Riggs, and A. B. Wolcott, all of Chicago.

Distinguished Visitors

Among distinguished visitors recently received at Field Museum are Mr. A. R. Penfold, Curator and Economic Chemist of the Sydney Technological Museum in Australia; Mr. S. Koperberg, Secretary of the Java Institute for Promoting Javanese Art and Culture, Director of the Museum Sono Boedojo, and Secretary of the School for Javanese Arts and Crafts; Mr. James T. Dye, of the staff of the New York Museum of Science and Industry; Dr. Herman Johannes Lam, Director of the National Herbarium, Leyden, Netherlands; Mr. David Lack, of London, a recognized authority on bird ecology and population; Dr. Ernst Mayr, Associate Curator of Birds at the American Museum of Natural History, New York; Dr. Levi W. Mengel, Director Emeritus of the Public Museum and Art Gallery of Reading, Pennsylvania; Dr. F. M. Pagán, head of the Department of Botany, University of Puerto Rico; Dr. Louis C. Wheeler, Department of Botany, University of Missouri; Professor Maximino Martinez, noted botanist of Mexico City, formerly on the staff of the National Museum of Mexico; Dr. Edgar Anderson, of the Missouri Botanical Garden; Dr. F. A. Barkley, of the University of Montana, and Dr. C. L. Wilson, of Dartmouth College.

NEW MEMBERS

The following persons were elected to membership in Field Museum during the period from August 16 to September 15:

Non-Resident Life Members

Miss Mary Louise Clas

Associate Members

E. W. Burbott, Mrs. John L. Gardiner, Theodore Leavens.

Annual Members

Mrs. Freeman K. Blake, Robert C. Brown, Jr., Denis P. Carey, Miss Rose A. Clark, Mrs. Cecile Coverley, George H. Dovenmuehle, Norman Eaton, Mrs. I. H. Freund, William A. Fuller, Albert B. Fulton, Mrs. Edward F. Fox, Lee J. Gary, Mrs. Nathan S. Goldstein, Ferris E. Hurd, George P. Jensen, Dr. Joseph C. Kaczkowski, Miss Anne L. Milburn, Miss Theresa J. O'Brien, Grier D. Patterson, Mrs. Charles S. Pillsbury, Mrs. George W. Powers, Mrs. Sidney L. Schwarz, Joseph J. Tumpeer, George Wolosh.

OCTOBER GUIDE-LECTURE TOURS

Conducted tours of exhibits, under the guidance of staff lecturers, are made every afternoon at 3 o'clock except Saturdays, Sundays, and certain holidays. Following is the schedule for October:

Week beginning October 2: Monday—Horned and Hoofed Mammals; Tuesday—Ores and Minerals; Wednesday—Mexico; Thursday—General Tour; Friday—Carl Akeley and His Work.

Week beginning October 9: Monday—Horses—Past and Present; Tuesday—Trees and Their Uses; Wednesday—African Cultures and Art; Thursday—General Tour; Friday—Birds as Friends to Man.

Week beginning October 16: Monday—Crystals and Gems; Tuesday—China and Tibet; Wednesday—Su-Lin and Other Asiatic Animals; Thursday—General Tour; Friday—Textiles and Fibers.

Week beginning October 23: Monday—India and Its Neighbors; Tuesday—Rocks and Their Formation; Wednesday—Plants with Curious Habits; Thursday—General Tour; Friday—Animals at Home.

Week beginning October 30: Monday—Totem-pole Indians; Tuesday—Jades and Their Uses.

Persons wishing to participate should apply at North Entrance. Tours are free. Guide-lecturers' services for special tours by parties of ten or more may be arranged for with the Director a week in advance.

MEMBERSHIP IN FIELD MUSEUM

Field Museum has several classes of Members. Annual Members contribute $10 annually. Associate Members pay $100 and are exempt from dues. Sustaining Members contribute $25 annually for six consecutive years, after which they become Associate Members and are exempt from all further dues. Life Members give $500 and are exempt from dues. Non-Resident Life Members pay $100, and Non-Resident Associate Members $50; both of these classes are also exempt from dues. The Non-Resident memberships are available only to persons residing fifty miles or more from Chicago. Those who give or devise to the Museum $1,000 to $100,000 are designated as Contributors, and those who give or devise $100,000 or more become Benefactors. Other memberships are Honorary, Patron, Corresponding and Corporate, 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.

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.

Contributions made within the taxable year, not exceeding 15 per cent of the taxpayer's net income, are allowable as deductions in computing net income for federal income tax purposes.

Endowments may be made to the Museum with the provision that an annuity be paid to the patron for life. These annuities are guaranteed against fluctuation in amount, and may reduce federal income taxes.

PRINTED BY FIELD MUSEUM PRESS

Field Museum News

Published Monthly by Field Museum of Natural History, Chicago

Vol. 10 NOVEMBER, 1939 No. 11

WILD TURKEY, LARGEST GAME BIRD, DRIVEN FROM MOST OF ITS RANGE BY MAN

By RUDYERD BOULTON
CURATOR OF BIRDS

When America was young—before express highways quartered the country, before millions of hunters roamed the fields and woods, before the forests were cut down, before distance was eliminated by new methods of transportation, in other words, before modern civilization took over the planning and ordering and destiny of all forms of life—the country was populated with a rich and teeming fauna that can be likened only to that popularly conceived in Africa's plains and forests. Finely balanced in their relationship to each other, the birds and animals, large and small, occupied almost to the saturation point the ecological niches that had existed from time immemorial. These changed so slowly that the innate adaptability of the creatures was able to keep pace with the change. Many of these "ecological niches," which abstract term is used to indicate the relationship between an organism and its environment—physical, biological, and social—have been displaced by civilization only slightly in time and space. The life in them goes merrily on. Some of the niches are all but destroyed and with them have gone, are going, or are drastically reduced in numbers, the bison and pronghorns, the passenger pigeons and Carolina paroquets, the heath hens and Eskimo curlews, the condors and turkeys. Turkeys, wild turkeys at any rate, just "can't take it!" They require a large range, adequate forests, and freedom from disturbance by the ways of man which are so annoying from the turkeys' point of view. And so, although they were exceedingly abundant once throughout the eastern states, they now occur east of the Mississippi only in the forested mountains from Pennsylvania to North Carolina, and in the cypress swamps, cane brakes and pine woods of the deep south. In the southwestern states, where man has not yet become such a dominant feature of the environment, turkeys range more nearly as they originally did. Before the advent of the white man, turkeys occurred commonly from southern Maine to Florida, and from the Dakotas south along the eastern Rockies to the tableland of central Mexico. In 1517 Francisco Fernandez encountered turkeys domesticated by the natives in large numbers on the north coast of Yucatan. It is interesting to note that this first published account refers to a domesticated bird—not to the wild bird, which never ranged so far south. Thus it is seen that some Indians as readily recognized the economic value of this largest of all game birds as did the European invaders. The first wild turkeys in what is now the United States were reported by the Coronada Expedition in 1540 from Taos, New Mexico. This exploring party found the Pueblo Indians using turkey feathers extensively in ceremonials and in making prayer stick offerings.

Wild Turkeys

On such birds as these the Pilgrim fathers feasted in inaugurating the Thanksgiving custom. Wild turkeys formerly flourished in the Chicago area, and in forty states from the Atlantic to the Dakotas, and from Maine to Mexico—only the extreme western states lacked them. But as human population has spread and increased, they have rapidly vanished from all but a few retreats in the more southern and western portions of their former range. This habitat group, in Hall 20, a gift from Mr. Stanley Field, President of the Museum, represents a scene in Louisiana forests which afford one of the present refuges of the bird. The illustration is reproduced from a natural color photograph made by Mr. Clarence B. Mitchell, Research Associate in Photography at Field Museum. The Museum plans to publish a book containing forty or more similar color pictures of outstanding exhibits in all Departments of the institution, all products of Mr. Mitchell's camera artistry, and to be printed from plates contributed by him.

Champlain in 1604 was the first to report our eastern turkeys, and shortly thereafter the Pilgrims used them as the *pièce de résistance* of the first Thanksgiving feast. So important has this holiday and ceremony become to the American people, and so firmly rooted in tradition, that a great schism has arisen in the country this year, and two Thanksgivings may be celebrated in some communities—one by those who follow the customary last Thursday of November, and one by those who follow the date set one week earlier for 1939 by the President's proclamation.

About six varieties or subspecies of the wild turkey are recognized in addition to the distinctive ocellated turkey of the Yucatan peninsula. The principal differences among these races are in size, barring of the wing quills and, most important, in the color of the tips of the

feathers of the rump and lower back. The eastern varieties have deep rich chestnut colored tips to the feathers. The farther south and west one goes, the lighter these become until they are almost white in Mexico. From this character one can be sure that our domesticated turkeys are derived wholly from the Mexican birds that were taken to Europe by the conquistadores. The darker and larger wild turkey of the eastern states was not much involved in the development of the various kinds of domesticated turkeys. The most common variety is the bronze turkey. Buff, black, white, and steel gray varieties are also propagated.

On the average, none of the domesticated varieties are as large as the eastern wild turkey. An old gobbler of the latter form frequently weighs as much as thirty pounds. It might be expected that such heavy birds would not be strong fliers. Yet, of their own free will, they always roost in trees to which, of course, they must fly. When alarmed, a turkey's first method of escape is by running, but when closely pressed and really frightened it readily takes to the wing and flies across wide rivers and mountain valleys with ease.

Few birds are more alert and wary than a wild turkey. Their sight and hearing are especially keen, and at the slightest suspicion of danger they take themselves to safer places. For this reason, if for no other, turkey hunting probably requires more skill and woodcraft than any other kind of hunting in North America. Turkeys are sometimes shot at dusk or dawn while they are roosting. That, of course, can hardly be called hunting in the true sense of the word. Any hunter who successfully stalks a wild turkey, or who knows enough "turkey talk" to succeed in having one respond to his call, must be regarded as an especially qualified woodsman.

The voice of a turkey, aside from the "gobble" of the cocks during the strutting season, is quite disproportionate to its size and noble bearing. It is quite a plaintive "peeping" that can be readily imitated by a piece of slate on a hardwood box, a whistle made from a turkey's hollow wing bone, or even by a blade of grass. The nuances of tone, inflection and timing are as obvious to the turkey's ear as the various American dialects are to our ears. The slightest false note gives the deception away and the turkey stealthily vanishes.

The habitat group of wild turkeys in Hall 20 was prepared by Staff Taxidermist Julius Friesser, and has a background painted by the late Charles A. Corwin, former Staff Artist. Field Museum's Zoological Leaflet No. 6, *The Wild Turkey*, by Mr. John T. Zimmer, formerly Assistant Curator of Birds, gives many interesting details of turkey history, turkey lore, and turkey habits that limited space prevents discussing here.

SATURDAY LECTURES FOR ADULTS CONTINUE THROUGH NOVEMBER

Four more lectures in Field Museum's free Autumn Course for adults remain to be given on Saturday afternoons during November. All are to be illustrated with motion pictures or stereopticon slides. The lectures are given in the James Simpson Theatre of the Museum, and all begin at 2:30 P.M. Admission is restricted to adults. Following are dates, subjects and speakers:

November 4—Wonders of Plant Life
Arthur C. Pillsbury, Berkeley, California

November 11—What is Biblical Archaeology and Why?
Dr. Nelson Glueck, Director of American School of Oriental Research, Jerusalem

November 18—The Tundra Speaks
Dr. Arthur C. Twomey, Carnegie Museum

November 25—Stratosphere Exploration
Major Chester L. Fordney, Great Lakes, Illinois

No tickets are necessary for admission to these lectures. *A section of the Theatre is reserved for Members of the Museum, each of whom is entitled to two reserved seats on request.* Requests for these seats may be made in advance by telephone (Wabash 9410) or in writing, and seats will be held in the Member's name until 2:30 o'clock of the lecture day. Seats not claimed by 2:30 will be made available to the public.

"ALCOHOL" WAS ONCE THE NAME OF A SOLID MINERAL

By L. BRYANT MATHER, JR.
ASSISTANT CURATOR OF MINERALOGY

To say that the name *alcohol* was once properly used only for a mineral species may sound very strange—indeed, some question may be raised as to the writer's personal familiarity with the substance that has now usurped that name. Yet, when the word came to Europe in the sixteenth century, from the Arabic, it was as a mineral name. The mineral thus designated is now known as *stibnite*, and fine specimens of it are to be seen at Field Museum in Hall 34 (Cases 7 and 11).

This mineral, long known, has been used as a cosmetic since ancient times. Stone receptacles and bronze applicators for this substance were used by the Egyptians (2000 B.C.—300 A.D.). Examples of these objects, known as *kohl jars* and *kohl sticks*, may be seen in Hall J (Archaeology of Egypt, Case 32). Among the Greeks it was known as πλατυοφθαλμον from πλατυς meaning *wide* and οφθαλμος meaning *eye*, since the powdered mineral was used to increase the apparent size of the eye. Among the Arabs it was known as *kohl*, from *kahala*, meaning to color or to stain. In the theatrical profession the black powder used for blackening the eyelids is still called *kohl*, perhaps the only vestige in contemporary language of the original Arabic usage. The earliest use of the word *al-kohl* (*kohl* with the definite article *al*) seems to have been in 1623 by Minsheu, who wrote: "Alcohol is a drug, sometimes called antimonium, used to color the eyebrows." Francis Bacon in 1626 wrote: "The Turkes have a Black Powder, made from a Mineral called Alcohole, which, with a fine long pencil they lay under the Eyelids." Thus, as a mineral name, the word "alcohol" was introduced into Europe.

Before the science of mineralogy, and its nomenclature, became systematized, the word had changed in meaning and, in effect, the mineral had lost its name. Alcohol became a general term for all sublimed powders and later for all distillates. In these stages of the evolution of the word we find phrases such as "alcohol of sulphur" and "alcohol of wine" being used for sublimates and distillates. In the last century the use of the word has again been restricted by chemists, not to a mineral species, but to a class of organic compounds containing the *hydroxyl group* (OH). The best known of these are methyl (wood) alcohol CH_3OH, and ethyl (grain) alcohol C_2H_5OH.

What then, we may ask, happened to the mineral after its name had been lost through these devious changes? Among the Greeks there seem to have been other names that were applied both to the mineral and to the metal antimony extracted from it. These names were στιβι (stibi) and στιμμι (stimmi). The Latin language took over στιβι and made it *stibium*, as a name for the metal antimony, from which term we derive the present chemical symbol of the element—Sb. Thus when F. S. Beudant, the French mineralogist, in 1832, was looking for a new name for the mineral he decided to call it *stibine*. The English name *stibnite* was given by J. D. Dana, the American mineralogist, in 1854, as a modification of Beudant's name.

THIS MONTH AT THE MUSEUM

From various schedules which will be found in this issue of FIELD MUSEUM NEWS, it will be seen that there are special events scheduled for the entertainment and instruction of Museum visitors every day during November. On Saturdays, in the morning there will be the Raymond Foundation motion picture programs for children, and in the afternoon the illustrated lectures on science and travel for adults, both presented in the James Simpson Theatre. On Sunday afternoons there will be the lectures and tours conducted by Mr. Paul G. Dallwig, the Layman Lecturer. Daily from Monday to Friday inclusive there will be presented guide-lecture tours conducted by members of the Museum staff.

A "MIRACULOUS" METEORITE OF ARAB LEGEND

By HENRY W. NICHOLS
CHIEF CURATOR, DEPARTMENT OF GEOLOGY

A slice of a meteorite which, according to an ancient Arabian legend, was a block of gold when it fell to earth, and was twice changed by God—once to silver, and finally to iron—as a punishment to tribes who quarreled over its possession, was recently acquired by Field Museum. It is now on exhibition in Hall 34 which contains the world's most comprehensive meteorite collection.

The true history of this meteorite, known as the Tamentit iron, although not as strange as the Arabian Nights type of tales told about it by the natives of the region where it fell, is nevertheless also extraordinary. It arrived on the earth hundreds of years ago near the Tamentit oasis in the Touat, Sahara Desert, and it is the oldest iron meteorite, actually seen while falling, which has been preserved, according to the records.

THE LEGENDARY STORY

For hundreds of years this meteorite has been the mascot of the people of the Tamentit oasis, and if we could only believe all that is told of it in an old, undated Arabian manuscript it would be the most extraordinary object in Field Museum or any other museum. According to this manuscript, called El Bassit, a block of gold fell between Noum in Nas and El Tittaf in the Sahara during the time when the Oulad Nesslem, the Oulad Yacoub, and the Oulad Daoud occupied Tamentit. Each of these peoples prepared to take it home, but each encountered the opposition of the others. Quarrels arose, and God changed the gold to silver. As the quarrels continued, God next changed the silver to the iron of which the meteorite is now composed.

THE AUTHENTIC HISTORY

Digging into its authentic history, we find that the Tamentit iron fell toward the close of the fourteenth century—the exact year is not known. Sometime between 1392 and 1413 it was brought by order of the Sheik Amr' to Tamentit. Here it lay in the street in front of the mosque, projecting sixteen inches above the ground in which it was partly buried from about 1400 to 1827, when it was moved to France. Because the Arabs believed it to be a mascot of great virtue and importance they had constantly avoided touching it as far as possible, and tried to prevent animals also from touching it. Before the French could obtain the consent of the natives to take it away, they found it necessary to conduct long and difficult negotiations, lasting more than two years. After consent was obtained difficulties were encountered in transporting it from the desert over 1,000 kilometers to the coast. However, these were overcome and in 1827 the meteorite reached Paris, where most of it now rests in the National Museum.

Complementing Field Museum's specimen representing the Tamentit meteorite as the first iron meteorite ever seen to fall and afterwards to be preserved, the institution also has a piece of the Ensisheim (Alsace) meteorite which was the first stone meteorite ever preserved after being seen to fall. The Ensisheim stone fell in 1492, or about one hundred years after the Tamentit iron arrived on the earth.

Change in Visiting Hours

Effective November 1, and continuing until February 29, winter visiting hours—9 A.M. to 4 P.M.—will be observed on weekdays at Field Museum; 9 A.M. to 5 P.M. on Sundays.

Proceedings, transactions and publications of learned societies and universities throughout the world are among the books available to the public for reference in the Library of Field Museum.

THINGS YOU MAY HAVE MISSED

Something to Think About on Thanksgiving Day

Whether you celebrate Thanksgiving on the traditional last Thursday of the month, or in accordance with presidential and gubernatorial proclamations which vary from that date, it is of interest to reflect how purely American this holiday is. Even the foods used in a typical Thanksgiving feast are practically all native to this country, and were unknown in Europe prior to the opening of the New World—the plant foods, as well as the turkey (regarding the latter, see *page 1*).

The important part the discovery of America played in augmenting the world's variety of foodstuffs is impressively illustrated in an exhibit of food plants of New World Origin in Hall 25 of the Department of Botany. By means of this display a visitor is enabled to see at a glance which of the numerous vegetables and fruits in common use originated on this continent. A large proportion of these are to be found at almost any Thanksgiving dinner-table.

Dr. B. E. Dahlgren, Chief Curator of the Department of Botany, writes:

"On his first voyage to the New World, Columbus found the inhabitants using vegetables that were strange to him, especially some starchy tubers, probably sweet potatoes and cassava. He carried these back to Spain and presented them to Queen Isabella, together with other products of the newly found land. The incident marked the first introduction of American food plants into the Old World, an event of considerable significance to the world's dietary, which has America to thank for many important contributions.

"After Columbus, the early explorers and conquistadores found other food plants in use and cultivation among the New World inhabitants, especially the Aztecs of Mexico and the Incas of Peru. Cortez made the first acquaintance with chocolate and vanilla at the court of Montezuma.

"Early settlers in North and South America soon learned to use many of the vegetable foods of the Indians, such as corn, pumpkins, squashes, and cassava. Certain of the newly discovered food plants spread rapidly over most of the world. This was true of the peanut, which was carried to Africa from the east coast of South America, and to the Orient from the west coast, early in the history of world-wide navigation. Some American food plants, such as potatoes, were first carried to Europe and developed in cultivation there before coming into general use among the new population in the land of their origin. Others, such as tomatoes, were very slow in becoming adopted.

"The tomato was grown in Europe for several centuries as a curiosity and ornamental plant known as 'pomme d'amour' or 'love apple,' before it became, rather recently, the important food that it is today, with its juice also a popular beverage."

Food Plants of New World Origin

An exhibit in Hall 25 which enables a visitor to comprehend at a glance America's vegetable and fruit contributions to the world's diet. All of these plant foods were unknown in Europe prior to Columbus's voyages. Many will appear on typical Thanksgiving dinner tables throughout the United States this month.

Included among the products on display are maize or Indian corn, potatoes, sweet potatoes, tomatoes, pimentoes, Jerusalem artichokes (which are the roots of a western sunflower), pumpkins, squashes, lima and kidney beans, cassava (which in the United States is best known in the form of tapioca), peanuts, cranberries, persimmons, papaws, papayas, avocado, pineapple, cacao, and vanilla. Uncommon products are omitted.

SOUTHWEST EXPEDITION TRACES "LOST PERIOD" CULTURE

(Editor's Note:—The Field Museum Archaeological Expedition to the Southwest, sponsored by Mr. Stanley Field, President of the Museum, recently concluded its operations for the 1939 season. Excavations and researches were conducted for about five months on sites of habitations of prehistoric Indians in the Mogollon and San Francisco Mountains in southwestern New Mexico. This is the ninth expedition to the Southwest under the leadership of Dr. Paul S. Martin, Chief Curator of the Department of Anthropology. Following is a report which outlines some of the expedition's principal accomplishments this year, and indicates the relation of its discoveries to the whole sequence of the region's archaeology.)

Evidence has at last been found, as a result of operations in 1939 by the Field Museum Archaeological Expedition to the Southwest, which may lead to the bridging of a 1,500 year gap in our knowledge of the culture of an ancient people who lived in Arizona and New Mexico.

Dr. Paul S. Martin
Chief Curator, Department of Anthropology, and leader of nine Field Museum Archaeological Expeditions to Southwest Indian sites.

To obtain the proper background for consideration of this evidence, and an appreciation of its place in the reconstruction of cultural history, it is of value to review briefly what is known of periods preceding the gap. Some 18,000 years ago the last Pleistocene ice sheet in Canada was so reduced that an ice-free corridor formed at the eastern foot of the Rocky Mountains. Through this corridor some of the Asiatic peoples shortly found their way into territory now occupied by parts of the United States.

10,000-YEAR-OLD RECORDS

Evidence of early immigrants is present in southeastern Arizona, and has been studied by archaeologists of the Gila Pueblo Archaeological Institution of Globe, and the Carnegie Institution of Washington. The records occur in beds exposed by the modern arroyo erosion. They include handstones, milling stones, stone axes, and knives, which occur in association with bones of extinct horses, bison, camels, dire wolves and mammoths. In the hearths of the dwellings of these people is found charcoal of which part is of hickory logs, although trees of this kind now grow no closer than some 700 miles to the east. The ancient people camped on the sandy flood plain of a permanent stream during the Pluvial period which came to a close some 10,000 years ago.

In beds overlying the oldest human records there are artifacts belonging to cultural stages dated by researchers tentatively at about 3000 B.C., 1500 B.C., and 500 B.C. The stage of 500 B.C. yields the first pottery, and evidence, in the form of corn remains, of the beginning of agriculture. The stone artifacts are plainly developed from earlier types, while the pottery is of a very primitive sort, derived from the stone objects. Between the appearance of the first primitive pottery in 500 B.C. and the advanced forms of painted pottery and highly developed villages in A.D. 1000, all trace of these people has been lacking.

Problems facing the archaeologists were: What sort of growth took place in these 1,500 years? What were the stages of development from the primitive to the sophisticated? The answers have been hidden by this gap of 1,500 years with nothing as yet uncovered to contribute to our knowledge of the period.

The Field Museum expedition of 1939 (ninth season of operations), working in southwestern New Mexico some eighteen miles from the Arizona line, has uncovered evidence of a culture that may lie in the early part of the gap period. Pit houses of a former village, excavated by the expedition, represent a very ancient type of dwelling brought over from the Old World where it was very common. Such houses are found in northern Europe, across Siberia, and in China, and the idea for this type of construction may have been brought to the New World anywhere from 40,000 to 10,000 years ago. A pit house consists of walls sunk two to three feet below the ground level, roofed over by boughs and hide supported by six-foot posts. The floors are smooth hard-packed dirt, and the entrance is generally a low passage opening to the east. This is also characteristic of the Old World pit houses and may have been in accordance with the dictates of a cult or merely for warmth.

Enough pottery fragments were found by the expedition to piece together two jars and a bowl. Hundreds of unrelated sherds were also collected. The scarcity of complete pottery is probably due to the fact that working in clay was still a new technique to the people inhabiting this region during this period. The shapes are simple and entirely without decoration. The technique used is clay spirals without benefit of the potter's wheel. The color throughout is dark brown-red.

SHELL BRACELETS ON SKELETON

Burials found by the expedition are related in type to previously known cultures designated by archaeologists as Cultures IV and V. Skeletons were found in flexed position, one to a pit, individuals being buried in the houses in which they had lived. The careful placement indicates a high regard for the dead. On the arm of one skeleton was found a series of four marine shell bracelets. This would indicate that at this period there must have been at least indirect trade with the people of the Pacific coast.

Nothing can be deduced about the cults and ceremonies of these people. However, one anthropological observation may hold here: that the more primitive the material culture of a people may be, the more elaborate are their cults and ceremonials. But these particular people have left nothing behind that the archaeologist may regard as a clue indicating more than that they, like their earlier brothers, were hunters, probably a poor and peaceable people, and that they had to contend with the exigencies of stern elements for food and shelter.

LARGE SCALE FUR TRAPPING REPORTED IN ILLINOIS

Not generally recognized is the fact that Illinois ranks fairly high among the states most important in supplying animal furs for commercial use. That this is so, however, is revealed in a recent publication of the Bureau of Biological Survey of the United States Department of Agriculture, under the title *A Survey of the Annual Fur Catch of the United States* (Wildlife Research and Management Leaflet BS-140). According to this survey, during the last year for which statistics are available (1937), the numbers of various fur animals taken in Illinois were as follows:

Fox, red and gray	3,926
Mink	21,593
Muskrat	323,895
Opossum	25,519
Raccoon	6,281
Skunk, common large	30,426
Total	411,640

The state reporting the largest take of pelts is Louisiana with 2,546,820. Second comes Ohio with 2,530,800. Information, in many cases not regarded as complete or satisfactory by the Bureau of Biological Survey, was supplied by forty-one states and Alaska. Excerpts from the leaflet follow:

"The conservation of fur animals in the United States is as much a matter of public concern as is the conservation of any other of the natural resources of the country. The administration of fishes and game may rest with either the state or federal government, but fur animals are generally recognized as the property of the individual states. The maintenance of fur supplies, therefore, must be brought about through the enactment and enforcement of state laws. . . .The states are entitled, therefore, to know how much of their natural wealth in the form of fur is taken every year. . . . One of the most important features of present-day legislation" (which the leaflet indicates has not yet been adopted in many states) "is that requiring trappers to make annual reports on the number of each species taken. . . .The data to be obtained from these reports would provide the material for a factual survey of the annual kill and of its relation to the breeding supply, or capital stock, as it may be considered. It is on such surveys that protective measures should be based."

TO COLLECT PLANTS IN MEXICO AND U. S. SOUTHWEST

Dr. Francis Drouet, Curator of Cryptogamic Botany at Field Museum, and Mr. Donald Richards, of the Hull Botanical Laboratory, University of Chicago, left Chicago October 7 on an expedition into the southwestern United States and northwestern Mexico. The primary aim of the expedition is to make an investigation of the algae and bryophytes (mosses) of the region, with special reference to that type of flora along the Gulf of California. Collections of all other groups of plants will be taken also. A week will be spent at Las Vegas, New Mexico, for study of the flora of hot springs in the vicinity. Another week will be devoted to collecting in the area about Tucson, Arizona. The itinerary will then continue into the Mexican state of Sonora, with stops at points between Nogales and Hermosillo, and between Hermosillo and Guaymas. With the two latter cities as bases, short trips will be undertaken along the coast and into the mountains and desert. If time permits, the lakes of northern Lower California will also be visited. Dr. Drouet and Mr. Richards are expected to return to Chicago in January, 1940. The expedition is sponsored by President Stanley Field.

COLORADO EXPEDITION RETURNS WITH NOTABLE COLLECTION

The Field Museum Paleontological Expedition to Colorado returned to the Museum last month with a large collection of fossil vertebrates from the western part of that state. The greater part of the season was spent working in the Plateau Valley beds, a late Paleocene formation which has been the scene of Field Museum operations at various times since 1932.

Bryan Patterson
Assistant Curator of Paleontology, and leader of fossil hunting expeditions to the American west in 1939 and several other years.

The most important discovery made by the expedition was a rather extensive deposit of bones representing a new genus of the order Pantodonta, sufficient, it is hoped, to permit the mounting of a skeleton. This group of ungulates, or hoofed animals, was the first among the mammals to achieve large size in the era that followed the disappearance of the dinosaurs. The new animal is a relative of *Barylambda*, skeletons of which were obtained by the expeditions of 1932 and 1933. From an examination of the material as collected in the field it may be tentatively estimated that the skeleton will be between six and seven feet long, and will stand between three and four feet high. The animal was very powerfully built with a small head and massive limbs. Like all its relatives it was a vegetarian.

The method of excavating this find differed somewhat from the usual collecting procedure. The bones were discovered cropping out along one side of a small clay ridge some sixty feet long and twenty-five feet high. This ridge was capped by six feet of hard sandstone, the specimens occurring at the junction of the sandstone and the clay. The latter being softer than the former, it was found easier to mine under the sandstone than to cut through it. The clay was blasted out with dynamite. Then with the roof supported by timbers, members of the party were enabled to sit in the cool of their "mine" and comfortably chisel the bones out of the roof.

Other specimens collected by the expedition include two partial skeletons of *Barylambda*, a partial skeleton of a taeniodont, and fragmentary remains of the smaller animals of the time. Of particular interest among the latter are some jaws of early primates, members of the order to which man belongs.

The personnel of the party consisted of Mr. Bryan Patterson, Assistant Curator of Paleontology, Mr. James H. Quinn, Assistant in Paleontology, Messrs. Robert G. Schmidt, and Paul Clark, of Homewood, Illinois, and Messrs. Leonard C. Bessom and Harold Pearson, of Chicago.

Raymond Foundation Co-operates in School Radio Work

The James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures is again co-operating, as in 1938 and the spring of this year, with the Public School Broadcasting Council. Special programs are presented at the Museum as "follow-ups" to the Council's science radio programs. Two such radio follow-ups were given last month—"Grasses and Forage Plants" on October 4, and "Famous Trees" on October 25. Informal meetings were held in the Lecture Hall of the Museum for representative pupils selected from the upper grades of many schools. More than 200 attended the first program. Mimeographed sheets containing text and drawings pertaining to the subjects under discussion were distributed to the children. After the meetings the children were conducted on tours of the halls containing related exhibits.

Balsa

Balsa wood, light and soft like cork, is obtained from various species of ochroma. This tree grows in the lowlands of Central and South America and the West Indies, and is used by the natives to make unsinkable rafts. An exhibit of balsa may be seen in Case 870, Hall of Plant Life (Hall 29).

SUNDAY "LAYMAN LECTURES" TO FEATURE GEMS

The third annual season of Sunday afternoon lecture tours at Field Museum, conducted by Mr. Paul G. Dallwig, the Layman Lecturer, will begin on November 5. On the four Sundays in November Mr. Dallwig's topic will be "Gems, Jewels and 'Junk.'" In connection with this lecture he will take his hearers through the gem exhibits in H. N. Higinbotham Hall, and in other halls of the Department of Geology. He will trace for his audience the progress of precious and semi-precious gem-stones from their original home in the mother-rocks to their ultimate resting place in a jewelry store, milady's personal jewel chest, or a museum. He will explain the rise of superstitions that led to the customs of wearing gems as charms to avert evil and illness, to induce good luck, and to further the cause of love. He will also describe the methods of producing imitation and synthetic gems, and give instructions on how gems may be tested to prove their genuineness or artificiality.

As each Sunday tour is necessarily limited to 100 adults (*children cannot be accommodated*), it is necessary to make reservations in advance by mail or telephone (Wabash 9410). Lectures begin promptly at 2 P.M., and end at 4:30. During a half-hour intermission midway in the tours, members of the parties wishing to do so may obtain refreshments in the Cafeteria, where they may also smoke. Special tables are reserved for the groups.

On Sundays in December Mr. Dallwig's subject will be "The Parade of the Races," on which the tour will cover the famous Races of Mankind sculptures by Malvina Hoffman. In January the subject will be "Romance of Diamonds from Mine to Man," and in February, "Prehistoric Monsters in Nature's 'March of Time.'" Other changes of subjects will be announced for each succeeding month up to and including next May.

New Guinea House Ornaments

A collection of New Guinea house ornaments is on exhibition in Joseph N. Field Hall (Hall A). Each family has certain designs, more or less elaborate, with which they decorate not only their houses, but their implements, canoes, and other objects, large and small. The designs are inherited, and no one else has the right to use them unless such a right is purchased—thus they might be said to be protected by a primitive form of patent, like a registered trademark.

FROM THE DIRECTOR'S DESK—

The Layman Lecturer

For the past two seasons Field Museum has offered a series of Sunday afternoon lecture tours given by "The Layman Lecturer." The membership of the Museum should be fully informed about these lectures, and particularly about the lecturer.

Daguerre Studio, Chicago

Paul G. Dallwig, the Layman Lecturer

The Layman Lecture Tours actually began as a personal hobby. Prior to the fall of 1937 Mr. Paul G. Dallwig had developed the habit, born of his interest in Field Museum, of bringing in groups of personal friends on Sunday afternoons. When these repeated visits were brought to my notice, I sent an invitation to Mr. Dallwig to call upon me and tell me of his work. As a result of this interview I persuaded Mr. Dallwig to include in his informal groups not only his own friends but a much larger group of friends of Field Museum. It was felt that Mr. Dallwig, being closely associated with men in the business and professional life of Chicago, might have a different point of view in the presentation of the wealth of scientific information available at Field Museum. The experiment, now two years old, has amply indicated the correctness of this belief.

When the new series of lectures became known, they soon achieved such popularity that a limitation had to be placed on the size of the groups. Reservations were required in advance, and still the demand exceeded the approved size of group-lecture parties to the extent that many persons were unable to obtain reservations, although Mr. Dallwig spoke to groups averaging 84 in attendance during the entire past season.

The reasons for this phenomenal showing might well be worked into a typical success story. First of all, Mr. Dallwig carries into his work an enthusiasm and a desire for accurate information which would do credit to a true professional scientist. His research among his chosen subjects includes the facilities of his own splendid library, the library and collections of Field Museum, and frequent interviews with members of the Museum staff. He spares neither time nor effort in the preparation of his scripts, and he weaves into them material of great "human interest." His objective is to disseminate accurate scientific information in a non-technical manner and in terms readily understood and appreciated by his audience.

Mr. Dallwig believes that a good title is an asset in any lecture series. Certainly the interest shown seems to bear out his contention. "Digging up the Caveman's Past" is more alluring than "The Life of Prehistoric Man," and "Nature's 'March of Time'" seems more intriguing than "Prehistoric Life as Revealed by Fossils." His fascinating story on precious stones bears the title, "Gems, Jewels and 'Junk.'" His scripts are prepared in a similarly interesting and non-pedantic style.

I would feel that I had not properly completed this story if I did not emphasize the fact that Mr. Dallwig's activities for Field Museum are wholly unselfish. He receives no compensation, direct or indirect, from either the Museum or his audience. He is making a truly notable contribution in public service and in the dissemination of scientifically correct information.

—CLIFFORD C. GREGG, *Director*

Field Museum Participates in Television Programs

In recent weeks Field Museum has participated in a series of experimental programs of an educational nature over the television station (W9XZV) of the Zenith Radio Corporation.

The staff lecturers of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures were speakers on these programs. They were televised while giving their talks, as were also the stereopticon slides, exhibition objects, living animals, and motion pictures they used to illustrate their subjects. The first program, "Introduction to Field Museum, Its Exhibits and Activities," was presented by Mrs. Leota G. Thomas; "The Story of the Earth" was given by Miss Marie B. Pabst; Miss Miriam Wood spoke on "Native American Food Plants"; Mr. Loren P. Woods on "Life Stories of Snakes"; Miss Elizabeth McM. Hambleton on "Hunters, Herders and Farmers," and Miss Margaret M. Cornell, Chief of the Foundation, concluded the series with "Expeditions and Their Value to Chicagoans."

Officials of the Zenith corporation expressed themselves as highly pleased with the Museum's contributions to this new type of educational venture. The success of the undertaking indicates a broad field for this work in the future when television facilities are further developed.

Staff Notes

Mr. Sharat K. Roy, Curator of Geology, has been on a trip through the east during which he visited various important museums and universities to check the results of his research on the paleontology of Baffin Land with the work of other paleontologists. Mr. Roy's studies in this field were undertaken through his participation in the Second Rawson–MacMillan Subarctic Expedition.

Mr. L. Bryant Mather, Jr., Assistant Curator of Mineralogy at Field Museum, has been given an honorary appointment, as Associate Curator of the Department of Mineralogy of the Natural History Society of Maryland, at Baltimore.

Staff Taxidermist John W. Moyer recently lectured on "Behind the Scenes in a Museum" before the Cincinnati Art Club.

A FEW FACTS ABOUT FIELD MUSEUM

Field Museum is open every day of the year (except Christmas and New Year's Day) during the hours indicated below:

November, December,
January, February ....9 A.M. to 4 P.M.
March, April, and
September, October ...9 A.M. to 5 P.M.
May, June, July, August.9 A.M. to 6 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 Museum's Library is open for reference daily except Saturday afternoon and Sunday.

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

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

Free courses of lectures for adults are presented in the James Simpson Theatre on Saturday afternoons (at 2:30 o'clock) in March, April, October, and November.

A Cafeteria serves visitors. Rooms are available also for those bringing their lunches.

Chicago Motor Coach Company No. 26 busses provide direct transportation to the Museum. Service is offered also by Surface Lines, Rapid Transit Lines (the "L"), interurban electric lines, and Illinois Central trains. There is ample free parking space for automobiles at the Museum.

SPECIAL EXHIBIT OF BIRDS FROM BISHOP COLLECTION

As reported in the October FIELD MUSEUM NEWS, the famous Bishop Collection of some 50,000 North American birds was recently acquired for addition to the study collections of the Department of Zoology. Last month a special exhibit of unusually interesting birds, selected from this collection, was placed in Stanley Field Hall, where it will remain until November 30. Aside from the inherent interest of the birds chosen for display, this exhibit is designed to demonstrate to the layman the various purposes and values, from the ornithologist's viewpoint, of assembling such huge and comprehensive study collections, and to indicate some of the results obtained from researches conducted as a result of their availability.

GEOGRAPHIC VARIATION IN A SPECIES

One section of the exhibit illustrates the geographical variation which occurs in various parts of the range of a bird. This is one of the most important purposes for forming large collections with complete data recording the known history of each specimen. In the exhibit the song sparrow has been chosen to illustrate the phenomenon of variation, the species shown including the Aleutian song sparrow from the Aleutian Islands near Alaska; the Yakutat song sparrow of southeastern Alaska; the Dakota song sparrow of southeastern Saskatchewan to northeastern North Dakota; the rusty song sparrow, which is found from British Columbia to Oregon; Samuel's song sparrow of west-central California; the eastern song sparrow, found from Manitoba and Quebec to Georgia; the mountain sparrow, ranging from Montana to New Mexico, and the desert song sparrow, which inhabits the regions from southern Nevada to southwestern Arizona. These birds demonstrate the plasticity of the species and the changes which occur according to the nature of their habitats. Thus, the desert form of the song sparrow is very pale, while those subspecies inhabiting humid regions are very dark. There is also a tendency among many species to develop increased size in northerly habitats, which is especially well illustrated by the Aleutian song sparrow. To compare this form with the desert race might lead one to think they are entirely different species, but that this is not so is proved by their intergradation with forms geographically intermediate.

SPECIATION, AND BEAUTY

The phenomenon of speciation is illustrated by several small birds of the genus Passerina. In no other closely related group of North American birds is there so much variation in color as in these, states Curator Boulton. The species shown are the indigo bunting, lazuli bunting, beautiful bunting, and painted bunting. The last named thoroughly merits the designation "painted," and it is considered by many ornithologists to be the most beautiful of all North American birds. The many colors with which it is resplendent, and the intense quality of these colors, make it a superlative example of the artistry of Nature.

SEASONAL CHANGES IN COLOR

Seasonal variations in the color of the scarlet tanager are demonstrated by a series of specimens showing three nestling stages of this bird from the egg to juvenal plumage, followed by the male's first winter plumage stage, the first prenuptial stage of the following spring, the first male nuptial plumage, the male adult winter plumage, and the adult breeding plumage. A specimen illustrates also the female's adult plumage which, although the feathers change just as often as the male's, shows practically no variation in color. Most birds do not develop differences as striking as those of the scarlet tanager, but there are significant changes in all of them, Mr. Boulton declares. These may be due to a change of feathers (molting), fading, and wearing of the feather tips. In the case of the scarlet tanager, molting is the cause.

HYBRIDIZATION ILLUSTRATED

Another section of the exhibit illustrates hybridization in the genus Vermivora. Shown are two hybrids of the golden-winged warbler and the blue-winged warbler. The Bishop Collection contains what is probably the finest representation of this group in the world.

LARGEST AND SMALLEST BIRDS

A feature of the exhibit is the striking contrast in size afforded by comparison of North America's largest bird, the California condor, with the continent's smallest bird, the calliope hummingbird. It would take approximately 5,000 of the latter to equal the condor in weight and bulk.

RARE AND EXTINCT BIRDS

Finally, a section of the exhibit is devoted to some of the rare and extinct birds represented in the Bishop Collection. Most specimens of such birds in museums today were collected when the various species were common—now they can only be obtained through the acquisition of old private collections such as this one assembled by Dr. Louis B. Bishop, of Pasadena, California. The extermination of a species often involves many complex factors, but in many cases it can be attributed to Man and his ruthless destruction of wild life, says Mr. Boulton. Included in this section of the exhibit are specimens of the heath hen, passenger pigeon, Carolina paroquet, Eskimo curlew, ivory-billed woodpecker, and Guadalupe petrel. It is only through the preservation in museums of the few existing specimens of extinct birds that future generations can really know what they were like—birds that once existed in hordes and that have succumbed to Man's thoughtlessness and greed.

TWINS IN AFRICA

By WILFRID D. HAMBLY
CURATOR OF AFRICAN ETHNOLOGY

In Hall D, Case 9, is a small wooden figure of a type carried by a Negro mother when one of her twins has died. She gives the explanation that the remaining twin, feeling lonely, might also die. If the surviving twin nevertheless dies later, the wooden companion is buried with him.

Among the Ovimbundu tribe, of Portuguese West Africa, twins are not unwelcome, but they are somewhat feared. The medicine-man carries out rites for purifying the mother of twins, and he gives her protection against evil influences by providing a small horn which she hangs around her neck. This she has to blow when crossing a river, when meeting a group of people, or if she sees a hawk flying overhead. There is a good deal of good-natured joking with the mother of twins, and an inquiry concerning the "litter" is met with loud laughter. To all this she replies jokingly and with a shake of a special rattle which she substitutes for the ordinary oral greetings.

The regard of the Ovimbundu for twins is not a true indication of the general Negro attitude. African customs have been modified under European administration, but in former days the birth of twins was often followed by their execution, and that of the mother also. In some tribes only the twins were killed; sometimes one of them was permitted to live. Customs varied locally.

In some tribes a special form of burial is given if both twins die. They are buried at cross-paths, which is a form of interment given also to suicides and to people who have been killed by lightning.

A wide survey of tribes south of the river Zambezi indicates that only a few tribes regard the birth of twins as fortunate for the family.

Fossil Horse on Exhibition

A mounted skeleton of the fossil horse *Plesippus*, from the Pliocene formation of Idaho, has recently been placed on exhibition in Ernest R. Graham Hall (Hall 38). Most of the skeleton, as mounted, belongs to one animal. A few parts of other animals from the same locality have been used to supply missing bones.

Plesippus is one of the native stock of North American horses. The animal would have been about fourteen hands high, or as large as a small saddle pony. It had most of the horse-like characteristics common to living species of wild horses in Asia. The head is proportionately larger, the legs more slender, and the feet smaller than those of our better-bred domestic horses.

The five main types of modern corn, as well as ancient maize such as was grown by the Mound Builders, Cliff Dwellers, and early Peruvians, are shown in Hall 25.

RAYMOND FOUNDATION OFFERS MORE CHILDREN'S PROGRAMS

The autumn series of free motion picture programs for children, presented by the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures, will continue through November. Programs are presented each Saturday morning in the James Simpson Theatre of the Museum. There are two showings of each, one beginning at 10 A.M., and one at 11. Most of the films have talking and other sound effects. Following are the dates and the titles of the films on each:

November 4—Land of the Giants; Seagoing Thrills on the *Wander Bird;* Oriental Methods of Traveling; Glimpses of Old China.

November 11—Armistice Day Program: Famous Dixie Land Spirituals; The Pilgrims Land at Plymouth; The Signing of the Declaration of Independence; The Moon and Its Features.

November 18—Hunting Musk Ox with the Polar Eskimos; Eskimo Life in Southern Greenland; Nanook and His Family; In the Land of the Reindeer.

November 25—Winter (cartoon); Learning to Ski; Sonja Henie, the Champion Skater; International Ice Patrol; the Nass River Indians.

Children from all parts of Chicago and suburbs are invited. No tickets are required for admission. The Museum is prepared to receive large groups from schools and other organizations, as well as individual children coming alone or accompanied by parents or other adults.

GIFTS TO THE MUSEUM

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

Department of Anthropology:

From Dr. S. M. Lambert, Utica, N. Y.—265 ethnological specimens, New Guinea and Pacific Islands; from Mrs. Alonzo Newton Benn, Chicago—a serape, northern Mexico; from Miss Nina Burdick, Chicago—a Makah Indian basket, Vancouver Island; from Mrs. Mildred Anderson, Chicago—a jungle belt, French West Africa; from Ralph Chait, New York—2 bronze halberd butts, with light green "water patina," third century B.C., China.

Department of Botany:

From Miss Charlotte C. Ellis, Mancos, Colo.—75 herbarium specimens, Colorado; from Mrs. B. B. Lewis, Guatemala City, Guatemala—10 herbarium specimens, Guatemala; from Dr. J. R. Johnston, Chimaltenango, Guatemala—80 herbarium specimens, Guatemala; from Rev. Brother Apolinar-María, Bogotá, Colombia—59 herbarium specimens, Colombia; from Museo Nacional, San José, Costa Rica—43 herbarium specimens, Costa Rica; from Illinois State Museum, Springfield, Ill.—133 herbarium specimens, Illinois; from William A. Daily, Cincinnati, Ohio—31 specimens of algae, Ohio and Michigan; from Preston Smith, Oberlin, Ohio—52 specimens of algae, Ohio; from Dr. G. T. Velásquez, Manila, P. I.—35 specimens of algae, District of Columbia, New York, and Ontario; from Dr. Henry Field, Chicago—42 specimens of algae, Maine; from Rev. Brother H. Daniel, Medellín, Colombia—45 herbarium specimens, Colombia; from Professor J. Soukup, Puno, Peru—32 herbarium specimens, Peru.

Department of Geology:

From Dr. M. J. Groesbeck, Porterville, Cal.—11 geological specimens, California; from Miss Bertha Gordon, Porterville, Cal.—a garnet crystal, California; from Dr. Henry Field, Chicago—2 flint nodules, England; from William E. Menzel, Chicago—a mineral specimen, Mexico.

Department of Zoology:

From Loren P. Woods, Evanston, Ill.—3,441 fish specimens, southeastern Missouri; from Chicago Zoological Society, Brookfield, Ill.—5 mammal specimens.

The Library:

Valuable books from L. C. Page and Company, Boston, Mass.; Golden Gate International Exposition, San Francisco, Cal.; George J. Wallace, Boston, Mass.; and Dr. Henry Field and Elmer S. Riggs, both of Chicago.

Distinguished Visitors

Among distinguished visitors recently received at Field Museum are Dr. Ralph Linton, formerly on the staff of this institution's Department of Anthropology, now chairman of the Department of Anthropology at Columbia University; Mr. Ellsworth P. Killip, Associate Curator of the National Herbarium, Washington, D.C.; Dr. T. H. Kearney, of the Department of Agriculture, Washington, and Dr. Hermon C. Bumpus, noted zoologist, former Director of the American Museum of Natural History, New York, and now Chairman of the Educational Advisory Board, National Parks Service.

NEW MEMBERS

The following persons were elected to membership in Field Museum during the period from September 16 to October 16:

Associate Members

Mrs. Harold A. Bachmann, Mrs. Maurice Berkson, William McCormick Blair, Frank B. Calmeyn, Arthur W. Carlson, Mrs. W. W. Forrester, Mrs. Guy H. Giles.

Annual Members

Mrs. J. J. Allin, Harry P. Baumann, Mrs. Corabel K. Brown, Mrs. Frank A. Carlton, Miss Bonnie Colvin, Robert S. Cushman, Mrs. Abel Davis, Ellis H. Denney, Walter W. Drew, Leo H. Elkan, Walter A. Gerwig, Fred M. Heller, Mrs. Irene Huck, Mrs. Martha F. Jackson, Mrs. Alfred B. Johnston, Mrs. Jacob G. Joseph, Leslie H. Kerr, John A. Obermaier, Harry M. Reser, Mrs. W. D. Richardson, Dr. I. I. Ritter, Stuart Busby Smithson, Milton J. Spitz, A. L. Starshak, Mrs. Dana R. Treat, Charles Velvel, E. A. Wagonseller, Charles T. Wegner, Jr.

NOVEMBER GUIDE-LECTURE TOURS

Conducted tours of exhibits, under the guidance of staff lecturers, are made every afternoon at 3 o'clock except Saturdays, Sundays, and certain holidays. Following is the schedule for November:

Wednesday, November 1—South America, Past and Present; Thursday—General Tour; Friday—Amphibians and Reptiles.

Week beginning November 6: Monday—Hall of Plant Life; Tuesday—Life in the Old Stone Age; Wednesday—Marine Life; Thursday—General Tour; Friday—Egypt and Its Art.

Week beginning November 13: Monday—Prehistoric Plants and Animals; Tuesday—Valuable Fur-bearers; Wednesday—American Archaeology; Thursday—General Tour; Friday—Dwellers of the Far North.

Week beginning November 20: Monday—Cats and Their Relatives; Tuesday—Plant Ecology; Wednesday—The Earth and Its Crust; Thursday—Thanksgiving holiday, *no tour;* Friday—Hall of Races of Mankind.

Week beginning November 27: Monday—The Story of Coal; Tuesday—Plants of Plains and Deserts; Wednesday—Animal Families; Thursday—General Tour.

Persons wishing to participate should apply at North Entrance. Tours are free. Guide-lecturers' services for special tours by parties of ten or more may be arranged for with the Director a week in advance.

MEMBERSHIP IN FIELD MUSEUM

Field Museum has several classes of Members. Annual Members contribute $10 annually. Associate Members pay $100 and are exempt from dues. Sustaining Members contribute $25 annually for six consecutive years, after which they become Associate Members and are exempt from all further dues. Life Members give $500 and are exempt from dues. Non-Resident Life Members pay $100, and Non-Resident Associate Members $50; both of these classes are also exempt from dues. The Non-Resident memberships are available only to persons residing fifty miles or more from Chicago. Those who give or devise to the Museum $1,000 to $100,000 are designated as Contributors, and those who give or devise $100,000 or more become Benefactors. Other memberships are Honorary, Patron, Corresponding and Corporate, 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.

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.

Contributions made within the taxable year, not exceeding 15 per cent of the taxpayer's net income, are allowable as deductions in computing net income for federal income tax purposes.

Endowments may be made to the Museum with the provision that an annuity be paid to the patron for life. These annuities are guaranteed against fluctuation in amount, and may reduce federal income taxes.

Field Museum News

Published Monthly by Field Museum of Natural History, Chicago

Vol. 10 DECEMBER, 1939 No. 12

EXHIBIT TRACES HISTORY OF CAMEL, ORIGINALLY A NATIVE OF NORTH AMERICA

By PAUL O. McGREW
ASSISTANT IN PALEONTOLOGY

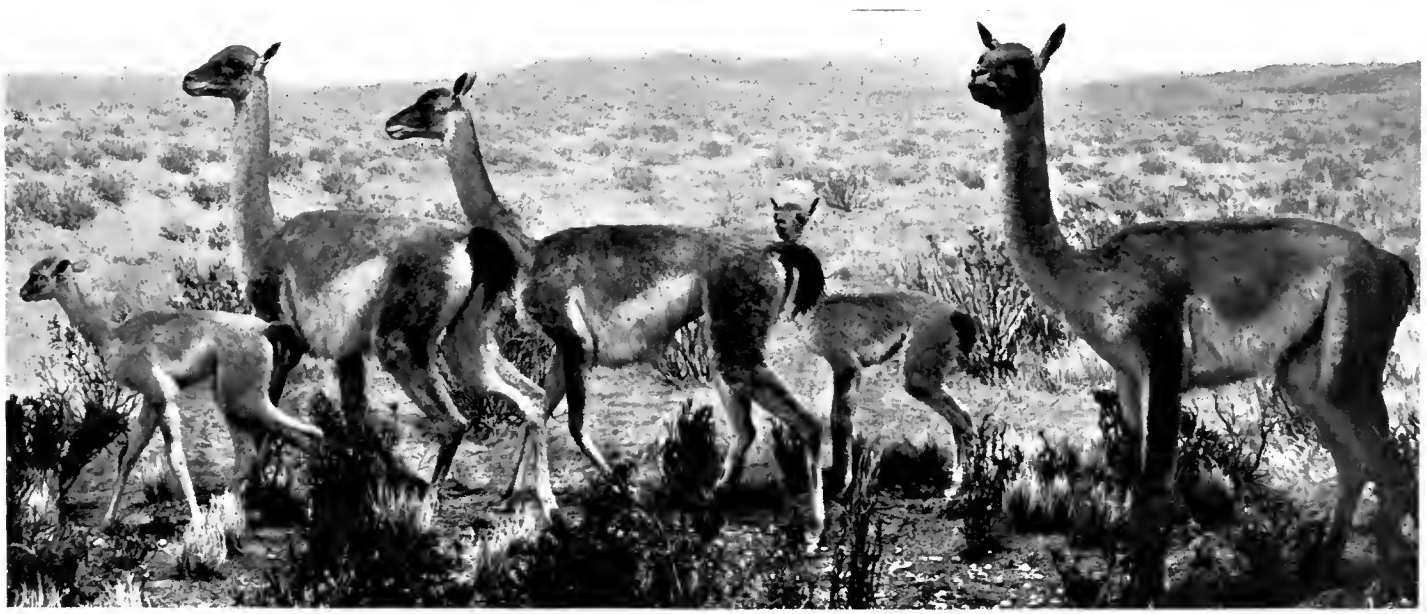
Paleontological research during the last hundred years has yielded a great deal of knowledge concerning the evolutionary history of mammals. Several families, in fact, may be accurately traced back through the geologic past in great detail, the classic example being that of the horse. Although not so widely used as a textbook example of evolutionary development, the history of the camel is as interesting and almost as well documented as that of the horse. Certain important pages are missing from our book of knowledge of camel history, but these are not numerous enough to interfere seriously with the story.

The living members of the camel family are now limited to Asia, Africa, and South America. For some thirty million years, however—from late Eocene to late Pliocene time—camels were restricted to North America. This means that America was the stage upon which most of the evolution of the camels took place. There is ample evidence to support our reconstruction of the major steps in the development of the camel, for, in the successive strata of Tertiary sediments, bones of the ancestral forms are abundant.

These fossils show us that in the last thirty-five million years or so the camels have undergone profound structural changes. They have evolved from little creatures hardly larger than rabbits to the large domesticated animals used in Asia as beasts of burden. The limbs in the early ancestors were short, but in the modern descendants they are long. Of the original four metapodial bones in the foot, two have been lost, and the remaining two are solidly fused to form a single "cannon bone." The toes, of which there were once four on each foot, are now reduced to two. The teeth also have been reduced in number. Of the forty-four teeth in the Eocene camels only thirty-two are present in the llamas, and thirty-four in the Asiatic camels of today. The molar teeth, which were originally poorly equipped grinders with low, rounded cusps, are now long, complex, efficient grinding mechanisms. The first two upper incisors were lost in the later camels, while the third took over the form and function of a canine tooth. The front premolars moved forward from their usual position and they also became caniniform.

All of these changes may be regarded as modifications for life in open plains country where the two major requirements for survival of grazing animals were speed to escape from carnivorous enemies, and specialized teeth which would permit feeding upon the hard prairie grasses. The progressive steps through which the camels evolved coincided with changes in the character of the western terrain, the open country adaptations following closely upon the appearance of the grass land areas in what is now the Great Plains.

Some may wonder why, if the camel developed in, and was restricted to, North America in the past, it is now absent from this continent and present in two others: Asia and South America. To account for this it may be pointed out that in Pliocene times a land connection is known to have extended across what is now the Bering Strait, permitting the camel, along with other mammals, to migrate to Asia. Although it would be impossible for a grazing animal to make such a journey at the present time, because of the severe climatic conditions in the north polar region and the consequent lack of suitable food, climate did not form such a barrier in the past. There is good evidence that throughout the greater part of the earth's history the climatic zones were not so sharply differentiated as they are today. Likewise, migration to South America was made possible by the elevation of the Central American isthmus late in the Pliocene,



A Modern Descendant of Ancient North American Camels

Habitat group of guanacos, on exhibition in Hall 16. These animals, now common in southern Argentina, are descended from ancestors which once lived in North America.

reuniting North and South America which had been separated almost from the beginning of the Age of Mammals.

The camels which invaded the Old World were of a different group from those that migrated to South America. The large humped camels that went to Eurasia belong to the genus *Camelus*, comprising both the bactrian camel and the dromedary. Even the earliest known camels from Asia (Pleistocene) belong to this same genus. The guanacos and llamas that went to South America, however, were smaller and without humps.

All of this does not mean that camels simply evacuated North America. A llama-like form, *Tanupolama*, continued to live on this continent through most of Pleistocene time, and a large distinct group, *Camelops*, lived on almost until historic times. Some authorities believe that certain *Camelops* remains found in the United States can be hardly more than a thousand years old. This view is supported by a specimen found in a Utah cave which was so fresh that some dried muscle remained on the bone. Those camels which did remain in North America, however, were destined to complete extinction, for at some time before the arrival of the white man the last North American camel died. Not only camels, but also mastodons, mammoths, ground sloths, horses, and other animals which abounded in this country during the Pleistocene, became extinct at about the same time. The causes of this mass extinction are not known. Some students believe that early man killed the animals off in much the same manner as modern hunters have exterminated certain birds and mammals. On the other hand, the Ice Age may have brought such a cold climate that these animals were unable to survive. It has also been conjectured that some deadly disease may have spread through susceptible species and brought about their extinction. Many other possible causes have been postulated, but none yet seems to offer a satisfactory or conclusive explanation.

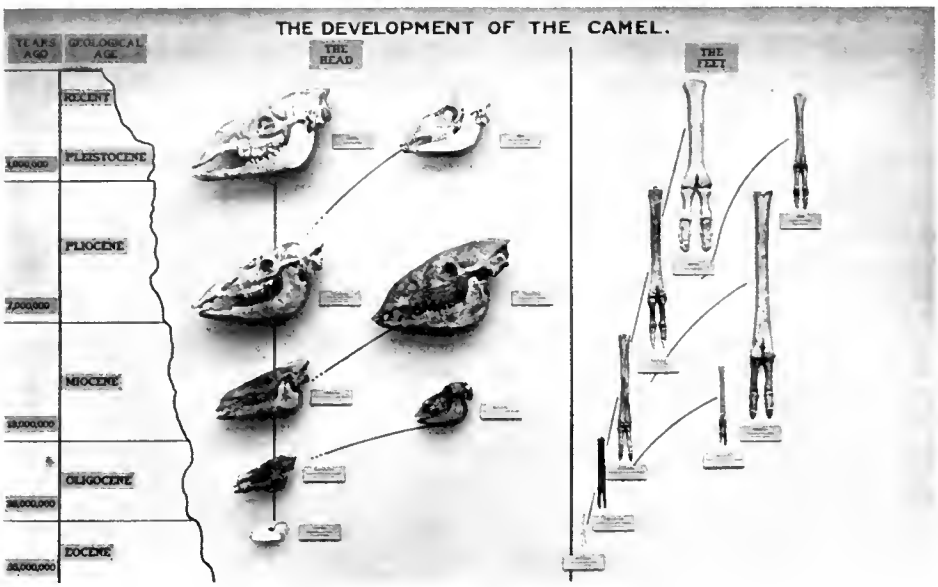


Exhibit Traces Evolution of the Camel

A new addition to Hall 38, showing, by means of skulls and footbones of extinct species, the development of the animal from a tiny creature in Eocene time (55,000,000 years ago) to the recent camels of Asia and South America.

In the ancient sediments of the western United States are found several kinds of fossil camels which were offshoots from the main line of camel development. *Stenomylus*, for example, from the lower Miocene of Nebraska, was very small and had extremely long delicate limbs and a long slender neck. Dozens of skeletons of this gazelle-like camel have been collected from a single quarry. Another striking form was *Alticamelus* from the lower Pliocene. This animal had extremely long legs and neck, and was the terminal member of a line of "giraffe-camels" that had its origin in the early Miocene. Probably the most spectacular of these side branches is one represented by *Gigantocamelus* which, as its name implies, was an enormous animal with a head some three feet in length.

An exhibit has recently been installed in Ernest R. Graham Hall (Hall 38) showing each important step in camel evolution, as demonstrated by changes in skulls, jaws and feet. The fossil specimens displayed were collected over a period of thirty-five years by various Field Museum expeditions. The first camel specimens obtained, those of *Oxydactylus*, were collected in the lower Miocene beds of Wyoming by an expedition in 1906; the last, those of *Pliauchenia*, were found in lower Pliocene deposits of South Dakota by an expedition of the current year. In addition to the evolutionary series, a skeleton of *Oxydactylus* is now on exhibition, and it is expected that during the present winter a skeleton of *Pliauchenia* will be mounted for display.

On exhibition in Hall 16 of the Department of Zoology is an excellent habitat group of guanacos, the modern South American species of camel which in appearance closely resembles the form which fossil skeletons indicate for certain extinct species. The modern bactrian and dromedary camels of Asia are considered too thoroughly domesticated to warrant their inclusion among the zoological exhibits. They were used as beasts of burden thousands of years ago, in ancient Egypt, Babylonia, Central Asia, northern China, and elsewhere. It may be of interest to note at this Christmas season that paintings representing the Three Wise Men usually portray them as traveling to Bethlehem by camel.

LARGEST CHRYSOBERYL CRYSTAL RECEIVED AT MUSEUM

By L. BRYANT MATHER, JR.
ASSISTANT CURATOR OF MINERALOGY

What is probably the largest chrysoberyl crystal in the world has been placed on exhibition in Field Museum's mineral collection (Hall 34, Department of Geology).

This, and another large specimen, were recently obtained from their discoverer, Mr. Richard V. Gaines, of the Colorado School of Mines, who found them in the course of mineralogical field work conducted during March, 1938, near Golden, Colorado. The specimens occurred among several hundred crystals, of which a number were larger than had ever before been found on this continent, or probably anywhere in the world. They were in a small granite pegmatite dike, only eighteen feet wide.

The larger of the two crystals at the Museum measures 5 x 5 x 1½ inches and weighs 40 ounces. This is 6¾ ounces more than the second largest of all the crystals found. In comparison, not one of the twenty-five specimens of this mineral that were in the Museum collection before this acquisition measured more than 2½ inches in its longest dimension. The second of the newly obtained specimens is a well developed twinned crystal 3 x 3 x 1 inches weighing 11½ ounces.

Chrysoberyl is a rare accessory mineral in granite pegmatites and is characterized by its extreme hardness (8.5) being exceeded only by corundum and diamond. Chemically it is the aluminate of beryllium. Certain varieties are cut as gem stones, especially alexandrite, cymophane or cat's-eye, and Oriental chrysolite.

MUSEUM TO CLOSE CHRISTMAS AND NEW YEAR'S DAY

In order to permit as many employes as possible to spend Christmas and New Year's Day with their families, Field Museum will be closed on those days.

JAMES SIMPSON

January 26, 1874–November 25, 1939

The death on November 25 of Mr. James Simpson deprived Chicago of one of its greatest civic benefactors and business leaders, and Field Museum of one of its most earnest and active Trustees and Officers.

James Simpson

For many years Mr. Simpson had displayed a keen interest in Field Museum and its work for science and education. This interest was expressed in characteristically vital manner, by acts which advanced the realization of the institution's aims. He gave lavishly of his time and his funds to promote the causes represented by the Museum. Outstanding was his generous contribution of $138,000 for the construction in Field Museum of the theatre which the Trustees named, in his honor, the "James Simpson Theatre." This benefaction has been of the utmost importance in enabling the Museum to present series of lectures on science and travel for adults, and of instructive motion pictures for children through the James Nelson and Anna Louise Raymond Foundation. Since the completion and opening of the Theatre in 1922, audiences aggregating hundreds of thousands of adults and children have enjoyed the programs presented in it. In recognition of this notable benefaction, the Board of Trustees elected Mr. Simpson a Patron of the Museum on January 12, 1920, and elected him to a Trusteeship on December 17 of the same year. For eminent service to Science, Mr. Simpson was elected an Honorary Member in 1922.

In 1925, Mr. Simpson again made an outstanding contribution to the Museum by his sponsorship of the James Simpson–Roosevelts Asiatic Expedition, one of the largest and most successful enterprises for the collecting of specimens ever undertaken by this institution. This was led by Colonel Theodore Roosevelt and Mr. Kermit Roosevelt, and among its results are some of the finest habitat groups now on exhibition—for example, the rare Marco Polo sheep (*Ovis poli*), Asiatic ibex, and Indian rhinoceros. To make this expedition possible, Mr. Simpson provided funds totaling more than $45,000.

Mr. Simpson was elected Third Vice-President of the Museum in 1929, and Second Vice-President in 1933. Keenly alert to the Museum's needs in every direction, he rendered extremely valuable services as a member of various important committees of the Board of Trustees—the Pension, Auditing, Finance, and Executive Committees. The loss of his wise counsel and pleasant companionship will be deeply felt by his fellow Trustees.

Mr. Simpson's civic interests embraced many other Chicago institutions. He was a trustee of the Chicago Zoological Society, the John G. Shedd Aquarium, the Sunday Evening Club, and the Otto S. Sprague Institute, and was active in the affairs of the Chicago Community Trust, the Children's Memorial Hospital, the Scottish Old People's Home, and various other charitable organizations. During the World War he directed Red Cross work in the Chicago area. As head of the Chicago Plan Commission he actively pushed a progressive program for the development of Chicago's industry, and for the beautification of the city.

Prehistoric Stone Carving

A prehistoric stone head, found in the interior of New Guinea north of Cape Arkona, is on exhibition in Joseph N. Field Hall (Hall A). Its use is unknown. Possibly it was the top of a stone pestle, as a number of these have been found in the mountains of New Guinea.

THINGS YOU MAY HAVE MISSED

Mistletoes

If you have missed the mistletoe perhaps you have missed certain opportunities for enjoying life's full charm. Field Museum is probably the only place in Chicago where this plant, so closely associated with Yuletide, is accessible every day of the year (except, ironically, on Christmas and New Year's days, the only days out of 365 when the Museum is not open to the public).

The Museum exhibit of mistletoes, including a number of varieties not ordinarily seen, occupies half of an exhibition case in the Hall of Plant Life (Hall 29).

"The mistletoes (Loranthaceae) compose a rather small group of shrubby plants living mostly as semi-parasites on trees of various kinds," states Dr. B. E. Dahlgren, Chief Curator of the Department of Botany. "Their fruits, usually small soft berries, contain a glutinous substance which renders the seed sticky. Birds feeding on the fruit carry the sticky seeds to the branches of trees where germination takes place, and the seedlings establish themselves by sending rootlike suckers through the bark of the host plant. In general the mistletoes do not live entirely at the expense of their host. Those that have green leaves can manufacture a part of their own food. A few of them grow on the ground as shrubs or trees. More than 800 species are known from all continents. They are most numerous in the tropics. Many are important pests on broad-leaved trees, others on conifers producing the so-called witches'-brooms. One well-known species is a very serious pest on cacao plantations.

"Thanks to an old English custom, deriving apparently from the ancient Roman festival of Saturn, everyone is familiar with mistletoe which, like holly, is used at Christmas as a special festive decoration for the house. The mistle employed for this purpose in Europe differs from any American species but is sufficiently similar in general appearance to be instantly recognized as mistletoe. An Australian species grows as a tree reaching thirty feet or more in height. Flowering with a profusion of orange bloom at Christmas time, it is known as the Australian Christmas tree."

In the Museum exhibit a species of mistletoe is shown growing on a horseradish tree. As a result of the penetration of the mistletoe roots into the tissues of the host plant, a gall-like thickening as large as a turnip has been produced around the point of attachment of the parasite.

Mistletoe of the Tropics

The common North American mistletoe will be very much in evidence during the coming Christmas season, so a picture of it here would be superfluous; but the variety illustrated above, which comes from Brazil, and is very different from ours, is seldom seen in this country. Both species are shown in Hall 29.

Likewise shown is a mistletoe on an ebony branch. The common mistletoe of the United States, and a South American mistletoe, conspicuous for its large, brightly colored flowers, are among the other specimens included in the display.

New Leaflet on Mistletoe

Scheduled for publication this month by Field Museum Press is a new leaflet in the Botanical Series—*Mistletoe and Holly*, by Miss Sophia Prior. This will be on sale at the Museum during the holiday season. It presents in interesting form the principal botanical information as well as the folk-lore of these two Christmas plants.

SCIENTISTS SPEND CHRISTMAS IN MANY STRANGE PLACES

A Symposium of Reminiscences by Men Who Explore for Field Museum

Somewhere, far south of the equator, down near the bottom of the long narrow strip of land which Chile forms on the west coast of South America, the members of Field Museum's "Magellanic Expedition" will celebrate Christmas this year. According to the last reports received from Dr. Wilfred H. Osgood, the Museum's Chief Curator of Zoology and leader of the expedition, they will probably be in camp at that time along the shores of the Straits of Magellan—possibly on the Island of Tierra del Fuego, which is swept by some of the strongest winds known in the world, and is to be the scene of much of the expedition's most important research. Accompanying Dr. Osgood are Mr. Colin C. Sanborn, Curator of Mammals, and Mr. John Schmidt, field assistant. Mr. Karl P. Schmidt, Curator of Amphibians and Reptiles, has completed his work and is expected home in December.

To the three men remaining in the field, whose interest in science has led them to this remote end of the earth, Christmas will probably be "just another day." The experience of other expedition men indicates that they will probably go right on with their collecting. Museum scientists often find themselves in strange places, among strange wild peoples, on this day which most men spend with their families.

The exploring scientist's typical sensations on this day may be illustrated with the remarks of Dr. Fritz Haas, Field Museum's Curator of Lower Invertebrates, who has often found himself in the depths of African jungles and other far places during the holidays while conducting expeditions for various institutions.

WORK DISPELS NOSTALGIA

"You wake up, scramble out of your mosquito netting, and realize that this is Christmas morning," says Dr. Haas. "As your native cook serves your breakfast, you are aware of a strong sense of nostalgia, thinking of home, family, friends, and the usual Yuletide festivities. Then you reflect upon why you are here in the field, and resolve that the day's work must go on—it is easier to lose the nostalgia by working than by lazily taking a holiday. Soon the homesickness is lost as you become immersed in your work—although it usually returns when darkness falls, and work must cease. Then, finally, if you have really toiled hard enough to be good and tired, Morpheus comes to your rescue."

Mr. C. J. Albrecht, a staff taxidermist, spent one Christmas in Ethiopia as a member of the Harold White-John Coats Expedition.

SANTA CLAUS IN AFRICA

"We went right on with our hunting," says Mr. Albrecht, "and that day bagged one of the nyalas now mounted in a group in Carl E. Akeley Memorial Hall. However, in the evening we really did celebrate Christmas, even to the extent of having an appropriately freezing temperature on the icy African mountain top where we were camped. We had a portable phonograph and a record of 'Holy Night' which made things just like home musically. We feasted on one of the rarest of birds—the blue goose—of which the first specimens to reach the United States were obtained by this expedition. I was able to act as Santa Claus by giving my only warm suit of woolens to a poor shivering native helper attached to our party who previously had seemed in danger of freezing to death."

FRIED ANTS AS A DELICACY IN BRAZIL

Mr. Emmet R. Blake, Assistant Curator of Birds, and his associates on an expedition to the upper Rio Négro in northern Brazil, had a Christmas ruined by the intended kindness of native Indians. He and his fellows were in the midst of a special roast chicken feast when a family of natives approached offering a bowl of their own choicest delicacy—inch-long sauba ants which had been fried in grease. The etiquette and diplomacy required in dealing with natives made it essential for Mr. Blake and his companions to accept and eat the ants, pulling off wings and legs in the manner locally practised. After enduring the strong taste of formic acid characterizing this *pièce de résistance*, the explorers left their other dishes untouched. However, they made up for this on New Year's Day with a dinner of wild cat which, Mr. Blake says, was really not bad.

CHRISTMAS IN THE FAR NORTH

Most like home in many respects was the Christmas enjoyed by Mr. Alfred C. Weed, Curator of Fishes, and Staff Taxidermist Arthur G. Rueckert, who were members of the Second Rawson-MacMillan Subarctic Expedition. This expedition spent an entire winter in the northern part of Labrador. However, they had built substantial wooden buildings which served as scientific headquarters and dwelling place. A large number of Naskapi Indians and Eskimos of the region were guests.

A Christmas tree was cut from among the native pines, and erected in the expedition living room. It was decorated with baubles and tinsel which someone had thoughtfully provided in preparing the expedition's stores before sailing in June. Christmas toys and candy were distributed among the delighted Eskimo children. The men of the expedition and their guests shot at targets, and raced on skis across the ice to where the *Bowdoin*, flagship of the expedition, was frozen in. There were also snowshoe races, dogteam races, tumbling contests, and other games.

Several canned whole turkeys brought from home, together with local wild cranberries (lingonberries) gathered in Labrador, and canned plum pudding burning in brandy, provided a thoroughly home-like Christmas dinner. In the evening motion pictures were shown—the first the Eskimos and Indians had ever seen in their lives. For a New Year's Eve celebration several members of the expedition "dressed up"—this consisted of shaving off the several months' accumulation of beard that had been allowed to grow.

ON A TOSSING SCHOONER

Mr. Sharat K. Roy, Curator of Geology, also a member of the MacMillan Expedition, was separated from the main party due to assignment on field work in a different area. He found himself on Christmas Day sailing through a cold white-capped sea on a frail thirty-five foot fishing schooner bound from Straits of Belle Isle to Notre Dame Bay, Newfoundland. As the small boat pitched and tossed on this hazardous crossing, Christmas dinner was served in the galley, and consisted of "fish and brewis." The brewis—hardtack soaked in pork grease overnight and fried with salt cod—is a specialty of the "greasy jackets," as sealers and fishermen are locally known.

UNDER PROTECTION OF MACHINE GUNS

A sixty-mile ride at 4 o'clock Christmas morning to attend services at a small monastery in the mountains, traveling in a car equipped with sub-machine guns and manned by alert French officers on the lookout for possible attack by native bandits, was the experience of Mr. Richard A. Martin, Curator of Near Eastern Archaeology, during an expedition in Syria. For further safety, patrol troopers had been stationed in each mile of the route. On Christmas Eve the expedition had presented goats as Christmas gifts to the Armenian children in a near-by village.

AN EGYPTIAN PERFECT HOST

"I found myself one Christmas at an archaeological camp in the Sudan, about 200 miles south of Khartum," says Dr. Wilfrid D. Hambly, Curator of African Ethnology. "It was like any other day—blazing hot, about 130° in the sun, with a cloudless sky. The workmen's shovels raised clouds of dust as usual. A messenger arrived with an invitation to dine with the local railway station-master about six miles from camp. So evening saw our little cavalcade on a curious assortment of mounts—camels, donkeys, mules—loping along the narrow path through the bush. Our host was an Egyptian, and at dinner the etiquette of the East was strictly observed. Courtesy compelled us to swoop our coffee with the loud sucking noise that is supposed to express keen appreciation. The station-master selected morsels of meat with his fingers and passed them to us. His attentiveness to his guests was carried

to such extremes that he even rolled, moistened with his lips, and lit cigarettes for us. Divertissement was provided by two colored dancing girls who constantly swayed and pirouetted around the table. On the way back to camp, confusion was produced when the donkeys and mules scented hyenas. My donkey put his heels high and his head low suddenly, and I sailed over his ears."

SWIMMING ON A SUMMER CHRISTMAS DAY

Mr. Elmer S. Riggs, Curator of Paleontology, arrived one Christmas morning in southern Argentina, to collect fossil animals. At that latitude the heat of summer was just coming on, and he and his companions spent part of Christmas Day swimming in the sea—it seemed like the Fourth of July. Christmas dinner was enjoyed in an adobe building operated by an Italian as a holstelry. Wild goose was served on a table decorated with spring flowers. The host used a large fossil bone as a center-piece in honor of the paleontologists. The prying eyes of small native boys crowded the windows to watch the "gringos" celebrate.

EXCAVATING A CITY OF 3000 B.C.

"'*Sitta sa'a wa nuss, Sahib, mai harr* (Six-thirty A.M. sir, your hot water)'—these were the first things I remember of Christmas morning, 1927, as an Arab servant shuffled into my small mud hut at Kish, Iraq," reminisces Dr. Henry Field, Curator of Physical Anthropology. "Breakfast at seven in the cold and damp underground dining room, and a cold drive alone in an open touring car across the windswept desert to the great temple complex dedicated to the Earth Goddess—Harsagkalemma. Two hundred and fifty local Arab workmen were awaiting my starting signal—both hands raised above my head. All day long walls and rooms of buildings 5,000 years old were unearthed. Two human skeletons, and simple grave furniture were recovered. At sunset a horseman galloped up bearing cabled greetings from President Stanley Field of the Museum in Chicago, and from Professor Stephen Langdon, Director of the Field Museum-Oxford University Joint Mesopotamian Expedition, who was in England. After a special dinner in which Shemu, the Armenian cook, excelled himself, we drank a toast to absent friends, and soon retired to our mud huts.

"Overhead *Miazan*, the great Dipper, looked very close. Jackals barked in the distance. Our armed sentries paced the camp with an occasional challenge of '*Menu hadha*? (Who goes there?).' A rifle shot rang out—a jackal, perhaps, had ventured too close to camp. I fell asleep."

AN ICY NIGHT IN THE TROPICS

One Christmas was made memorable to Mr. Paul C. Standley, Curator of the Herbarium, during a botanical expedition in Honduras, by the presence of a chained

(*Continued on page 7, column 1*)

"CHRISTMAS ANIMALS" AMONG FIELD MUSEUM EXHIBITS

The Christmas season is a good one during which to bring young children on a visit to Field Museum. Here they may see some of the most famous of "Christmas animals"—the reindeer, associated for so many years with the Santa Claus legend; and also the nearest approximation in nature to the perennially popular "Teddy bear." The "Teddy bear" is a strange anomaly. Inspired by the grizzly-bear hunting exploits of the late President Theodore Roosevelt, and named for him, the toy as usually produced actually resembles the strange and charming little mammal of Australia known as the koala much more than it does any kind of real bear. The "Teddy bear" has remained to the present day one of the most beloved of all types of toys given to small children. At the Museum, children may see the koala to which it bears such a striking resemblance, and also the grizzly bear which may be regarded as its real "ancestor," as well as many other kinds of bears.

In recent years, due to the great publicity achieved by giant pandas, toy representations of that animal have come to rival the "Teddy bear." Children visiting Field Museum may see the first giant panda specimens ever to reach America—those collected by Colonel Theodore Roosevelt and Mr. Kermit Roosevelt, sons of the President who inspired the "Teddy bear" vogue—in a habitat group in William V. Kelley Hall (Hall 17), and also the famed Su-Lin, late of the Brookfield Zoo, now occupying a conspicuous place in Stanley Field Hall.

The reindeer is represented at Field Museum by a habitat group of Alaskan caribou in the Hall of North American Mammal Habitat Groups (Hall 16). That the American caribou are really reindeer is not generally known, states Dr. Wilfred H. Osgood, Chief Curator of the Department of Zoology, but, he says, they are in fact so closely related to the Old World species from which the domestic variety was derived, that in early zoological classifications they were regarded as the same species.

North American Reindeer

That the caribou of Alaska, shown in the above photograph of a habitat group in Hall 16 of the Museum, are really reindeer is not generally recognized. In fact, however, they are so closely related to the Old World species, whence domestic reindeer were derived, that early zoological works did not classify them separately.

The animals in the habitat group were collected by the Thorne-Graves-Field Museum Arctic Expedition.

The koala is one of the marsupials or pouched mammals, all of which are now confined to Australasia and America.

Nature's "Teddy Bear"

The koala, of Australia, which in appearance more closely resembles the perennially popular Christmas toy than any bear or other animal. When very young the koala's offspring are carried in a pouch, like those of a kangaroo or opossum; a little later they ride their mother's back, as shown in the above exhibit in Hall 15.

Field Museum of Natural History
FOUNDED BY MARSHALL FIELD, 1893
Roosevelt Road and Field Drive, Chicago

FIELD MUSEUM NEWS
CLIFFORD C. GREGG, *Director of the Museum....Editor*

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HENRY W. NICHOLS.....*Chief Curator of Geology*
WILFRED H. OSGOOD.....*Chief Curator of Zoology*
H. B. HARTE.....*Managing Editor*

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

FROM THE DIRECTOR'S DESK—

Scientific Museums and Wars

For many years the great research institutions of the world have been working harmoniously together for the purpose of adding to the sum total of human knowledge and understanding; thus they have benefited mankind as a whole. Whether the subject of research be the origin and early history of man, the evolution of animal or plant forms, the discovery of natural laws, or any one of hundreds of other problems, the research scientist has cherished the knowledge that he might look for help to other men studying the same or similar problems, wherever they might be. There is a constant interchange of correspondence and ideas among scientists and scientific institutions. Geographical distances, political barriers, and different languages are no barriers to unity of effort. Science speaks a universal language.

Year after year Field Museum publishes the results of its research and distributes its publications to other institutions throughout the world. Year after year Field Museum receives from other institutions the results of their studies, printed in various languages. A study being conducted in London may be based upon materials gathered together from the United States, Russia, Siam, the jungles of Africa, and the wind-swept Arctic regions. Facts are valid wherever they are discovered. True research seeks to find only the truth. Scientific institutions and scientific men of repute co-operate generously toward a common end.

Normally, perhaps, men who govern sovereign states live amicably with their neighbors. Neighboring sovereignties carry on commerce with mutual profit, and we say they are at peace with one another. Too often, however, interests, and ideas come into conflict, and the rulers of nations, seeking not truths but special advantages for themselves, their own nations, or their groups, sever diplomatic relations and their countries are at war. National boundaries are closed; free communication of ideas is prohibited; co-operation is forbidden; constructive research is hampered, and the God-given energies of millions of people are turned toward mutual destruction.

In times like these, thinking people may well consider the different methods employed in research science and in political government. One seeks to establish truths and to give knowledge to the world, that all may use it. The other frequently suppresses truth, substitutes propaganda, and withholds material or knowledge of special value for limited use by favored individuals, with the inevitable result that life continues on a lower rather than a higher plane.

Unfortunately there is no quick and easy remedy for the difficult situation called war. Science is devoted to the search for truth, and scientists sacrifice their own ideas, their own theories, whenever the preponderant weight of evidence indicates that they are wrong. By contrast, war makers obscure the truth and substitute propaganda, to reinforce their claims when they find that they are in error. Science by international co-operation has accomplished much for the benefit of mankind. Let us hope that rulers of nations will some day rise above personal prejudice and partisan advantage and will so govern their countries in the light of truth that there will be co-operation on all sides toward a common goal of harmonious living.

—CLIFFORD C. GREGG, *Director*

Henceforth the editorials appearing under the heading "From the Director's Desk," will not be published regularly every month, but will appear from time to time.

Museum Receives Another $2,000 Gift from Mrs. James Nelson Raymond

A gift of $2,000 was received by Field Museum last month from Mrs. James Nelson Raymond. The money is for the support of the activities conducted by the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures, and is the third such contribution made by Mrs. Raymond during 1939. With the total of $6,000 given this year, the Museum has now received a total of $569,422 from this generous benefactor.

Mrs. Raymond's continuing and kindly interest in the work of the Foundation has made it possible for that division of the Museum to improve its services to children and teachers, and increase its effectiveness year by year. A heavy program of activities both in the Museum itself and in the schools is now being carried, and a number of innovations have recently been made.

Bequest from Cyrus H. McCormick

A bequest of $10,000 from the late Cyrus H. McCormick, who was a Trustee of Field Museum from 1894 until his death in 1936, was paid to the Museum last month by his estate. The money has been added to the endowment funds of the Museum.

Distinguished Visitors

Among distinguished visitors recently received at Field Museum are Dr. D. C. Graham, well-known archaeologist and ethnologist, and a professor at the West China Union University, Cheng-tu, Szechwan; Professor Owen Lattimore of Johns Hopkins University, Baltimore, who is editor of *Pacific Affairs;* Mr. James Roosevelt, of Hollywood, California; Dr. Gordon L. Walls, of the ophthalmic research laboratory at Wayne University College of Medicine, Detroit; Mr. Roger Conant, Curator of Reptiles of the Philadelphia Zoological Society; Dr. V. Wolfgang von Hagen, noted ethnologist, explorer, and author, of Berkeley, California; Mrs. Paul Armand Scherer, chairman of activities of the Junior Recreational Museum of San Francisco, and Mr. A. S. Coggeshall, Director of the Santa Barbara (California) Museum of Natural History.

A FEW FACTS ABOUT FIELD MUSEUM

Field Museum is open every day of the year (except Christmas and New Year's Day) during the hours indicated below:

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

The Museum's Library is open for reference daily except Saturday afternoon and Sunday.

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

Lectures at schools, and special entertainments and tours for children at the Museum, are provided by the James Nelson and Aona Louise Raymond Foundation for Public School and Children's Lectures.

Free courses of lectures for adults are presented in the James Simpson Theatre on Saturday afternoons (at 2:30 o'clock) in March, April, October, and November.

A Cafeteria serves visitors. Rooms are available also for those bringing their lunches.

Chicago Motor Coach Company No. 26 busses provide direct transportation to the Museum. Service is offered also by Surface Lines, Rapid Transit Lines (the "L"), interurban electric lines, and Illinois Central trains. There is ample free parking space for automobiles at the Museum.

SUNDAY TOURS IN DECEMBER TO STUDY RACIAL TYPES

"The Parade of the Races" is the subject of the lecture tours to be conducted by Mr. Paul G. Dallwig, the Layman Lecturer, on the five Sunday afternoons during December.

Mangbetu Woman
One of the sculptures by Malvina Hoffman, discussed by Mr. Dallwig in "The Parade of the Races."

In this lecture, which has proved in previous seasons one of the most popular of Mr. Dallwig's subjects, he takes his hearers on an imaginary trip around the world, visiting the inhabitants of jungle forests, great princes of the East in their palaces, and many strata of human society in between. Mr. Dallwig endeavors to clarify the basic physical characteristics that differentiate the races of mankind, and to promote a deeper and more sympathetic understanding of the principal peoples of the earth.

As each Sunday tour is necessarily limited to 100 adults (*children cannot be accommodated*), it is necessary to make reservations in advance by mail or telephone (Wabash 9410). Lectures begin promptly at 2 P.M., and end at 4:30. During a half-hour intermission midway in the tours, members of the parties wishing to do so may obtain refreshments in the Cafeteria, where they may also smoke. Special tables are reserved.

In January Mr. Dallwig will introduce a new lecture subject with his first presentation of "Romance of Diamonds."

SCIENTISTS SPEND CHRISTMAS IN MANY STRANGE PLACES

(*Continued from page 5*)

Hindu maniac who a few days before, had attempted to murder a British overseer in the vicinity. This charming guest was present at the dinner. Mr. Standley recalls also a New Year's Eve spent in a tiny log cabin at an altitude of 10,000 feet on Cerro de Las Vueltas in Costa Rica. It was freezing cold—a sheet of ice covered pools among the spagnum. A gale was blowing and it was raining. The hut had open gables so that wind, fog, and rain swept through the interior. The only light was the flame of a small candle.

"I went to bed before dark, to keep warm, bundled in layer upon layer of heavy clothes, but in spite of all it was the coldest, most uncomfortable night I ever spent in my life—in the midst of the tropics!" says Mr. Standley. "I was lying on a shelf-like *tabanco*, usual bed of the country people, but slept very little. Nearly all night I was entertained by the tales of three young men who were traveling with a large and very fat hog that had been so affected by the cold and high altitude it had been unable to proceed the day before."

Christmas in the field once became a commonplace to Dr. Albert B. Lewis Curator of Melanesian Ethnology. He was in far-off places on that day in four successive years while conducting expeditions for Field Museum. The first time was on the island of New Britain in the South Pacific, where the natives, employed on European-owned plantations and therefore given a holiday, celebrated with a "sing-sing" and exotic dancing. The next year Dr. Lewis attended a similar celebration in the Solomon Islands; the third Christmas was spent in Australia, and the fourth aboard ship en route to New Guinea.

HOW THE MAYAS CELEBRATE

The most hilarious Christmas was that among the Maya Indians of Central America, described in 1929 by Mr. J. Eric Thompson, formerly Curator of Central and South American Archaeology at Field Museum (now on the staff of the Carnegie Institution of Washington, D. C.). In a report on the progress of the Second Marshall Field Archaeological Expedition to British Honduras, Mr. Thompson wrote:

"I arrived at San Antonio (British Honduras) just before Christmas. The Mayas here are nominal Christians, but retain much of the old paganism, and seize eagerly any excuse for a feast, so Christmas was the occasion for a four-day siesta. The married men are banded in guilds of thirteen men each, and on the senior man of each guild successively falls the honor, but also the cost and responsibility, of being host to the whole village for a festival.

"The Christmas fiesta was in a large hut. On the mud floor squatted the women and their numerous children. At one end was the orchestra, consisting of a queer harp with a wide hollow base, and a crude homemade violin. The music was a crude barbaric rhythm such as probably accompanied rites of human sacrifice fifteen centuries ago.

"The center of the hut was occupied by dancing couples. The men wore moccasins or boots, while the women were barefoot, as an outward visible symbol of male superiority, a tradition that remains unshaken here. Most of the men were under the influence of the native-made fiery white rum, and as the night wore on the scene became more animated with the shouts in the Maya tongue becoming wilder and wilder. At last, yielding to the potent liquor, the men fell one by one, headlong to the ground, often amidst the dancers.

"In the days when ancient Maya culture flourished, only the old people had the privilege of getting drunk, and they did it only on special occasions as a form of ceremonial sacrifice to the gods."

STAFF NOTES

Dr. Louis B. Bishop, of Pasadena, California, well-known ornithologist, has been given an honorary appointment on the staff of Field Museum as Research Associate in the Division of Birds. Dr. Bishop was responsible for assembling the great collection of more than 50,000 North American birds recently acquired by Field Museum, and known as "the Bishop Collection." He will continue research upon these birds, to which he has devoted a major part of his time during the past forty years.

Howlett photo
Dr. Louis B. Bishop

Dr. Julian A. Steyermark, Assistant Curator of the Herbarium, now leading a botanical expedition to Guatemala, reports exceptional success during his first month in the field, with more than a thousand numbers collected. His headquarters have been at the town of Zacapa, in the heart of the Motagua Valley desert region of the Atlantic watershed. He also made a trip of several days to the summit of the Sierra de las Minas, which rises above the Motagua River, a region probably never visited before by any botanist.

Dr. Francis Drouet, Curator of Cryptogamic Botany, leading a botanical expedition to the southwestern United States and northwestern Mexico, has forwarded to the Museum a collection of 1,200 algae and other plants from the general region of Las Vegas, New Mexico, where he spent several weeks exploring particularly the algal flora of the numerous hot springs which abound there. In October he engaged in similar exploration in southern Arizona, and early in November left for Mexico. When last heard from he was at work in northern Sonora. He is accompanied by Mr. Donald Richards of the University of Chicago.

Professor Samuel J. Record, Dean of the School of Forestry at Yale University, during a recent visit to Chicago conferred with members of Field Museum's Department of Botany. He is a member of the Department staff, as Research Associate in Wood Technology.

Mr. Paul G. Dallwig, the Layman Lecturer currently conducting Sunday afternoon lecture-tours at Field Museum, was guest speaker on November 25 before the Springfield (Illinois) Women's Club. He gave a version of "Gems, Jewels and 'Junk' " which, when presented at the Museum, is illustrated with gem exhibits.

GIFTS TO THE MUSEUM

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

Department of Anthropology:

From Estate of Mrs. Anne Fisher—38 negatives and 100 prints of scenes in Iraq.

Department of Botany:

From Miss Marjorie Brown, Bennington, Vt.—135 herbarium specimens, Panama; from University of Texas, Austin—48 herbarium specimens, Texas; from Donovan S. Correll, Cambridge, Mass.—76 specimens of orchids, southeastern United States; from Museo del Instituto de la Salle, Bogotá, Colombia—131 herbarium specimens, Colombia.

Department of Geology:

From Ludwig A. Koelnau, Minneapolis, Minn.—a chatoyant quartz specimen, Minnesota; from Miss Ann Trevett, Casper, Wyo.—5 specimens of cordierite, Wyoming; from Mrs. M. J. Hubeny, Chicago—a sardonyx boulder, Oregon.

Department of Zoology:

From Chicago Zoological Society, Brookfield, Ill.—17 birds and a mammal; from Loren P. Woods, Evanston, Ill.—1,177 lower invertebrates, Washington and Indiana; from G. J. Kessen, Sanibel Island, Fla.—2 live snakes, Florida; from W. J. Beecher, Chicago—22 small mammals, Illinois; from Schwab Brothers, Muscatine, Iowa—a barred owl and a quail, Iowa; from Carnegie Museum, Pittsburgh, Pa.—a salamander, West Virginia; from Dr. Henry Field, Chicago—86 fish specimens, Maine.

The Library:

Valuable books from G. C. Vaillant, New York City; T. Cabot, Boston, Mass.; E. P. Dieseldorff, Coban, Guatemala; Harold V. Smith, New York City; and Henry W. Nichols, Dr. Henry Field, Elmer S. Riggs, W. J. Gerhard, Earl E. Sherff, and M. Garkowski, all of Chicago.

Belladonna

Belladonna, a member of the nightshade family, is a coarse, much branched herb, three to five feet tall, with large ovate leaves. The small flowers are bell-shaped, and of a greenish color. The large and thick roots are used, as well as the leaves, in preparing atropine, the "drops" employed by ophthalmologists to relax the muscles of the iris before testing the eyes for glasses. The name belladonna, meaning "beautiful lady," is derived from the practice of Italian women who employed an extract of the plant to brighten their eyes. Leaves of the plant are shown in the Hall of Plant Life (Hall 29).

Field Museum Now a Member of Radio Council

Field Museum has become a member of the University Broadcasting Council which is responsible for many of the better types of educational and cultural programs presented on the radio. Among other institutions which are members of this organization are: Northwestern University, De Paul University, and the Art Institute.

Guide-Lecture Hour Changed

Beginning December 1, the guide-lecture tours offered daily from Monday to Friday inclusive for the general public at Field Museum will begin at 2 P.M., instead of at 3 P.M. as heretofore. It is believed the new hour will better suit the convenience of a larger number of persons desiring to participate in these tours.

NEW MEMBERS

The following persons were elected to membership in Field Museum during the period from October 16 to November 15:

Associate Members

Reid M. Bennett, Mrs. Warren Buckley, Donovan Y. Erickson, Max Gerber, Miss Ruth G. Mason, Mrs. H. Foster Straw, Otto Vogl.

Annual Members

Benjamin S. Adamowski, Miss Minnie J. Arthur, Miss Mildred Berleman, Miss Josephine Blalock, Carleton Blunt, Mrs. Ralph E. Burkhardt, Paul W. Cook, Miss Winnie Coxe, William Dwight Darrow, Countess Mira Edgerly, William Eismann, Winston Elting, Mrs. M. G. Fessenden, John D. Filson, Miss Gertrude Gane, Joseph L. Gidwitz, Mrs. William O. Goodman, Dr. Earle Gray, Harry Hall, Henry M. Huxley, Mathew Keck, Ellman Koolish, George E. Kuh, Paul Moore, Rev. Walter K. Morley, Harry C. Phibbs, Mrs. W. G. Potts, John T. Riddell, David P. Scobie, Harry Seidenberg, Mrs. James U. Snydacker, Frank M. Wallace, R. A. Walsh, Lew H. Webb, Edward Wray.

DECEMBER GUIDE-LECTURE TOURS

Conducted tours of exhibits, under the guidance of staff lecturers, are made every afternoon at 2 o'clock except Saturdays, Sundays, and certain holidays. Following is the schedule for December:

Friday, December 1—Etruscan and Roman Exhibits.

Week beginning December 4: Monday—Moon, Meteorites and Minerals; Tuesday—Carl Akeley and His Work; Wednesday—Masks and Their Uses; Thursday—General Tour; Friday—Rocks and Their Formation.

Week beginning December 11: Monday—Native American Fruits and Vegetables; Tuesday—Deer and Antelope; Wednesday—China and Tibet; Thursday—General Tour; Friday—Dinosaurs and Other Early Reptiles.

Week beginning December 18: Monday—Su-Lin and His Neighbors; Tuesday—Mammals of the World; Wednesday—Hall of Plant Life; Thursday—General Tour; Friday—Egypt.

Week beginning December 25: Monday—Christmas holiday, *Museum closed;* Tuesday— Animals at Home; Wednesday—Indians of Plains and Deserts; Thursday—General Tour; Friday—The Story of Man.

Persons wishing to participate should apply at North Entrance. Tours are free. Guide-lecturers' services for special tours by parties of ten or more may be arranged for with the Director a week in advance.

Fine embroideries made in western India are exhibited in Stanley Field Hall.

CHRISTMAS SHOPPING MADE EASY BY FIELD MUSEUM

Members of Field Museum are offered services whereby they may, while sitting at their own desks, do at least a large part of their Christmas shopping, thus avoiding the crowds that fill the streets and stores during the rush season. Further, they can obtain relief from the task of wrapping Christmas parcels, and save themselves from standing in long lines at post offices to have their packages weighed, stamped and insured.

The Museum offers its assistance in two forms:

1. *Christmas Gift Memberships in the Museum.* With this issue of FIELD MUSEUM NEWS there are enclosed Christmas Gift Membership application forms, and postage-prepaid envelopes for returning them. All you need to do is designate the name of the person you wish elected to membership, and send the form in with your check. The Museum will handle all details, sending the recipients attractive Christmas cards notifying them that they have been elected Members of this institution through your courtesy. With the card will be sent information about their privileges as Members, as well as the regular Membership cards (and Certificates in the case of Life and Associate Members).

2. *Services of the Book Shop of Field Museum.* The Book Shop is prepared to furnish books, endorsed for scientific authenticity by members of the Museum staff, for both adults and children. Also, the Book Shop has in stock a wide selection of other appropriate gifts, such as book ends, illuminated globe-maps of the world, and animal models suitable for use as library decorations or as toys for children. You are invited to browse in the Book Shop during part of your next visit to the Museum. Where desired, the Book Shop will handle mail and telephone orders, and will undertake all details in connection with the wrapping, and dispatching of gift purchases to the designated recipients, together with such forms of greeting as the purchaser may specify. Purchasers may also specify the date upon which delivery is to be made.

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