# Field Museum News

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# MANY BIRDS SPEND WINTER IN THE CHICAGO REGION

BY EMMET R. BLAKE ASSISTANT CURATOR OF BIRDS

Chicago has long been famous as the railroad center of the United States, where passengers change trains in going between east and west, or north and south, and where lines of freight cars are shunted from one track system to another. In recent years, it has similarly become a great junction for the air

lines.

Vol. 11

Did you know it is also the crossroads of the nation for the birds of America in their annual journeys between their northern summer homes and southern winter quarters -a place that Nature has ordained for the crossing of the paths of feathered as well as human travelers?

The Chicago region is ideally suited, both in its geographical position and ecological composition, for ornithological activity at all seasons. It is here that the faunas of the eastern forests and of

the western plains meet or overlap. Among certain birds, such as the meadowlark, breeding representatives of the eastern and western races of the same species are conveniently near for observation. Although the Chicago area lies within the northern limits of many typically southern species, it also marks the southern bounds of others which range to higher latitudes.

The wealth and variety of relatively undisturbed natural habitats near Chicago insure an abundance of birds throughout the year. Prairie and forest, slough and dune, each harbors its association of birdlife, while the proximity of expansive lakes attracts many species which otherwise would not occur so far inland. During migration, myriads of birds flood the area in following

one of the four major fly-ways of the con-

tinent from north to south.

More than 400 of the 1,421 species and races of birds found north of Mexico have been recorded in Illinois. Approximately 370 of these occur, at least occasionally, within seventy-five miles of Chicago. In order to understand the inter-relationships of these varied forms and their place in our natural economy, the birds of the Chicago region can be classified broadly as



Winter Birds of Lake Michlgan

A habitat group in Hall 20 at Field Museum, showing some of the many varieties of feathered creatures which linger in the Chicago area despite ice and snow. Shown here (left to right) are old-squaw, herring gulls, and red-breasted mergansers.

permanent residents, summer or winter visitants, migrants, and those of rare or purely accidental occurrence. These categories are somewhat flexible, however, for the sensitivity and mobility of birds permit them to respond to climatic and other variable factors with relative ease.

To the bird observer and student of natural history, winter in the Chicago region is hardly less interesting than in the milder seasons. True, the dynamic activity of the breeding and migration periods is lost or curtailed, but with the advent of inclement weather new associations of bird-life are formed, interesting adaptations are to be observed, and many species from the north are for the first time available for study by

(Continued on page 7, column 2)

# MR. LEON MANDEL SPONSORS EXPEDITION IN CARIBBEAN

Through the generosity of Mr. Leon Mandel, of Chicago, Field Museum will open the new year with an expedition to out-of-the-way cays, islands, and rocks in the Caribbean Sea. Birds, mammals, and reptiles will be collected in these places, and fishes and other marine creatures will be collected in the waters surrounding them. Ecological studies are also planned by the

scientific staff of the expedition.

No. 1

The Caribbean cruise will be made aboard the Buccaneer, Mr. Mandel's yacht, sailing from Havana on January 1. Mr. Mandel will be leader as well as sponsor of the expedition, and will personally participate in collecting, as he has so ably done on three previous expeditions which he has sponsored for the Museum. Mrs. Mandel, and her mother, Señora Elvira Panerai, of Havana. will also be members of the party.

Members of the Museum staff accompanying the

expedition are Mr. Rudyerd Boulton, Curator of Birds, and Mr. D. Dwight Davis, Assistant Curator of Anatomy and Osteology. Mr. Poulton will concentrate his efforts chiefly upon the collecting of birds, and Mr. Davis will specialize in reptiles, but both will seek desirable mammal specimens, and oceanographic material, and will assist Mr. Mandel and Captain William Gray, of Palm Beach, in the collecting of fishes.

The localities to be worked are practically all off the routes of regular steamers. Included in the itinerary are such places as Swan Island, a small possession of the United States off the southwest coast of Cuba; the Bay Islands, which belong to the republic of Honduras; Glover's Reef, Half Moon Cay, Turneffe Cay, Chinchorro

Bank, Cozumel I

Bank, Cozumel Island, Holbox Island, and the Triangles (three large rocks in the Gulf of Mexico). The ship will also make a call at the Mexican port of Progreso, at which time members of the party will go inland in Yucatan to visit the famous Maya archaeological site of Chichen Itza. The expedition is expected to complete its work and return to Havana about the middle of February.

Among the objectives of the expedition is the collection of various specimens needed for a new Hall of Fishes currently in preparation at the Museum. Efforts will be made to harpoon a large devilfish—a species of giant ray, also known as manta, having a fin spread of twelve feet or more in fully developed individuals. For this purpose the Buccaneer carries a small auxiliary fishing launch with a cabin, making it possible for the collectors to make side cruises of several days in waters not navigable by the larger vessel. The launch is equipped with two-way radio-telephone apparatus so that constant communication may be maintained with the mother-ship. The launch has a "fishing pulpit," ideally suited to work with harpoons, and full equipment of large nets will be carried for other types of collecting. Specimens will also be sought of large game fishes such as marlin, and attempts will be made to study the life history of these, which to date is shrouded in almost complete mystery.

According to Mr. Boulton, many of the islands and cays to be visited have been incompletely explored biologically. Some of them are known to be inhabited by species and subspecies of birds and reptiles different from those of the adjacent mainland, and it is hoped that the expedition may be able to contribute to the further knowledge of this interesting area.

# THE SCIENTIST EMERGES IN SPITE OF HIMSELF

Monsieur André Cailleux, of Paris, for years has studied the sands deposited by the great ice sheets of the Glacial Period at the time of their greatest advance. His object has been to learn something of climates which prevailed at that time. To do this, he determines under the microscope how much wind-blown sand is mixed with the other sands in these deposits. Large quantities of such sands would indicate a climate dry enough to allow loose sand to be blown about by the wind. He has found that there was a general period of dry weather at the close of the glacial period.

Mr. Henry W. Nichols, Chief Curator of the Department of Geology at Field Museum, while examining under the microscope a sand he collected recently from the glacial deposit at Antioch, near the northern edge of Illinois, noticed the presence of numerous wind-polished grains. He sent samples to M. Cailleux, as a leading au-

thority, for verification. The following reply was received:

"Thank you heartily for your kind letter and samples. I will study the latter only after the victory. I am now a lieutenant of artillery in the French Army. We are very enthusiastic here and all decided not to finish the war before Hitler and the German militarism are knock-out.

"Very truly yours,

"A. Cailleux

"P.S.: Just a look at your samples: both contain eolian grains, but No. 1 seems to be much more eolian than No. 2."

The postscript indicates a characteristic of the typical scientist who, however determinedly he may try to put aside his science because of involvement in some other activity, cannot refrain from consideration of a scientific problem presented to him.

Mr. Nichols states that M. Cailleux' verification of the presence of wind-blown (aeolian or eolian) sand indicates that at some time about 18,000 years ago the climate of the Chicago region was much dryer than it is at present.

### METEORITE STUDIED IN RESEARCH ON AGE OF THE UNIVERSE

BY HENRY HERPERS
ASSISTANT CURATOR OF GEOLOGY

Specimens of the Pultusk meteorite from the collection of Field Museum have played an important role in a program of research which is leading to more definite knowledge of the ages of the earth, the solar system, and the universe.

Dr. Robley D. Evans, a well-known physicist on the staff of the Massachusetts Institute of Technology, Cambridge, Massachusetts, and Dr. Walter C. Schumb and Miss Jane L. Hastings, his colleagues in the Department of Chemistry there, are conducting investigations into the relative amounts of the isotopes of radioactive elements in both meteoritic and terrestrial materials. The Museum has recently published the results of a part of the research in a technical publication.

Isotope is the scientist's name for atoms of an element that differ in weight from that of the normal atom. For example, the weight of the normal lead atom is 207 units, but some lead atoms weigh 206, and others 208. The variants are the isotopes of the element lead. Many other elements, such as iron, cobalt, nickel, silicon, and chlorine, to name but a few, also exhibit abnormal atomic weights, and scientists have found that the relative amounts of the isotopes present in an element, independent of its source or its mode of combination with other elements, are constant.

In the case of radioactive elements, such as uranium and thorium, the study of

abundance-ratios of the isotopes has an additional importance, for by means of them a knowledge of the difference in age between the atoms in a meteorite specimen and those in a terrestrial rock may be determined. The radioactive elements uranium and thorium break down continuously and form other radioactive elements which, in turn, break down, finally forming lead.

The rate of breakdown has been determined for all the radioactive elements, and a determination of the amounts of those elements in a given specimen enables the scientist to calculate the length of time required for their formation. Since it has been established that "in the beginning" no secondary radioactive elements were present, and that only the primary radioactive elements, uranium and thorium, existed, any secondary elements present now would have begun forming when the rocks or meteorites which contain them first came into existence. Thus, the age of the rock or meteorite may be determined.

The scientists at the Massachusetts Institute of Technology, who have developed most precise methods for research on the isotopes of elements, have found that the age of the uranium atoms in the Pultusk meteorite is the same as the age of the atoms of terrestrial uranium. English scientists have found that the age of terrestrial uranium atoms is approximately 2,000,000,000 years.

The Pultusk meteorite shower occurred January 30, 1868, near the town of that name in Russian Poland. Excellent specimens of the meteorite may be seen in Hall 34 of the Museum.

Devices associated with strange tribal ideas of magical powers and practice are included among the exhibits pertaining to Australian aborigines in Hall A-I.

# THE WAGES OF BIOLOGICAL SIN

are forecast in *Twilight of Man*, a book by Dr. Earnest A. Hooton, Professor of Anthropology at Harvard.

"A scintillating and ironically witty account of human devolution, illustrated with almost incredibly amusing drawings by the author," says Dr. Henry Field, Curator of Physical Anthropology at Field Museum. "This sugar-coated, painless method of presenting both current and future racial problems will appeal to the layman, who should, particularly in these times, face the possible reversion to barbarism."

On sale at the BOOK SHOP OF FIELD MUSEUM-\$3.

# FIELD MUSEUM BOTANIST RETURNS FROM EUROPE

After more than ten years in Europe during which he has been conducting an important botanical project for Field Museum, Mr. J. Francis Macbride, Associate Curator of the Herbarium, returned to Chicago December 18. Mr. Macbride obtained photographic negatives of more than 40,000 type specimens of plants, chiefly South American species, preserved in the principal herbaria of various European countries. He also obtained from the herbaria in Copenhagen, Geneva, Paris, Madrid, and Vienna, a large number of herbarium specimens, many of them notable for their historical associations.

The type specimen negatives secured by Mr. Macbride represent an important development in systematic botany, not only to Field Museum, but to botanists throughout the United States, and foreign countries as well. Through Field Museum, prints of these are made available to scientists and institutions at cost, obviating the necessity for much travel and delay which would otherwise confront them in many of their research problems. The destructive possibilities of the present war make these negatives potentially even more valuable and important than when the project of collecting them was conceived, as under certain circumstances they might be the only remaining records of many of these type specimens of plants. Said Mr. Macbride on his return to the Museum:

"After life in Paris in recent monthswith its blackouts at nightfall, the occasional sirens shrieking the 'alert' signal, the drone of war planes overhead, the boom of antiaircraft guns reverberating from the surrounding hills, people scurrying in the streets for abris (shelters), their heels tapping, the only illumination from their flashlights, police whistling shrilly at the appearance of any other light in the Stygian darknessafter such a world, the bright peaceful streets of America, thronged with happy free citizens spending the comparatively abundant American dollar, is a contrast that makes a returning Chicagoan's heart leap with joy! It makes him feel like hugging himself in gratitude that he is out of the sad mess to which civilization has come across the water.

"From this seemingly dying civilization, from the best of which our own culture took its roots, I have been privileged for these ten years to work toward saving for science a portion of the botanical record that might be otherwise destroyed in just such a conflagration as hovers over Europe at this moment. The records thus preserved are of American origin, and are precious because of their inestimable value in the study of our native plants in the present and future. The threat to these, as to other collections of scientific and of

artistic significance, is a real one, as every government and every people in Europe knows. The result is that a fear, a sadness, pervades the everyday life in the neutral countries no less than those at war."

The greater part of Mr. Macbride's negatives were sent, intermittently, during his years in Europe, to the Museum, where they are already in use. Part of his collections, obtained in the later months of 1939, have been left in storage in Geneva and Paris, because of the difficulties and risks involved in shipping them under present circumstances.

Mr. Macbride returned to America on a ship of United States registry, sailing from Genoa. The voyage was without incident except for rigorous inspection of the ship and its passengers by British naval authorities at Gibraltar.

#### THINGS YOU MAY HAVE MISSED

# Chinese Stoves for the Dead to Cook Their Meals

The ancient Chinese, like the Egyptians, were much concerned about extending the necessities, comforts and conveniences of life to their deceased relatives and friends. Consequently they buried with the dead



Mortuary Stove

Pottery model such as the Chinese buried with the dead on the assumption that cooking would have to be continued in the other world. Exhibited in Hall 24.

various implements, and representations—in pottery or other material—of food, domestic animals, and even human servitors.

Among the things buried with the dead were pottery models of stoves so that the cooking of food might be continued in the other world. A number of these, dating to about the beginning of the Christian era, are on exhibition in the Hall of Chinese Archaeology (George T. and Frances Gaylord Smith Hall—Hall 24).

Also exhibited is a real cast-iron stove, made during the later Han Dynasty (A.D. 25–220). This, although likewise found buried in a grave, is of the type upon which the people of the period actually did their cooking, according to Mr. C. Martin Wilbur, Curator of Chinese Archaeology and Ethnology. The process of casting iron was the basis of an important industry in old China. Iron founders amassed large fortunes, and in 119 B.C., during the reign

of Emperor Wu, the industry became a state monopoly.

The iron stove is provided with a chimney at one end, and has five cooking holes on top. There is a platform in front of the fire chamber. The four feet are in the shape of a conventionalized art form representing elephants. An inscription on the front has been deciphered as "Great felicity! May this stove be serviceable to the lords."

The mortuary stove models in pottery are similar in design. On some of them are molded, in relief, utensils and articles of food, such as pokers, trays, mats, ladles, fish, and fowl. Also on exhibition is a rubbing from a stone carved during the second century A.D., which shows men preparing a feast and using just such a stove full size.

### Groups of "4-H" Boys and Girls Make Annual Museum Visit

Field Museum was host, on December 5 and 7, to groups aggregating 1,018 boys and girls from American farms. These youths were in Chicago as delegates to the National Congress of 4-H Clubs held each autumn in conjunction with the International Live Stock Exposition. Members of the staff of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures conducted the groups on tours of the Museum halls devoted to prehistoric animal life, early man, the Races of Mankind sculptures by Malvina Hoffman, and the exhibits of animals. The live stock show also was responsible for bringing many other out-oftown visitors to the Museum.

At the Live Stock Exposition itself, Field Museum, following its custom of a number of years past, participated by exhibiting several of the portable cases circulated among Chicago schools by the Department of the N. W. Harris Public School Extension, together with photographs of some of the outstanding exhibits in the Museum halls. A wall space of more than thirty feet was devoted to this exhibit, and indications are that it stimulated many of the out-of-town people at the exposition to visit the Museum.

# FIELD MUSEUM TO PRESENT RADIO PROGRAM SERIES

Beginning early in January, a series of radio broadcasts on various phases of the work of Field Museum will be presented in co-operation with the University Broadcasting Council. There will be one program each week. At the time this issue of FIELD MUSEUM NEWS is going to press, details as to the station, day, hour, and titles are not available, but to those who may be interested it is suggested that they watch the radio programs printed in the daily newspapers. Speakers on these programs will be members of the staff of the Museum.

## MOUNTING OF ANIMALS FOR EXHIBITION INVOLVES MANY STEPS AND THE UTMOST CARE

An extremely rare rodent whose scientific name, *Dinomys*, translates from the Greek into "Terrible Mouse," recently was added to Field Museum's systematic exhibit of mammals in Hall 15.

Known to the Indians in its native Peru



Figure 1. Taxidermist W. E. Eigsti making the clay model. The technique of a sculptor is required.

by still another name-"rukupi"-the "Terrible Mouse" actually is not very terrible, according to Mr. Colin C, Sanborn, Curator of Mammals. The specimen was obtained on a Field Museum South American expedition conducted by the late Edmund Heller (a former member of the Museum staff who became Director of the Fleishhacker Zoo in San Francisco). He reported that Dinomys is not a real fighter, but merely fights as a last resort to save its life. It is slow in motion, and cannot turn quickly, in consequence of which it is lacking in protection from attacks in the rear by alert enemies, such as ocelots, taras, coatis, and others, which prey upon it. Because of this danger, Dinomys usually lives in rocky cliffs or holes in the ground, where it can back up and secure rear protection. It has large teeth with which it can fight any ordinary enemy. Because of its rarity the animal is of special interest to zoologists.

Field Museum is constantly in receipt of inquiries as to the methods employed in preparing its lifelike exhibits of animals. So many visitors apply for permission to go "behind the scenes" and witness work in progress that, to prevent the disturbance of work that such distraction would inevitably cause, it has been necessary to adopt a policy of rejecting such applications except in a few instances where special circumstances provide valid reasons for granting permission. Besides, in a single visit it is possible to observe work at only one stage, which does not give a satisfactory idea of the many long and intricate processes.

However, a series of photographs made during the preparation of the mount of *Dinomys* by Staff Taxidermist W. E. Eigsti makes it possible to present a synopsis of some of the steps taken in bringing a zoological specimen "back to life." These

pictures, of course, represent only one of several methods of taxidermy employed. The techniques vary considerably both in accordance with the type of animal being prepared for exhibition, and with the special skills and practices of the individual taxidermists. Like artists, good taxidermists develop their own practices which may differ considerably, though attaining approximately the same end-result. There is a basic relationship between the various techniques, however, and the present case serves adequately to illustrate the general method.

Because, in this instance, Mr. Heller had to be satisfied with a specimen of the rare Dinomys collected by Indian natives, only the skin and a skull were obtainable. In the case of specimens shot by Museum collectors themselves, the skeletons also are usually brought home. When the skeleton is thus available, the taxidermist usually uses it as a temporary framework for construction of his clay model of the animal. Because such bones were lacking, Mr. Eigsti had to carve facsimiles of bones out of wood for this purpose (a practice also



Figure 2. The plaster molds removed from the manikin, which is now ready for mounting the skin.

employed where, because of rarity, it may be desirable to preserve a skeleton for exhibition or study purposes). In this case, with bones completely lacking, it was necessary to base measurements for the facsimiles upon the lengths indicated by the skin. Figure 1 shows Taxidermist Eigsti applying the clay to an upright core supported by an iron rod. The core in turn supports the skull and the wooden leg bones which are fastened by strong wire. Thus held in place, after a lifelike position has been determined, the bones or bone facsimiles provide the most natural and lifelike framework upon which to model the muscles in clay. This is done much as a sculptor models his works of art, but more attention must be given here to anatomical verity. When the modeling in clay has been completed, the skin is temporarily fitted upon it, and such adjustments as may be necessary to insure proper fit are made by adding to or removing

from the clay in various places as the situation requires. Altogether, even in the case of this small mammal, the meticulous care devoted to attaining scientific accuracy and verisimilitude to life made it necessary to devote some three weeks of work to preparation of the clay model alone (in the preparation of large habitat groups, with their many additional problems, a period of months of work is often required). When it has finally been completed in satisfactory manner, a cast is made from the clay model, and the resulting mold, of plaster reinforced by fiber, is removed. This mold is the negative from which will be obtained the ultimate manikin over which the animal's skin is to be mounted.

The manikin is made by fitting three layers of burlap into the negative molds. Through the burlap, plaster to which dextrine has been added to strengthen it, is rubbed and worked. The sections of the manikin are then joined, thus providing a sturdy hollow form for mounting of the skin. The plaster of the manikin is allowed to set, and after it is strong and hard, the molds are removed from it in three sections. Figure 2 shows the plaster molds being separated from the manikin. The reason for making the molds in three sections, and then assembling them, is that this eliminates difficulties that might otherwise be encountered in removing them without damage to the manikin. The manikin now is a complete and exact reproduction of the clay model. The mold has served its purpose, and is discarded. Next the manikin is shellacked, and glass eyes are set in place. It is now ready to receive the skin.

Figure 3 shows the taxidermist mounting the skin on the manikin. This is done with the skin wet. A dextrine paste is applied upon both the manikin and the skin. This is an exceedingly strong adhesive which makes the skin adhere tightly to the manikin even in the hollows of body formation. It is favored also for its permanent nature, so that once mounted with this material, the skin does not eventually loosen up in spots and lose its carefully executed life-



Figure 3. Mounting the skin on the manikin. An exceedingly strong adhesive is used so that skin will adhere tightly even in the hollows of the body formation.



Figure 4. The finishing touches. The whiskers must be reset, and faded spots in the skin must be retouched.

like contours, so essential to a good exhibit

In Figure 4, Mr. Eigsti is seen applying
the finishing touches. The whiskers, removed before tanning to prevent their
being spoiled or broken, are reset by the
taxidermist. Any spots in the skin where
the color may have faded are retouched.

Dinomys is then ready to make his debut
in the exhibition hall where, for years to
come, he will be seen by thousands of people.

# EXPEDITION'S HERPETOLOGIST RETURNS FROM PERU

Bringing extensive collections of the animals of Peru, Mr. Karl P. Schmidt, Curator of Amphibians and Reptiles, and a member of the Magellanic Expedition of Field Museum, returned to Chicago last month.

Other members of the expedition—the leader, Dr. Wilfred H. Osgood, Chief Curator of Zoology; Mr. Colin C. Sanborn, Curator of Mammals, and Mr. John Schmidt, field assistant—are remaining in the field, with several months more of work before them. The last reports indicated that they would be collecting in extreme southern regions of South America, along the Straits of Magellan, at the time this is published. There they will continue the research begun in 1834 by Charles Darwin on the famous cruise of the Beagle.

Mr. Schmidt brought back approximately 500 specimens of mammals, 250 birds, 1,200 reptiles and amphibians, 400 fishes, and a number of insects and invertebrates. The great majority are of species entirely new to the collections of Field Museum, and therefore of great importance to zoological research. Of special interest are specimens of a chocolate-red mouse whose scientific name is Akodon pulcherrimus meaning "most beautiful akodon," and another somewhat larger rodent, known locally in Peru as the "rata Andina." These were collected in the Andes at altitudes above 15,000 feet, which represents perhaps the pinnacle of rodent habitats. No examples of these species have reached the United States before, and the present collection is more extensive than any other in the world, Mr. Schmidt says. Another noteworthy rodent collected, called the vizcacha, is about the size of a rabbit, and similar to it except for the presence of a long tail. By special permission, the expedition obtained a specimen of the vicuña, one of the South American members of the camel group, which is strictly protected by the Peruvian government.

The reptiles and amphibians in the collection represent specialized species which have been adjusted in the evolutionary process to withstand the severe climate of high altitudes (up to the snowline) in the mountains. Included are many lizards, and frogs of large varieties which inhabit Lakes Titicaca and Junin. Especially noteworthy are a moderate sized lizard, and numerous frogs of the genus *Telmatobius*.

Mr. Schmidt collected lizards also on the Chincha Islands off the Peruvian coast. These islands are of particular biological interest. The co-operation of Mr. William Vogt, biologist in charge of research for the Guano Company, contributed much to the success of this part of the expedition.

Mr. Schmidt, and his son John, were the first Americans to travel by truck on new roads which have just been opened between Lima and Arequipa, and on connecting roads which lead into regions that were formerly inaccessible. They conducted biological reconnaissance over most of the coastal desert, a region remarkable for its characteristic lack of vegetation in all but the narrow valleys crossing from the mountains. The latter are the habitat of an abundant fauna of lizards and snakes in northern Peru, which dwindles to only two species toward the south.

## LEAFLET ON HOUSE PLANTS

For the benefit of city dwellers who enjoy gardening, but whose activity is restricted by their residence in hotels and apartments, Field Museum Press has published a leaflet entitled House Plants. Mr. Robert Van Tress, well-known horticulturist on the staff of Garfield Park Conservatory, is the author. The leaflet lists, describes, and illustrates in collotype plates twenty-nine of the principal plants and flowers available, and practical, for cultivation in window boxes and flower pots. The characteristics of each of these plants are set forth, and suggestions are given for their care. Included also is a supplementary list of fifty-six other plants suitable for window gardening. (Price 35 cents.)

#### Physical Anthropology Exhibit

Supplementing the sculptured racial studies by Malvina Hoffman, in Chauncey Keep Memorial Hall, are exhibits illustrating phases of physical anthropology. These include an analytic display of skulls, skeletons, and models of brains; color charts of skin and eyes; casts of hands and feet, and colored transparencies depicting further characteristics of some of the racial types shown by the sculptures.

#### MUSEUM ANTHROPOLOGIST FINDS NEW WHITE RACE GROUP

A new fundamental division of the white race, not hitherto known to anthropologists, has been discovered among the inhabitants of Iran (Persia) as the result of an expedition of Field Museum.

This was revealed with the publication on December 15 of a book, Contributions to the Anthropology of Iran, by Dr. Henry Field, Curator of Physical Anthropology. This work, in two volumes containing 706 pages of text accompanied by twenty-three maps and text figures, and 144 full-page collotype illustrations, is based upon data collected during the Field Museum Anthropological Expedition to the Near East, which was led by Dr. Field, and sponsored by Mr. Marshall Field, a Trustee of the Museum.

The book is the first comprehensive account of the ancient and modern inhabitants of Iran, and represents five years of compilation and intensive research. Many other new facts about these people, of importance to anthropologists and archaeologists, are made known in it.

The new division of mankind, which Dr. Field has labeled the "Iranian Plateau Race," appears to be of equal importance with the well-known classical Nordic, Mediterranean and Alpine divisions of humanity, in the anthropologist's opinion. The main physical characteristics of these people, as described in the book are: light or slender body; light to medium brown skin; dark brown, wavy hair; long and narrow head; elongated and narrow face; brown eyes; large, high, moderately broad convex nose; square jaw and prominent chin.

Of special interest is Dr. Field's theory that this Iranian Plateau race may well be the original source from which the large convex type of nose became diffused among many racial stocks, including the Jews of southwestern Asia.

In addition to a detailed study of the racial composition of the modern inhabitants and their general relationships to the adjoining peoples, the book contains a description of the geography of each province, with lists of the tribes and sub-tribes found inhabiting each. One chapter is devoted to historical references to the peoples of Iran from Herodotus (circa 445 B.C.) down to 1938.

#### Chinese Jades

More than a thousand examples of carved jade from China are exhibited in Hall 30—a collection which alone is worthy of a special visit to the Museum. The pieces are arranged in chronological order from the early archaic period (about 2000 B.C.) down to the end of the nineteenth century. On the walls of the hall are an embroidered screen of the K'ang-hi period and an imperial tapestry of striking beauty.

## Field Museum of Natural History

FOUNDED BY MARSHALL FIELD, 1893 Roosevelt Road and Fleid Drive, Chicago

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#### FIELD MUSEUM NEWS

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

## FROM THE DIRECTOR'S DESK-

#### The Museum Tax Situation

In recent weeks the daily newspapers of Chicago have devoted considerable space to discussion of the difficulty that will confront museums in the year 1941 because of the Illinois Supreme Court decision invalidating the so-called Museum Tax Levy Law. The actions of the court and of the plaintiff in the case were not aimed at the museums, although the museums are in the unfortunate position of being the ultimate losers. The purpose of the tax suit was the reduction of an ever mounting tax burden levied against the people of Illinois, a purpose with which most of us are in substantial agreement. This suit was one of many which have sought to find some means of lessening that burden, and the museum tax levy was found to be legally vulnerable.

Few thinking persons of Chicago would desire to withhold tax support from Field Museum, the Art Institute, Shedd Aquarium, The Museum of Science and Industry, and other institutions existing not for profit, and whose purpose is to give to the people of Chicago and the world accurate and interesting information, as well as opportunities for recreation and culture. It is noteworthy that less than seven per cent of the persons who entered Field Museum last year paid admission—this treasure house, valued at many millions of dollars, was available without any charge to about 1,300,000 persons.

While the loss of revenue from taxes would be a heavy blow to Field Museum, it must not be assumed that the Museum would be closed. The generous endowments of Marshall Field, the elder, the bountiful

gifts of the present Marshall Field and of President Stanley Field, the loyal support of thousands of members, and the determination of a capable Board of Trustees would keep the Museum in operation. It is true, of course, that many activities would have to be rigidly curtailed. Expeditions to bring back to Chicago new treasures and to discover additional knowledge for dissemination through the world would be sharply cut down or entirely eliminated. The purchase of essential equipment would in many instances become impossible, throwing additional burdens upon the staff, and seriously hindering the efficiency of their work. The quality of educational lecturers might necessarily be lowered, and publication of scientific information would unquestionably be limited.

It would indeed be a calamity if Chicago institutions which are recognized throughout the world as leaders in mechanical science, natural science, and art should be forced to yield their position of leadership because of the failure of Chicago citizens to support them properly.

Whatever the outcome, Field Museum will continue to serve the public to the best of its ability and to the utmost possibilities of every dollar of its income.

-Clifford C. Gregg, Director

#### Staff Notes

Dr. Francis Drouet, Curator of Cryptogamic Botany, who is engaged in botanical collecting in the Mexican province of Sonora, recently made excursions from Hermosillo to Rino Bay on the Gulf of California, and to the mountainous region between Ures, Nacozari, and Moctezuma, also Magdelina and Imuris. Dr. Drouet reports that his collection so far numbers in excess of five thousand specimens, and that he is now collecting marine plants in Tónichi, Navojoa, Alamos, and Yámaros.

Mr. David Gustafson, who came to Field Museum in October, 1937, to assist in editorial work and proofreading on Volumes I and II of A Bibliography of Birds (an important work by Dr. Reuben Myron Strong, Chairman, Department of Anatomy, Loyola University Medical School, Chicago), terminated his temporary employment at the Museum on December 31, by virtue of the completion and publication of the two volumes. His departure is viewed with regret by the administration of the Museum, and by those who were associated with him in the Division of Printing and the Division of Birds, as well as his many other friends on the staff of the institution.

Mr. Paul G. Dallwig, Layman Lecturer of Field Museum, reports an unusual experience recently during a presentation of his lecture, "Gems, Jewels and 'Junk.'" After dramatizing the romantic history of

the emerald, its supreme high value among gem stones, and the talismanic or charm power imputed to it by some people, whereby it is supposed to endow its possessor with a good memory and notable power of speech, Mr. Dallwig added with a smile, "So will someone please lend me an emerald?" At that very moment a woman in his audience became so excited at learning the value of her emerald ring that it shook off her finger and rolled across the floor to Mr. Dallwig.

Mr. Emmet R. Blake, Assistant Curator of Birds, recently was guest speaker for the General Electric Men's Club. His subject was "Travels of a Naturalist in British Guiana."

A lecture on "Field Museum and Its Work" was presented before members of the Hamilton Club on December 14 by Mr. Loren P. Woods of the James Nelson and Anna Louise Raymond Foundation staff.

## Distinguished Visitors

Among distinguished visitors recently received at Field Museum are: Dr. Edson S. Bastin, Chairman of the Department of Geology and Paleontology at the University of Chicago; Mr. John Clark, paleontologist of the Carnegie Museum, Washington, D.C., who brought fossil specimens for comparison with some in the collections of this institution; Professor Moholy-Nagy, Director of the School of Design, Chicago, and Mr. David Rockefeller, who is engaged in economic studies at the University of Chicago.

#### 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.

# FOUR MUSEUM EMPLOYEES RETIRE ON PENSIONS

December 31, 1939, marked the retirement of several employees of Field Museum under the new pension program instituted



Miss Margaret M. Cornell

last year. All retirements at this time either were granted at the request of the employee or were necessitated by impaired physical condition. Those whose active work at Field Museum terminated with the end of the year just past include Miss Margaret M.

Cornell, Miss Rose J. Watson, Mr. Thomas Mason, and Mr. Valerie Legault.

Miss Margaret M. Cornell, Chief of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures, joined the staff of Field Museum in July, 1926, as a guide-lecturer, and became Chief of the Division in March, 1929. She is an alumna of Kent Teachers College, the University of Chicago, and Northwestern University. Prior to her association with Field Museum she had had teaching experience in Ohio, Kentucky, and Illinois. Under her leadership the Raymond Foundation was expanded both in number of personnel and in the scope of its activities. During the year 1938, the last year for which complete figures were available at the time of going to press, the activities of the Raymond Foundation reached 265,229 individuals.

Miss Rose J. Watson, Departmental Librarian and secretary to the Chief Curator of Anthropology, came to Field Museum in September, 1907, and for more than thirty-two years has been an integral part of the administration of that Department. She served under three Chief Curators, Dr. George A. Dorsey, Dr. Berthold Laufer, and Dr. Paul S. Martin.

Mr. Thomas Mason joined the staff of Field Museum in December, 1896, as Chief Engineer, and was one of the oldest men in continuous service at the institution. During the entire period when Field Museum was located in Jackson Park, Mr. Mason continued as Chief Engineer, giving up that title and responsibility when the care of a new and larger plant and a new building confronted him at an age when many men retire from active service. Mr. Mason chose to remain in the Division of Engineering and has done so until the present time. He has passed his eightieth year, and the Museum is unwilling to make further demands upon his naturally diminishing strength.

Mr. Valerie Legault came to Field Museum as a carpenter in July, 1906. When the N. W. Harris Public School Extension was founded, Mr. Legault was detailed to that Department and was of great value in helping to plan the original traveling Museum case. In 1924 he was transferred to the Department of Geology, where he has taken care of the mechanical side of its exhibition program ever since. Mr. Legault is a native of Montreal, Quebec, but transferred his citizenship and his loyalty to his adopted country many years ago.

It is but natural that the employees of Field Museum look upon the passing of their several co-workers from active service with deep regret, recalling the many years of pleasant association together. On the other hand, it is most gratifying to realize that provision has been made for their future needs as a just reward for faithful service at Field Museum.

—C.C.G.

#### CHICAGO WINTER BIRDS

(Continued from page 1)

the local ornithologists of this region. In winter the activity of birds is motivated primarily by a search for food. If this need is adequately filled, most birds are able to survive temperatures which otherwise would force them southward or cause high mortality among those which remained. So vital to wintering birds is this single factor that the maintenance of sheltered feeding stations becomes a highly commendable and satisfying hobby. Not infrequently species which normally migrate southward can be encouraged to remain about feeding stations until spring. Many obscure problems of local distribution can best be solved by familiarity with the kinds and sources of food preferred by the various species.

A majority of the several score species which normally winter in the Chicago region can be regarded as permanent residents. The bob-white, Hungarian partridge, ringnecked pheasant, English sparrow and other strictly sedentary species probably remain within a few miles of their first homes throughout their lives. In general, however, the birds one sees in winter are not the individuals which nested in the area. With the approach of frigid weather a modified migration takes place in which locally breeding individuals are gradually displaced by new arrivals from the north.

As can be expected, Lake Michigan and other large bodies of water nearby strongly influence the occurrence and distribution of birds in the Chicago region. Each autumn countless northern-bred shore birds and ducks pause at these havens of food and shelter. Flocks of mergansers, golden-eyes, old-squaws, and Canada geese regularly resist all but the most inclement weather, and occasionally such rarities as eiders, scoters, Barrow's golden-eye and Harlequin ducks appear from the north. Ring-billed

and herring gulls may be seen on the lake at all seasons, though neither nests in our area.

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The study of wintering birds is particularly recommended for the novice who might well be confused and discouraged by the much greater activity and abundance of birds in spring and summer. Many species can be lured by strategically-placed feeding stations, and observation of the others in leafless trees usually is relatively easy. Fewer than 100 species are known to winter near Chicago. As one becomes familiar with these under ideal conditions others can be added to the list of acquaintances during the spring migration.

# MIRIAM WOOD IS NEW CHIEF OF RAYMOND FOUNDATION

Miss Miriam Wood, a member of the staff of the James Nelson and Anna Louise

Raymond Foundation for Public School and Children's Lectures since 1929, will become Chief of that lecture foundation on January 1, 1940, on the retirement of Miss Margaret M. Cornell. Miss Wood took both her undergraduate and graduate work at Northwestern



Miss Mirlam Wood

University. During her years at Field Museum she has devoted her principal energies toward the extension lectures carried on in the schools of Chicago and is thoroughly conversant with the public school curriculum and methods. Her appointment promises to uphold the high standards set for the Raymond Foundation.

## Missouri Flora Nearing Publication

A spring flora of the State of Missouri is now in process of publication jointly by the Missouri Botanical Garden and Field Museum. It was prepared by Dr. Julian A. Steyermark, Assistant Curator of the Herbarium, and provides keys in non-technical language for all plants of the state known to flower before June 1. The more than one thousand illustrations, picturing all the plants listed, were prepared at the Museum with the assistance of artists supplied by the Works Progress Administration.

#### Mortars of "Spirits"

Old stone mortars from New Guinea, regarded by natives as belonging to spirits, are on exhibition in Joseph N. Field Hall (Hall A). Found on old village sites and in the forest, their origin and use are unknown to the present inhabitants, who therefore have assumed that they are supernatural.

## JANUARY 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 January:

Week beginning January 1: Monday— New Year's holiday, Museum closed; Tuesday—Our Chicago Region Neighbors; Wednesday—The Dynamic Earth; Thursday General Tour; Friday—Plants People Eat.

Week beginning January 8: Monday— The Near East, Cradle of Civilization; Tuesday—North American Wild Life; Wednesday—Minerals and Rocks; Thursday— General Tour; Friday—Clothing and Shelter from Plants.

Week beginning January 15: Monday—Ancient Days in China; Tuesday—Animal Life of South America; Wednesday—Minerals Used for Precious and Semi-precious Stones; Thursday—General Tour; Friday—Plants and World Geography.

Week beginning January 22: Monday—America Before Columbus; Tuesday—Mammals and Birds of Africa; Wednesday—Plants and Animals of Prehistoric Times; Thursday—General Tour; Friday—How Man Classifies Plants.

Week beginning January 29: Monday— The First Americans; Tuesday—Animals of the Oriental Regions; Wednesday—Mineral Resources of the Western World.

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.

#### GIFTS TO THE MUSEUM

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

#### Department of Botany:

From Dr. Earl E. Sherff, Chicago—96 photographic negatives of plant specimens; from Harry Hoogstraal, Chicago—70 herbarium specimens, Mexico; from C. C. Deam, Bluffton, Ind.—6 herbarium specimens, Indiana.

#### Department of Geology:

From Western Springs Park Board, Western Springs, Ill.—6 specimens of fossil bones, Illinois; from Fred Sullivan and Jack Paige, Chicago—2 cherts, Missouri; from Miss Ada Vanderpool, Quincy, Ill.—fragment of a mastodon tusk, Michigan; from Henry Herpers, Chicago—a specimen of cross bedding in sandstone, New York. Department of Zoology:

From Michael Lerner, New York City—color film and slides of views of Mt. Egmont, New Zealand, to be used as studies in preparing the Museum's kiwi group; from Chicago Zoological Society, Brookfield, Ill.—6 mammals and 13 birds; from John G. Shedd Aquarium, Chicago—a giant salamander and 6 fish specimens; from Lincoln Park Zoo, Chicago—a large adult lioness, a giant skink, and 3 reptiles; from Schwab Brothers, Muscatine, Iowa—4 birds, Iowa, Palaearctica, and India; from Rupert

Wenzel, Chicago—7 beetles (including 4 paratypes of 3 species), United States, Panama, and South America; from Dr. Lewis H. Weld, East Falls Church, Va.—34 wasps and 12 galls, Turkey and United States; from Warren Buck, Camden, N. J.—9 fish specimens, West Africa.

#### The Llbrary:

Valuable books from H. E. Varga, Cleveland, Ohio; Wrigley J. Brent, Tulsa, Okla.; New York Horticultural Society, New York City; Graham Aldis, and Karl P. Schmidt, both of Chicago.

# "ROMANCE OF DIAMONDS" IS TOPIC OF JANUARY SUNDAY TOURS

On Sunday afternoons during January, Mr. Paul G. Dallwig, the Layman Lecturer of Field Museum, will present an entirely new subject in his series of lecture-tours— "The Romance of Diamonds from Mine

to Man." Mr. Dallwig will conduct his hearers on a tour of the gem room (H. N. Higinbotham Hall) and other halls in the Department of Geology con-



taining exhibits pertaining to diamonds. Mr. Dallwig will tell the story of diamonds from their original "find" through the various stages of mining, sorting, cutting, and polishing, and will relate fascinating tales of hate, love, greed, and murder attached to the successive ownership of the world's "famous diamonds." He will dramatize in word pictures the finding of diamonds in Africa, the diamond rush that followed, life among the natives as encountered by prospectors and miners, and an imaginary trip through a diamond mine.

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 February Mr. Dallwig's subject will be "Prehistoric Monsters in Nature's 'March of Time'."

A large collection of coal specimens from the important Saarbrücken field, in the heart of the European war zone, is on exhibition in Hall 36 of the Department of Geology at Field Museum.

Remarkable for its large size and symmetrical form is the large iron meteorite found near Tonopah, Nevada, in 1908, and now exhibited in Stanley Field Hall. It weighs 3,275 pounds.

#### NEW MEMBERS

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

#### Associate Members

Robert C. Biddle, Joseph L. Block, Philip D. Block, Jr., Mrs. Arthur H. Compton, Mrs. George L. Cragg, Mrs. Frank F. Ferry, Lawrence Hertzberg, Arthur A. Marquart, Mrs. A. D. Nast, Mrs. Robert G. Regan,

#### Annual Members

Harold V. Amberg, Mrs. Evan L. Ausman, John C. Bagby, John M. Berry, Mrs. L. W. Budd, Mrs. Emma Church, E. L. Clark, Ralph Ellis, Leo A. Goldstein, Allin K. Ingalls, Dr. Harry T. Jack, Louis Kahn, Samuel A. Marx, Dr. L. E. Nadelhoffer, George W. Nordstrum, Arthur J. O'Hara, Fred A. Preston, Royden K. Pretty, Edward H. Ravenscroft, Mrs. J. B. Rogers, Mrs. Walter A. Shaw, Louis Sisskind, James Slavik, Mrs. Philip T. Starck, Mrs. Marcy T. Weeks, David Maxwell Weil, William Ryer Wright, Dr. Hyman Yanofsky.

#### Ancient Romans Favored Asparagus

Common asparagus grows wild in Europe and Asia, especially in salt marshes, often occurring as a weed in fields and along roadsides. The plant has been under cultivation for more than 2,000 years, and was known to the ancient Romans.

### 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 Life Members pay \$100, 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 \$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

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# RED GROUSE, MOST FAMOUS OF BRITISH GAME BIRDS, SHOWN IN HABITAT GROUP

BY H. B. CONOVER RESEARCH ASSOCIATE, DIVISION OF BIRDS

Probably the most important game or sporting bird of the British Isles is the red grouse. While more people may enjoy pheasant shooting, the pursuit of the grouse is not only a great sporting and social event,

but it is economically a great asset to parts of Great Britain, especially the Scottish Highlands. Good grouse moors bring a large rental, and a great sum of money is spent by the sportsmen during the shooting season. Much of this expenditure goes to the local people in the form of wages for gamekeepers, drivers or beaters, and servants. As long ago as 1910 it was estimated by a writer that the annual rentals of Scottish shootings (mostly grouse moors), exclusive of deer forests, were between three and a half and four million dollars and that expenses of the renters and sportsmen came to a like amount. A later estimate for the whole of Great Britain has

given ten million dollars as the annual sum expended on this form of sport.

A habitat group of the British red grouse has recently been opened in Field Museum's Hall of Birds (Hall 20). The scene depicted is a section of moor in Selkirkshire, Scotland, as it appears in late October. It is a typical grouse environment, and a number of the birds are seen at rest in the snow on one of the hilltops. Despite the snow, the season is still early enough so that the grass is green lower down in the hills, and in the valley where is seen a small meandering stream. The region depicted is one where many of the large estates are devoted primarily to grouse moors, and where August 12, traditional opening day of the

shooting season, has come to be regarded almost as a national holiday. The nearest approach in the United States to the excitement and thorough organization which greets the red grouse shooting season in Great Britain is that which surrounds the hunting of partridge or bob-white on some

In the Heather-covered Hills of Scotland After an Early Snow
Habitat group of red grouse recently installed in the Hall of Birds (Hall 20). This bird, a favorite of the
sportsman, is found only in the British Isles, although some species of grouse inhabit America and other countries.
The birds were mounted by Staff Taxidermist John W. Moyer; Staff Artist Arthur G. Rucckert painted the
background, and the foreground accessories were made under the supervision of Preparator Frank H. Letl.

of the large plantations in the southern states.

The British red grouse is peculiar to the British Isles. It is found only on moors where the British heather grows, this plant being necessary for its existence, as it feeds to a great extent on the buds. Its habitats include the moors of Scotland, the Hebrides and Orkney Islands, northern England, Wales, and Ireland. Its center of abundance lies in Scotland, but in few places are grouse more numerous than the moors of southern Yorkshire in the vicinity of Sheffield, and Derbyshire.

Attempts have been made to introduce red grouse elsewhere, but with little success. At one time they were introduced near Göteborg, Sweden, where they were said to have done well. In 1894 some of the birds were liberated on a high tract of moorland on the borders of Germany and Belgium, south of Spa, where red grouse still existed as late as 1910. Whether any are now to be found in these localities is unknown.

Grouse are shot in two ways. The first and oldest form of the sport is to hunt them over pointing dogs in a manner similar to the American method of hunting the quail and the different species of grouse found on this continent. Hunting over dogs is still practised on some of the moors, especially the smaller ones in Ireland, and on the Orkneys and Hebrides. By far the greatest number of birds are shot, however, by the method called driving.

The driving method of hunting is supposed to have originated because the red grouse in many places became too wild to be hunted with dogs. Whatever its origin, it has become the most popular form of the sport. By

its use larger bags are made, and in general a greater number of hunters can take part. It has been criticised as being a lazy man's way of shooting, and as not being very sporting. However, the truth of the matter is that a driven grouse generally is a far harder shot than one flushing before a dog. This is because a bird arising before a dog has not had time to get up full speed, whereas a driven grouse is coming at its fastest. Driven birds also provide the shooter with a greater variety of shots, as they can come from all angles.

In this form of shooting, anywhere from two to twelve hunters, or "guns," as they are called in England, are stationed in individual hides or blinds, called butts, and the grouse are driven over them. The butts are located in a straight line, about fifty yards apart, generally along the slope of a hill, but sometimes in a valley. They are made either by hollowing out a part of the hillside leaving a low wall in the direction from which the birds will come, or they are built above ground by forming walls of sod in the shape of a rectangle or horseshoe, with the entrance away from the direction of the drive. The walls of the butts are about four and a half feet in height so as to conceal the "gun" as well as possible without interfering with his opportunity to shoot.

The actual driving of the grouse over the guns is quite an art, and calls for a good knowledge of the ground, habits of the birds, and their actions under different weather conditions. It is the responsibility of the head gamekeeper, who needs to show good generalship in the handling of the drivers. The number of drivers used varies from a dozen to fifty or more according to the extent of ground to be driven. Most of these men are formed in a line, either straight or semicircular, generally parallel to the line of "guns" and at a distance of anywhere from about one to three miles. This line moves toward the line of butts, flushing and driving the birds ahead of them. To keep the grouse from flying out to the side instead of toward the line of "guns," men are stationed at different places along the edge of the drive. These so-called flankers keep hidden, and only show themselves when necessary to turn back birds which are attempting to fly around the line of the butts.

## BIRDS DILIGENTLY PROTECTED

As the amount of the rental that is obtained for each moor depends on the number of birds that can be shot, great care is taken of the grouse. Each year a part of the old heather is burnt so as to have always some new tender plants available, as grouse feed largely on the buds. Vermin, such as rooks, hooded crows, stoats, weasels, and other birds and animals that prey on the grouse or their eggs, are kept under control, and the ground is patrolled to keep off poachers. Each season an estimate is made of the number of birds on each property, and the kill is limited so that a good breeding stock will be left. Conversely, care is taken that the stock of birds left after the shooting season is not too large, as it has been found that this conduces to a spread of the so-called grouse disease, which periodically causes havoc.

Some of the bags made are as follows: In Lancashire on August 12, 1915, eight "guns" killed 2,929 grouse. At Moy Hall, Invernessshire, owned by the Mackintosh of Mackintosh, ten "guns" in 1900 killed 1,740 birds, while the total bag for the season was 6,092. In one year a moor of 4,000 acres produced 5,000 grouse, while another 3,000-acre property yielded 3,600 birds.

The red grouse (Lagopus scoticus) is in

reality a specialized type of ptarmigan. Normal ptarmigan are clothed in pure white body plumage acquired during the regular post-nuptial molt, and in the spring this coat changes to a mottled brown plumage characteristic of the breeding season. But the red grouse omits the winter phase of white plumage.

#### RELATIVES OF RED GROUSE

There are three other species in the genus Lagopus—the willow grouse, the rock ptarmigan, and the white-tailed ptarmigan. The first two are circumpolar in range, while the white-tailed ptarmigan is found only above timber line in the Rocky Mountains from the Kenai Peninsula of Alaska to northern New Mexico.

Except in the breeding season red grouse congregate in flocks. Like the American prairie chicken, the male red grouse performs an interesting series of antics in courtship of the female that it selects as mate.

The birds in the Museum group were mounted by Staff Taxidermist John W. Moyer, the accessories were made by Preparator Frank H. Letl, and the background was painted by Staff Artist Arthur G. Rueckert.

# SPRING LECTURE COURSE WILL OPEN MARCH 2

The seventy-third free course of illustrated lectures on science and travel for adults will open March 2, and thereafter there will be a lecture each Saturday afternoon during March and April. They will be given in the James Simpson Theatre of the Museum, and all will begin at 2:30 o'clock. Motion pictures and stereopticon slides will be used to illustrate the subjects presented by the eminent scientists, naturalists, and explorers who have been engaged for the series.

The first lecture, on March 2, will be "Springtime in the Rockies," and the speaker will be Mr. Alfred M. Bailey, formerly a member of Field Museum's staff, and now Director of the Colorado Museum of Natural History, Denver. Mr. Bailey will tell of the plant and animal life found in various habitats ranging from the plains to the high peaks of the Rocky Mountains, and will touch also upon the fauna and flora of California and British Columbia.

A complete schedule of all nine lectures will appear in the March issue of FIELD MUSEUM NEWS.

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.

## If It's So, How Do You Know? Museum Answers On Radio

Under the title "How Do You Know?" Field Museum began a series of weekly radio broadcasts in co-operation with the University Broadcasting Council on January 25. In these programs, various questions regarding scientific facts and theories are presented, and answered by summarizing the evidence obtained from research by members of the staff of Field Museum and other scientists.

Coast-to-coast reception of this program is assured by its presentation over the Blue Network of the National Broadcasting Company each Thursday from 1 to 1:30 p.m. (Central Standard Time). However, because there is no local outlet available in Chicago at that hour, the broadcasts are being electrically transcribed, and are rebroadcast from the records in Chicago on Saturday afternoons from 4 to 4:30 o'clock over station WENR. Present plans call for the continuation of the broadcasts each week until late in May.

The January 25 (January 27 in Chicago) program consisted of introductory material explaining the purposes, scope, and methods to be employed on the series. Following are the programs scheduled for February:

National network	In Chicago	Subjects:
		HOW DO YOU KNOW—
Feb. I	Feb. 3	-what meteorites are?
Feb. 8	Feb. 10	—the name of a plant
		you have never seen before?
Feb. 15	Feb. 17	-that insects are of
		great value to man?
Feb. 22	Feb. 24	-where the Indians
		came from?
Feb. 29	Mar. 2	-when the cliff houses
		were built?

Programs for other months will be announced in succeeding issues of FIELD MUSEUM NEWS, and in the radio programs published in the daily newspapers.

Field Museum is contributing the scientific data upon which the programs are based, and expert radio technique in their presentation is being furnished by the National Broadcasting Company through its Chicago Educational Director, Miss Judith Waller, and her staff, and Mr. Allen Miller, Director of the University Broadcasting Council, and his associates. Although the programs are aimed especially at pupils in the schools, where radios are now being widely used in classrooms, they are also designed for listeners of all ages.

Have you attended any of the Sunday Afternoon "Layman Lecture Tours" conducted by Mr. Paul G. Dallwig? Reservations may be made at the Museum, or by mail or telephone (Wabash 9410).

# ENGLISH BOTANIST REPORTS 600 POTATO VARIETIES

A recent visitor to the Department of Botany was Mr. E. K. Balls, an English botanist, returning from an extensive expedition to western South America on behalf of the Imperial Agriculture Bureau. Mr. Balls' itinerary included Colombia, Ecuador, Peru, Bolivia and northern Argentina, where his special objective was collecting of wild and cultivated potatoes found in the highlands, especially between 6,000 and 14,000 feet.

Potato cultivation is known to have originated in western South America. It is fairly well established that the common cultivated potato of Europe and North America is derived from a species native to the Chilean island of Chiloe and the Andean area immediately to the north where it was cultivated by the Araucarian Indians. Various other species were, and still are, cultivated in other parts of the Andean region, and many more grow wild from Argentina to Mexico. Russian expeditions to western South America a few years ago collected an astonishingly large number of these, especially in northern Bolivia, for use in breeding and hybridizing experiments.

Mr. Balls' recent collections are very much more extensive than any previously made, and are estimated by him at some 600 kinds, representing wild and cultivated species, and their numerous varieties. His statement that as many as fifteen different kinds were found in a single cultivated field will give some idea of the potato situation in parts of this area. At the same time, it is to be expected that some of the apparently uniform, well established forms found in other places will, like various cultivated grains of Europe, on inbreeding, be resolved into their original genetic components.

Resistance to disease and resistance to cold are qualities which could be added with advantage to the usual cultivated potato. In Bolivia fully grown potato plants were found covered daily with white frost in the morning, resisting a temperature of about 22° Fahrenheit without showing any sign of wilting or injury. It can easily be imagined how valuable such frost resistant qualities would be for the production of new varieties by hybridization. Many of the forms collected were found to have a rather wide distribution, but Mr. Balls' general observation was that in the passage from north to south within the Andean region, the differences in character of both the wild and cultivated plants were very distinct.

Many interesting photographs were made by him in Peru. Among them is a most unusual series showing the use of the curious Peruvian foot-plow in the preparation of the soil for the planting of potatoes and other root-crops. By an extraordinary and fortunate coincidence, these photographs were brought to Field Museum at the very moment that the final touches were being applied to a mural painting representing precisely this operation, as practiced by the inhabitants of the American continent since pre-Columbian days.

—B.E.D.

#### THINGS YOU MAY HAVE MISSED

### Durian Tree Yields a Fruit With Odd Characteristics

A recent addition to the exhibits in the Hall of Plant Life (Hall 29) at Field Museum is a reproduction of the fruit of the durian tree (*Durio zibethina*). This is a forest tree of the Indian archipelago, commonly planted, as well as growing wild, in the Malay Peninsula and islands.

The fruit of the durian, states Dr. B. E. Dahlgren, Chief Curator of Botany, is



A Malayan Frult

Epicures who are able to disregard its disagreeable odor state that the durian is delicious to the palate. Specimen shown above is exhibited in Hall of Plant Life.

famous for its combination of a delicious flavor with a disagreeably putrid odor, thus bringing first disgust, then delight to the person who ventures to eat it. The large globose fruits, long stalked and pendulous from the branches, fall when ripe. Externally they have a thick fibrous rind set with coarse pyramidal spines. Internally the fruit is four-celled, each division containing from two to six large seeds. The seeds are covered with a fleshy or pulpy aril which is the edible part of the fruit.

The Museum exhibit was reproduced from a specimen presented by Mr. Evan Guest, a research worker at the Rubber Institute of Kuala Lumpur, Federated Malay States.

# MR. SILAS II. STRAWN ELECTED SECOND VICE-PRESIDENT

At the Annual Meeting of the Board of Trustees of Field Museum, held January 15, Mr. Silas H. Strawn was elected Second Vice-President, filling the vacancy caused by the death last November of Mr. James Simpson.

Mr. Stanley Field was re-elected as President, and began his thirty-second consecutive year in that office. Other Officers who served in 1939, and were re-elected for 1940, are: Colonel Albert A. Sprague, First 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. Clifford C. Gregg, Director of Field Museum, was recently appointed by Mayor Edward J. Kelly to membership on the Chicago Recreation Commission.

Mr. Bryan Patterson, Assistant Curator of Paleontology, returned to the Museum January 15, after a study of Paleocene mammals at museums in Pittsburgh, New York, Princeton, and Washington. At the Carnegie Museum in Pittsburgh he read two papers at the annual meeting of the vertebrate section of the Paleontological Society of America.

Mr. C. Martin Wilbur, Curator of Chinese Archaeology and Ethnology, lectured January 11 on "Archaeology of the Han Period" at Springfield in the Popular Science Series of the Illinois State Museum.

Mr. L. Bryant Mather, Jr., Assistant Curator of Mineralogy, and Mr. Henry Herpers, Assistant Curator of Geology, attended the recent meetings at Minneapolis of the Geological Society of America, Mineralogical Society of America, Society of Economic Geologists, and other organizations. Mr. Mather also attended a geology conference at the Johns Hopkins University, and lectured in Chicago before the Marquette Geologists' Association.

Mr. Paul G. Dallwig, Layman Lecturer of Field Museum, gave a special lecture on the Races of Mankind sculptures by Malvina Hoffman at the Museum for members of the Hoosier Salon Patrons Association on January 28.

Mr. Karl P. Schmidt, Curator of Amphibians and Reptiles, was speaker on Science Service's radio series, "Adventures in Science," over the Columbia Broadcasting System January 18. His subject was "Recent Discoveries of New Crocodiles."

## A MOUNTED SKELETON OF THE EXTINCT DEER LEPTOMERYX IS PLACED ON EXHIBITION

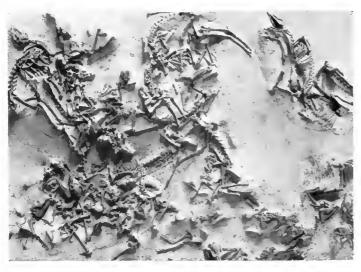
BY PAUL O. McGREW ASSISTANT IN PALEONTOLOGY

In 1905 a Field Museum paleontological expedition under Mr. Elmer S. Riggs, Curator of Paleontology, made a discovery which, to our knowledge, has not been duplicated by any other institution. This discovery was of a series of more than

occur in which each one faces in the same direction. In such cases it is probable that the animals died while seeking refuge from a severe storm and were all heading away from the wind. Such could hardly be true of the *Leptomeryx* skeletons because they face in every direction.

REMOVAL OF MATRIX DIFFICULT

In the laboratory all of the matrix above the bones was removed and the delicate skeletons were thus exposed to view in half-relief. A deer-like animals. Of these, the dik-dik of Africa is perhaps the best known. The smallest, however, is the mouse deer or chevrotain of the Malay Peninsula, Ceylon and India, which is about the same size as Leptomeryx, standing about ten inches high at the shoulders. (In the Department of Zoology there is a habitat group of dik-dik in Carl E. Akeley Memorial Hall, and a specimen of mouse deer in George M. Pullman Hall.) The Oligocene form was once believed to be ancestral to the chevrotain, and certainly there was a strong superficial resemblance between the two. Careful study of the skeletons, however, has shown



From this slab of rock, excavated, as shown above, with the fossil skeletons of perhaps twenty extinct deer confusedly imbedded in it for approximately the past thirty million years—

twenty skeletons of a small extinct deer known as Leptomeryx—all lying within an area of four by seven feet. The specimen was found in the Big Bad Lands of South Dakota in sediments deposited some thirty million years ago during the Oligocene epoch. The rock containing the skeletons was collected as a single slab and shipped to the Museum in sections.

#### POSSIBLE CAUSE OF DEPOSIT

The discovery of so many skeletons in such a limited space might permit some speculation on how the skeletons were thus deposited. Large concentrations of fossils are usually found in ancient stream channels where the bones have been carried considerable distances by the water and dropped in a curve or eddy. Under such conditions, however, complete skeletons are rarely found, and the individual bones are often water-worn and broken. In the case of the Leptomeryx occurrence, the sediments show flood plain origin, and, in addition, the completeness of the skeletons proves that the animals died almost on the spot where they were found. It seems likely that if a herd of the animals was caught in quicksand, the skeletons would be present much as in the group of Leptomeryx. The semifluidity of the quicksand deposit would permit the individual bones to become separated and mixed while the skeletons in the more solid edges of the deposit might retain their original articulated condition. Occasionally, small groups of skeletons

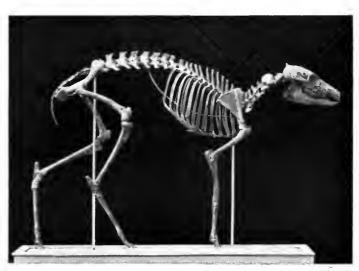
small portion of the block containing the bones of a single skeleton was separated and placed in storage, and the remainder put on exhi-

bition. Recently the single skeleton was prepared and mounted and may now be seen in Ernest R. Graham Hall (Hall 38).

As is usually the case, removal of the individual bones from the matrix presented certain difficulties. The rock surrounding the bones was hard, and it was necessary to chisel it away bit by bit. The fragility and brittleness of the bones was so extreme that often the slightest touch would cause them to break or even shatter. Consequently, it was a long and tedious task to separate each little bone from the enclosing rock without damage. Once the bones were free, liberal applications of shellac hardened them so they could be handled safely. A pose which was thought to be characteristic of the animal was chosen and a temporary mount erected. When satisfied that the position of each bone of the skeleton was accurate, a permanent support was made and the final mount set up.

#### LEPTOMERYX RELATIONSHIPS UNCERTAIN

Leptomeryx is an especially interesting animal because of its extremely small size and the uncertainty of its relationships. In different parts of the world there are now living several kinds of diminutive deer and



—paleontologists at Field Museum were able to select those bones that belong together and assemble them in their proper positions to form this mounted skeleton now exhibited in Ernest R. Graham Hall.

that such a relationship does not exist. Although there is considerable disagreement among paleontologists regarding the exact affinities of *Leptomeryx*, the most widely accepted view is that it was near the ancestry of the deer of the western hemisphere, including the little mazama

## EUROPEAN RACIAL PROBLEMS

are discussed in *The Races of Europe*, by Dr. Carleton S. Coon, Assistant Professor of Anthropology at Harvard.

"A clear presentation of the data now available on the origin and development of the white race," says Dr. Henry Field, Curator of Physical Anthropology at Field Museum. "Not only the anthropologist but also the general reader, whose attention is now focused on Europe, may use this book as a standard reference work dealing with the racial complexities of modern European peoples."

On sale at THE BOOK SHOP of FIELD MUSEUM—\$7.

of South and Central America. Another interesting opinion is that *Leptomeryx* was an early side branch of the camel family. While it may seem that such widely divergent views could be due only to inadequate



Modern Midget Among Hoofed Animals
The dik-dik, as shown in a habitat group in Carl E.
Akeley Memorial Hall. While this animal is a tiny
antelope, rather than a deer, it is about the size of
the extinct Leptomeryx, and thus gives a general idea
of that creature's appearance. Among contemporary
mammals, the dik-dik's size approximates that of a
full-grown rabbit. Its home is on the Ethiopian coast.

study, it must be remembered that both the camel and the deer came from a common ancestor, and that as we go back in geologic time the characters which separate the two groups become less and less pronounced and finally merge into those of the stem form.

## Television Programs Resumed by Field Museum Staff

Field Museum is again participating in a series of experimental programs in education by television over station W9XZV, operated by the Zenith Radio Corporation of Chicago. Officials of the Zenith Corporation requested the Museum to present the current series because of the success attained in the similar programs given last September and October. The first program was given on January 12, and the series will continue each Friday at 7:45 P.M., through February and most of March. The staff of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures is managing the programs, and members of the staff of all the scientific departments are appearing as speakers and being televised with various objects demonstrating the subjects of their talks.

#### Beech Forest Discovered in Mexico

Professor Maximino Martínez, well known botanist of Mexico City, is now engaged in monographic studies of the pines, of which Mexico probably has more species than any other area of equal size on the earth. He was a recent visitor to Field Museum, and presented to the Herbarium specimens of a Mexican beech tree, Fagus Mexicana Martínez, which represent the first record of this genus for Mexico.

The discovery in Mexico, a country believed to be fairly well explored botanically. of a beech forest is a matter of great scientific interest. The locality is in the mountains of Zacatlmaya, near Zacualtipán, about eighty miles northeast of Mexico City, in the State of Hidalgo, at an elevation of 6.000 feet. The forest is reported to cover hundreds of acres. The trees are 100 to 130 feet in height, with trunks 18 to 36 inches in diameter. Previously only a single species of Fagus has been known from Americathe familiar beech, occasional in the Chicago region, which ranges from eastern Canada to northern Florida and eastern Texas. The Mexican tree bears much larger nuts than the northern tree.

# MUSEUM BOTANIST CONTINUES VENEZUELAN EXPLORATION

An expedition far into the interior of the Venezuelan Guiana, by way of the Caura and Merevari Rivers to the Pacarima Mountains, is about to be undertaken by Mr. Llewelyn Williams, Curator of Economic Botany at Field Museum. A report on his plans was recently received from Mr. Williams, who for the last two years has been engaged in botanical exploration for the Venezuelan government during an extended leave of absence from his Museum post. He expects to join a Venezuelan boundary commission which is at work near the Brazilian border.

This is the second such expedition Mr. Williams has made in Venezuela. Reporting on the recently completed first expedition, he tells of a trip into a region so sweltering that it is known as "Infierno" or "Hades" to the native boatmen who navigated the sailboat, canoes, and dugouts used for this wilderness travel. Three weeks were spent in traversing a region totally uninhabited, sailing on rivers upon which dangerous rapids frequently had to be negotiated. Mr. Williams collected plant specimens and helped the native boatmen fish with "barbasco," a poison thrown in the water to stun the fish. By this method, he writes, about 300 large fish, and some 200 pounds of smaller ones, were caught in two hours.

#### **Products of Conifers**

The coniferous trees are not only important for their wood, but for producing resin, turpentine and other distilled products of great economic value. Resin and turpentine come from yellow pine (Pinus palustris) and other species of Pinus. Pine tar is made by destructive distillation of pine wood. Canada balsam, so useful for mounting microscopic objects, is derived from balsam blisters on the trunk of balsam fir (Abies balsamea). Comprehensive exhibits of yellow pine and balsam fir may be seen in Charles F. Millspaugh Hall (Hall 26).

#### MUSEUM STAFF APPOINTMENTS

Several new appointments to the staff of Field Museum became effective at the beginning of this year. Mr. Alexander Spoehr assumed his post as Assistant Curator of American Ethnology and Archaeology, Mrs. Eunice Gemmill became Assistant Librarian, and Mr. Bert E. Grove joined the staff of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures.

Mr. Spoehr, a native of Palo Alto, California, attended Leland Stanford University and the University of Chicago, and has a bachelor of arts degree from the latter. He served as associate archaeologist with Dr. Paul S. Martin, Chief Curator of Anthropology at Field Museum, on two expeditions which excavated prehistoric Indian sites in southwestern Colorado in 1937 and 1938. He participated also in expeditions of the Department of Anthropology of the University of Chicago-the Southern Illinois Archaeological Expedition in 1936, and ethnological expeditions among the Seminole, Creek, Cherokee, Choctaw and Alabama-Koasati Indians in 1938 and 1939. His first tasks in his Field Museum post will include work on an accumulation of American Indian ethnological material which has been in storage since its collection by expeditions of past years, and editorial work on various as yet unpublished ethnological reports.

Mrs. Gemmill, a graduate of Northwestern University, was formerly a member of the staff of the Chicago Public Library, serving at the Austin and Rogers Park branches of that institution.

Mr. Grove, appointed as a lecturer for the Raymond Foundation, to fill a vacancy which occurred under the operation of the Museum's retirement pension plan, began his duties January 15. He completed his studies at Miami University (Oxford, Ohio), and Northwestern University, receiving a bachelor of science degree from the latter.

Several other additions were made to the Museum personnel to fill vacancies caused by retirements of employees, and to meet increased needs in certain divisions. Among the other new employees are: Mr. Frank Heyser, bookbinder, and Mr. Albert Cohn, assistant, in the Library; Miss Nellie B. Starkson, artist-preparator in the Department of Zoology, and Miss Agnes McNary, departmental librarian and secretary to the Chief Curator of Anthropology.

From the backbone of a fossil reptile comes a bone which has completely changed to precious opal. It is now on display in the Gem Room (H. N. Higinbotham Hall).

Reproductions of pueblos built by the Indians of the Southwest are exhibited in Hall 7 of the Department of Anthropology.

## Field Museum of Natural History

FOUNDED BY MARSHALL FIELD, 1893 Roosevelt Road and Fleld Drive, Chicago

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#### FIELD MUSEUM NEWS

CLIFFORD C. GREGG, Director of the Museum Editor
CONTRIBUTING EDITORS
PAUL S. MARTIN Chief Curator of Anthropology

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

### Lord Lothian, British Ambassador, Among Distinguished Visitors

Lord Lothian, British Ambassador to the United States, was a visitor at Field Museum on January 4. He was accompanied by Mr. Leander McCormick-Goodhart, Honorary Commercial Secretary of the British Embassy, and Mr. Lewis H. Bernays, British Consul-General at Chicago. The party was conducted on a tour of some of the Museum's outstanding exhibition halls by Mr. Clifford C. Gregg, Director, and Dr. Henry Field. The visitors were especially interested in the Races of Mankind sculptures by Malvina Hoffman, the Hall of the Stone Age, and the habitat groups of birds and mammals.

Among other distinguished visitors recently received at the Museum are: Professor Robert H. Lowie of the Department of Anthropology at the University of California; Dr. Herbert Spinden, Curator of Primitive and Prehistoric Art at the Brooklyn Institute of Arts and Sciences; Dr. Carl H. Broedel, of the Johns Hopkins University, who recently returned from geological exploration in Rhodesia, Africa; Dr. Carl Schuster, Assistant Curator of Chinese Art at the Philadelphia Museum of Art, who recently was awarded a fellowship by the Guggenheim Foundation; Dr. Carl Epling, of the University of California at Los Angeles, who is monographer of the botanical family Labiatae; Dr. Robert E. Woodson, Jr., of the Missouri Botanical Garden, St. Louis, who studied plants in Field Museum's Herbarium in connection with a flora of Panama which he is preparing; Dr. Ralph W. Chaney, of the University of California, who consulted Field Museum's Herbarium in connection with his work on fossil floras; Mr. R. N. Buckstaff, Curator of Geology at the Oshkosh (Wisconsin)

Museum; Dr. William Jobberns, Head of the Department of Geography at the University of New Zealand at Christchurch, who spent several days studying methods used at this institution: Mr. Raymond Gilmore, zoologist of the International Health Division of the Rockefeller Foundation, who studied the Museum's collection of South American mammals; Professor E. C. Case, of the University of Michigan's historical geology and paleontology faculty; Mr. Charles B. Schultz, of the University of Nebraska, Assistant Director of the Nebraska State Museum; Mr. Edward B. Garnett, an executive of the Kansas City Star, who is a trustee of a proposed Kansas City Museum of Natural History, and Dr. Hellmut de Terra, Research Associate of the Carnegie Institution of Washington, D.C.

#### Children Vote Field Museum Among Principal "Wonders"

In a poll conducted among the schools by Chicago's Own Christmas Benefit, more than 3,000 children recently voted as to their choices for the designation, "the Seven Wonders of Chicago," with the following results:

1. Buckingham Fountain	
2. Field Museum of Natural History	1,614
3. Union Stock Yards	1,503
4. Municipal Airport	
5. Adler Planetarium	1,465
6. Art Institute	
7. Shedd Aquarium	1,345

It will be noted that Field Museum not only received the second place in the rating, but came so close to the first place (within three votes) as to be practically tied with the Buckingham Fountain.

# RUFUS C. DAWES July 30, 1867—January 8, 1940

The death, on January 8, of Mr. Rufus C. Dawes, President of the Museum of Science and Industry, was a great loss to Chicago, and one in which the administration of Field Museum feels a distinct share. The Trustees and Staff of Field Museum have recognized from the beginning of his association with the museum in Jackson Park the excellent work Mr. Dawes performed in the building up and development of that institution. Due in large measure to his co-operative spirit and wisdom, the most cordial relations exist between these two institutions. Whenever, as happens occasionally, problems have arisen in which the museums have some degree of mutual interest, they have been able to act in the utmost harmony with each other. Although his own great institution called for so much of his time and energy, Mr. Dawes was keenly interested also in the work of Field Museum, and was a Life Member of this institution.

Previous to his becoming head of the Museum of Science and Industry, Mr. Dawes had achieved a world-wide fame for his notable success, in the face of adverse economic conditions, in planning and directing, as its President, A Century of Progress exposition in 1933-34. Before that, he had won a high place in the world of business and industry, and, with his brother, former Vice-President Charles Gates Dawes, in the solution of certain international problems following the World War.

## Mr. Emil Liljeblad Retires from Museum Post

On February 1, 1940, exactly a quarter of a century after his coming to Field Museum as an employee in the Division of Insects, Mr. Emil Liljeblad will retire from active service on pension. Despite his 78 years of age, Mr. Liljeblad has remained physically active and would not retire at this time except for an unfortunate malady which deprives him of the clear vision necessary for the close study of specimens in his chosen field.

Mr. Liljeblad came to the Museum in February, 1915, as a Preparator in the Division of Entomology, and has served continuously in that Division, subsequently receiving the title, Assistant Curator of Insects. Mr. Liljeblad was born in Sweden and came to this country at an early age. Prior to his association with Field Museum, entomology was his principal hobby. He was a specialist on beetles and contributed many papers in that field for publication in the Canadian Entomologist. In his retirement Field Museum loses both a capable scientist and its most active and accomplished stamp collector.

#### 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 achools, 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 aerves 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 traina. There is ample free parking space for automobiles at the Museum.

# SUNDAY TOURS IN FEBRUARY —PREHISTORIC MONSTERS

"Prehistoric Monsters in Nature's 'March of Time'" is the subject of the lecture tours to be presented on Sunday afternoons during February by Mr. Paul G. Dallwig, the Layman Lecturer of Field Museum. Mr.



Triceratops

Dallwig will conduct his audiences on tours of the Hall of Historical Geology (Ernest R. Graham Hall, and in his narrative will carry them through the

principal stages of animal life from the earliest fishes, reptiles, and mammals to the beginning of Man—a span of about 600,000,000 years. A feature of the lecture will be the dramatization of a fight between two dinosaurs, the huge Tyrannosaurus and the horned Triceratops.

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 March Mr. Dallwig's subject will be "Digging Up the Cave Man's Past," illustrated by the exhibits in the Hall of the Stone Age of the Old World.

#### 1939 IN REVIEW

(Editor's Note: In accordance with its custom, Field Museum will publish in book form, at an early date, the detailed Annual Report of its Director. Meanwhile, the following brief summary of outstanding activities is offered.)

The total number of visitors received at Field Museum during 1939 was I,410,454, exceeding by 18,874 the total for 1938.

The number of those admitted free (which includes all visitors on Thursdays, Saturdays and Sundays, and Members, children, students, teachers, etc. on other days) contrasted sharply with the total paying the nominal admission fee—I,326,936 free, as against 83,518 paying. Thus, less than 6 per cent paid for the benefits offered by the institution, and the total admission fees received, \$20,879.50, represent a still smaller fraction of the year's total expenditures (\$774,386) for the operation and maintenance of the Museum.

#### SERVICES TO SCHOOL CHILDREN

Through the traveling exhibition cases circulated among the schools (public, parochial, and others) by the N. W. Harris Public School Extension), approximately 500,000

children were reached repeatedly, every two weeks during the months when schools were in session.

Contact was made also with 186,677 children in their schools by lectures presented in classrooms and assemblies by members of the staff of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures.

Attendance at special programs presented in the Museum—including the spring, summer, and autumn series of motion pictures for children provided by the Raymond Foundation in the James Simpson Theatre, the spring and autumn courses of lectures for adults in the Theatre, various special groups in the Theatre and the Lecture Hall, those participating in the daily guide-lecture tours of exhibits for both children and adults, and the Sunday tours conducted by Mr. Paul G. Dallwig, the Layman Lecturer—totaled more than 100,000 persons.

#### INFLUENCE EXTENDED TO 2,000,000

Combining the total number of visitors to the Museum with the hundreds of thousands of children reached extra-murally by the Harris Extension and the Raymond Foundation, it is found that the cultural influence of the Museum was extended directly to more than 2,000,000 persons. In addition, there was the usual extension of influence to incalculable numbers reached through less direct media such as publications, radio, etc.

Increases were made in the number of books and pamphlets in the Museum Library, bringing the total available to approximately 118,000. The number of readers consulting the Library, including Museum staff, other scientists, students and teachers, and the general public, continued the increase noted each year.

Twenty-eight technical scientific publications, circulated internationally among scientists, libraries, and other institutions, were issued by Field Museum Press, and in addition, two popular leaflets for lay readers. Publication of guidebooks, handbooks, and miscellaneous matter was continued as usual.

On December 31 the Membership of the Museum totaled 4,171, which represents a small but encouraging increase over the number at the same date in 1938. Any indication of a growing tendency by substantial citizens to support the Museum is most gratifying to the administration of the institution, and should be appreciated by the people of Chicago as a whole who derive the benefits of such an institution.

#### PENSION PLAN INAUGURATED

An outstanding achievement of the year was the institution of a pension plan providing automatic retirement for Museum employees in all classes at a proper retirement age. The signing of a contract, effective from July 1, with the Metropolitan Life Insurance Company, of New York, whereby pensions are provided both on

the basis of past service of Museum workers, and their future services, marked the culmination of many years of effort toward this desired goal. Its final attainment was made possible only through the financial backing of Mr. Marshall Field, a Trustee of the Museum.

An important program of expeditions, both in the United States and foreign countries, was a feature of the Museum's activities. As in past years, this extension of the institution's operations was made possible only through the generosity of patrons who have sponsored the most important expeditions. Like other endowed institutions, the Museum's present normal revenues from investments are still inadequate to permit such activities on a large scale without assistance from civic-minded persons. Details of the various expeditions, were published in Field Museum News at the times of their departures and upon receipts of reports from the workers in the field.

#### VALUABLE AID FROM WPA

The federal Works Progress Administration continued its project at Field Museum throughout the year, giving employment to a group of men and women ranging from 125 to 219, the average throughout the year being 189. The aggregate working hours of the WPA amounted to more than 262,000. In accordance with the experience of the previous years in which the Museum has cooperated with WPA, these workers displayed a variety of skills and talents adaptable to certain needs in nearly all Departments and Divisions of the Museum, and they were assigned to the tasks for which they were best fitted by experience or native ability. Not only routine work in clerical lines and general labor, but even scientific research, assistance in preparation of exhibits, and work requiring artistic talent were performed by some of the WPA helpers. As has been stated in previous years when reporting on the WPA project, all work assigned to these people represents an addition to that which could normally be done by the Museum's regular staff.

# IF YOU ARE A FRIEND OF THE BIRDS, read

The Watcher at the Nest, by Margaret M. Nice.

"Mrs. Nice's elaborate studies of the family life of birds and kindred subjects are classic," says Mr. Emmet R. Blake, Assistant Curator of Birds at Field Museum. "This book, written with the author's usual clarity and skill, is one of the most interesting and informative works on birds ever written."

Copies, autographed by the author, on sale at THE BOOK SHOP of FIELD MUSEUM—\$2.

### CHILDREN'S MOTION PICTURES BEGIN IN FEBRUARY

During February, the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures will present two special free programs of patriotic motion pictures for children, and on Saturday, March 2, the Foundation will open its spring series of natural history programs.

The first special program, to be presented on Monday, February 12, will be devoted to films portraying incidents in the life of Abraham Lincoln, whose birthday occurs on that day. Historical films about the life of George Washington will be presented on his birthday, Thursday, February 22.

The first regular program, on Saturday, March 2, will feature the film "Animals at Home." This will be followed by eight other programs on each Saturday during March and April.

All programs, those on the holidays, and those in the regular Saturday series, will be given in the James Simpson Theatre of the Museum, with two showings of each, one at 10 A.M., and one at 11. Children from all parts of Chicago and suburbs are invited. 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 notify their classes about these programs.

# Greetings Received at Museum from Byrd Expedition

From Rear-Admiral Richard E. Byrd's Antarctic Expedition, Mr. Clifford C. Gregg, Director of Field Museum, recently received the following radiogram:

"Christmas greetings from aboard the snow cruiser nearing New Zealand.

"Griffith, Petras, Ferranto, Wade, Poulter."

The message was sent from the expedition ship, North Star, and received through the Army Amateur Radio System at station WLMC, High Point, North Carolina. Among the signers of the message is Dr. Thomas C. Poulter, a member of other expeditions of Admiral Byrd's, who has appeared at Field Museum as a lecturer. Dr. Poulter is in charge of the huge wheeled vehicle especially constructed for the present expedition for use in exploring regions heavily covered with ice and snow.

#### Gifts to the Museum

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

Department of Botany:

From Dirección Técnica, Ministerio de Agricultura y Cría, Caracas, Venezuela—463 herbarium specimens, Venezuela; from Dr. Earl E. Sherff, Chicago—129 herbarium specimens and 52 photographic negatives of plant specimens, Hawaii; from School of

Forestry, Yale University, New Haven, Conn.—163 herbarium specimens, British Honduras; from Señor Don José Ignacio Aguilar G., Guatemala City, Guatemala—412 herbarium specimens, Guatemala; from the Rev. Brother Elias, Caracas, Venezuela—53 herbarium specimens, Venezuela; from Harry Hoogstraal, Urbana, Ill.—588 herbarium specimens, Mexico; from Professor C. William Penland, Colorado Springs, Colo.—41 herbarium specimens, Ecuador.

#### Department of Geology:

Standard Oil Company (Indiana), Chicago —2 photographs; from Compania Minera de Cailloma, Arequipa, Peru—5 specimens of silver ore, Peru; from E. G. Howe, Puno, Peru—4 specimens of silver ore, Peru; from L. Bryant Mather, Jr., Chicago —a specimen of hankesite, California; from Francis Wise, Colorado Springs, Colo.—4 specimens of minerals, Mexico; from C. H. Sholer, Minneapolis, Minn.—a specimen of cross-banded sandstone, Montana; from R. N. Gretton, Minneapolis, Minn.—a specimen of chatoyant, goethite-bearing quartz, Minnesota.

## Department of Zoology:

From Loren P. Woods, Evanston, Ill.-875 fish specimens and 18 insects, Washington, Illinois, and Kentucky; from Mrs. George L. Artamonoff, Chicago—a millipede, 5 spiders, and 35 insects, Mexico, Central America, and Panama; from Rupert Wenzel, Chicago—I4 histerid beetles, Peru and Colombia; from Chicago Zoological Society, Brookfield, Illinois-a giant anteater, a spider monkey, an Indian rat snake, and 17 birds; from Lincoln Park Zoo, Chicago -a zebra and a common krait; from Gustav E. Arnold, San Augustine, Texas—16 lizards and snakes and a turtle, Texas; from J. A. Green, Chicago—skull of a loggerhead turtle, Gulf of Mexico.

## FEBRUARY 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 February:

Thursday, February 1—General Tour; Friday, February 2—Tropical Plants.

Week beginning February 5: Monday—Men of the Stone Age; Tuesday—The Diversity of Living Things; Wednesday—The Work of Atmosphere and Water; Thursday—General Tour; Friday—Plants of the Deserts.

Week beginning February 12: Monday—Peoples of the World; Tuesday—The Different Worlds in Which Animals Live; Wednesday—The Work of Snow, Ice, and the Ocean; Thursday—General Tour; Friday—Aquatic Plants.

Week beginning February 19: Monday—The South Sea Islanders; Tuesday—Courtship in Animals; Wednesday—Earthquakes and How Mountains Are Made; Thursday—General Tour; Friday—Plants That Have Influenced History.

Week beginning February 26: Monday—The Art of the Indians: Tuesday—Animals' Conquest of the Air; Wednesday—Volcanoes

and Their Effect upon the Earth's Crust; 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.

#### NEW MEMBERS

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

> Non-Resident Life Members Emil A. Siebel

#### Associate Members

Graham Aldis, Dr. Arthur C. Bachmeyer, William D. Cox, Andrew R. Dole, Max A. Hart, Edward F. Mulhern, Charles H. Newman, Mrs. Lila H. Reed, Ivan Strauss.

#### Annual Members

Jacob M. Arvey, Elmer Balaban, Charles E. Barber, S. L. Barber, Charles P. Barker, Mrs. E. P. Brooks, Arthur J. Couse, Robert M. Cunningham, Richard F. Gibbs, Dr. Philip C. Goergen, Frederick M. Gottlieb, Dr. H. Close Hesseltine, Edwin W. Hirsch, Joseph Holzheimer, Maurice Marwick, Joseph Miller, Jacob L. Moss, Miss Anna O'Donohue, Burr L. Robbins, Fred A. Rugen, Rudolph B. Salmon, Leo J. Sheridan, Mrs. George Enos Throop, Dr. Charles Ira Wynekoop.

#### 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 Lassociate 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.

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

MARCH, 1940

# STRANGE CARVED FIGURES, FROM SOUTH SEA ISLANDS, PLACED ON EXHIBITION

BY ALBERT B. LEWIS CURATOR OF MELANESIAN ETHNOLOGY

Vol. 11

The large collection of material brought to Field Museum by the Joseph N. Field South Pacific Expedition (1909–13) included a

number of specimens that were too large to be placed in ordinary museum cases. Some objects were too tall even to stand upright in the exhibition hall. Until just last month, with the completion of especially constructed cases the bottoms of which are sunk below floor level, these tall specimens could not be exhibited. At the north end of Joseph N. Field Hall (Hall A) there have now been placed on exhibition four large and elaborate wooden carvings (one of which is illustrated on the left side of this page) from northern New Ireland. At the south end are two large figures cut out of the stems of tree-ferns (of which one is shown in illustration on the right), and two upright wooden drums, or slit gongs, as they are often called, from the New Hebrides (see illustration on page 2).

In northern New Ireland, as well as in other parts of Melanesia, there are many festivals and ceremonies of various kinds, at which much food is exhibited and consumed. Feasting and dancing provide the chief pleasures and attractions for such occasions. The area is remarkable for the number and variety of carved and painted wooden figures which are exhibited at many of these ceremonies, especially those held in honor of the dead. For such an occasion one or more carvings called malagans, representing a human figure in whole or in part, will be made or ordered by the head of the family or clan performing the ceremony. Usually the figures are made to order by men especially skilled in that work. Sometimes a ceremony will be held for a single individual, especially if he is wealthy or

influential. At other times it may be held for several clan members at once. Often it is necessary to wait some time for the carving to be finished, or until a sufficiently large supply of food of all kinds is accumulated. The finer the carving and the larger the feast, the greater are the honor and prestige gained by the family or clan giving the ceremony.

The carved figures made for these mortuary ceremonies are of many kinds, but are usually single human figures, somewhat less than life size, with an uncarved lower portion which is set in the ground. Sometimes two or more figures, one above another, may be carved from the same log, making a sort of column, which may be fifteen or more feet in height. All these figures may represent clan members recently deceased, or they may represent the clan ancestors in a general way. Such general ancestral figures are common.

Each clan has its own peculiar type of carving, characterized by the general form. the shape and position of arms and legs, the kinds of ornaments, and other details. There are also certain particular rites and ceremonies which go with each type of figure or malagan. Although figures belong to the clan in a general way, the direct ownership is usually vested in the chief man or head of the clan. A malagan, with its accompanying ceremonies, may be sold, however, in which case the purchaser has the exclusive right to its use. The seller must then in some way acquire another one. If not sold, the right to make and use a particular malagan is passed down by inheritance, or by gift.

The origin of many of the *malagans*, with their special ceremonies, is lost in antiquity. Some, however, are accounted for by dreams, and there are a number of myths and stories giving the origin of certain particular ones.

The making of a malagan may take a year or more. The carving is done in a special house, which only the carver and the male clan owners are allowed to enter. At the time of the ceremonies, the carvings are set up at the place where the dances and special performances are held. After this they may be destroyed, though usually no more attention is paid to them, and they are simply allowed to decay.

In the more complicated carvings the added birds, fish, or other objects as a rule seem to have no special meaning. Sometimes, however, they may refer to some particular incident in the life of the person for whom the figure is made. Such a meaning

would usually be known only to those acquainted with the person concerned.

No. 3

In general these ancestral figures may be regarded as memorials, and the ceremony as corresponding to the unveiling of a statue in America or Europe. The making of a fine carving, and the carrying out of the ceremony with the great amount of food and presents that accompany it, add to the prestige of the donor. Not so to recognize and honor any important member of the family who had died would be regarded as a disgrace to the survivors.

A DIFFERENT TYPE IN THE NEW HEBRIDES

In the New Hebrides we find a different culture, with carvings of an entirely different kind and with a different meaning. In Ambrym and eastern Malekula, in addi-

tion to wooden carvings, we frequently find peculiar large figures made from the inverted stems of tree-ferns. The native villages usually consist of a small number of crude huts placed close together, often hidden away in the forest. Somewhat to one side will be a small clearing, and near it one or more huts, each surrounded by a fence, often made of stone. These huts belong to men of high rank, a stone wall indicating the highest rank.

At the side of the clearing or near the huts there may be seen a few upright objects looking something like posts-some of wood, others of a peculiar black fibrous material. larger at the top than at the bottom. These are inverted tree-fern stems, carved to represent a head, with huge eyes, nose, and chin. Sometimes arms and legs are also crudely represented. One of these figures (illustrated in this column) was presented to the Museum by Mr. Templeton Crocker, of San Francisco.



These figures are usually dark gray or black, and show signs of weathering, but occasionally one may see a newly made figure, covered with clay to form a smooth surface, and painted white and black, perhaps with some red. Around and over the figure is constructed a sort of shed to protect it from the weather. This is open at the front and

sometimes at the sides. Such shelters decay in a short time, and the clay washes off, so most of the figures appear quite weather-worn. After they have once served their purpose, no further attention is paid to them.

TALL DRUMS OF WOOD

In addition to the tree-fern figures, there will also be some upright drums of different sizes, and probably some carved wooden posts and figures at the sides of the open space or clearing. This space serves as a dancing ground and showplace for the various ceremonies. The drums will be beaten for the



New Hebridea

These instruments are sounded at the ceremonial dances, and sometimes used

transmitting signals.

dances. The large ones may serve also as signal drums.

If the tree-fern figures are compared, they will be found to differ in certain respects. The style of each figure indicates the rank of its owner, and such figures are set up at the ceremony given when, and by means of which, he attains the rank indicated. All the men are divided into a number of classes or ranks. In Ambrym there are ten of these ranks or degrees, but in other islands the number varies from three or four to as many as twenty. A man can advance from a lower to a higher rank only by means of a special ceremony, for which he must provide a certain number of tusked pigs-that is, boars whose tusks have been allowed to grow beyond their usual length. This occurs when the upper tusks have been knocked out, so that the lower ones do not wear down. Such pigs are usually kept tied up in the house, and fed on soft food. The lower tusks then continue to grow, finally forming one, two, and in rare cases, even three complete circles. The longer the tusk, the more valuable becomes the pig. The number of pigs required as an offering at each ceremony increases with the rank. In Ambrym, for example, to

attain the fifth rank, fifteen must be offered. For the ninth rank, one hundred pigs are required. Only an old and very wealthy man can hope to reach the highest rank.

# FREE LECTURES FOR ADULTS WILL BEGIN MARCH 2

The seventy-third course of free lectures on science and travel for adults will be presented by Field Museum on Saturday afternoons during March and April. Scientists, naturalists, and speakers of renown have been engaged for this series. All of the lectures, except one, will be illustrated with motion pictures, and in the case of the exception, stereopticon slides will be shown. The lectures begin at 2:30 o'clock and are given in the James Simpson Theatre. Admission is restricted to adults. Following is the complete schedule of dates, subjects and speakers:

March 2—Springtime in the Rockies

Mr. Alfred M. Bailey, Colorado Museum of
Natural History

March 9-Social Insects

Dr. Alfred Emerson, University of Chicago

March 16-Penthouse of the Gods

Mr. Theos Bernard, New York

March 23—Threshold of a New World Mr. Vincent Palmer, New York

March 30—Our Attic Stairs—Southeastern

Mr. Karl Robinson, New York

April 6—Snow Peaks and Flower Meadows in the Canadian Rockies

Mr. Dan McCowan, Banff, Alberta

April 13—Africa Smiles Mr. Herbert S. Ullmann, Chicago

April 20—Birds of America
Dr. Arthur A. Allen, Cornell University

April 27—Return to Malaya Mr. Carveth Wells, New York

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.

#### Museum in Education Conference

Miss Miriam Wood, Chief of the James Nelson and Anna Louise Raymond Foundation, acted as chairman at one of the meetings of the National Conference of the Progressive Education Association, recently held in Chicago. The subject of this meeting was Museums as a Resource for Education. The main discussion was led by Miss Frances Pressler of the Winnetka Public Schools. Field Museum was represented further by other members of the Raymond Foundation staff, and by Director Clifford C. Gregg. Delegates were present from school systems and from museums in many parts of the country.

# LEON MANDEL EXPEDITION BACK FROM CARIBBEAN

Birds, mammals, fishes, and reptiles which inhabit certain islands and keys of the Caribbean where practically nobody ever goes were brought to Field Museum last month by members of an expedition which sailed to the most out-of-the way bits of land in that sea.

The returning collectors are Mr. Rudyerd Boulton, Curator of Birds, and Mr. D. Dwight Davis, Assistant Curator of Anatomy and Osteology. The expedition from which they returned was conducted aboard the yacht Buccaneer, and was led by its owner, Mr. Leon Mandel. Since the first of January the Buccaneer has been piloted between and around the coral reefs, and through remote and tortuous channels leading nowhere of importance so far as trade routes are concerned. Purposely sought were spots which most vessels would avoid.

The places visited are almost forgotten tiny possessions of the United States, Cuba, Honduras, Mexico, and British Honduras. Some of them are scarcely a square mile in extent, too insignificant to figure in international altercations and economic struggles, but nevertheless of great interest biologically. From them, Messrs. Boulton and Davis brought back approximately 150 exotic birds, 350 reptiles and amphibians, and 500 specimens of fishes, many of them exceedingly vari-colored and strange in form. They obtained also great quantities of mollusks, marine invertebrates, microscopic creatures accumulated in masses known as plankton, and other minute organisms. Color motion picture studies were made of many of the animals collected, in particular, slow motion analysis of sea birds in flight. In most of these places little or no scientific collecting had ever been done before. At Half Moon Cay, British Honduras, after material had been collected for exhibits representing a great colony of redfooted boobies which live there, a storm of hurricane force suddenly struck the Buccaneer, causing the breakage and loss of heavy chains and anchors, and a hurried departure out to sea for safety.

The most isolated of the islands visited was Swan Island, which consists of two mile-square specks of land belonging to the United States but probably unknown to most of this country's citizens, or even its government officials. It lies almost midway between Cuba, Honduras, and the Yucatan Peninsula. There the expedition obtained specimens of Nelson's yellow warbler, and a species of palm lizard, both of which are most exclusive hermit-like creatures, inhabiting, so far as is known, no other place on the earth's entire surface. Also collected there were representatives of a nesting colony of brown boobies, and various sea birds.

What is perhaps the largest colony of sea birds in the West Indies was found on Mujeres, Cancun and Contoy islands off the coast of Yucatan, Mr. Boulton reports. So far as known, no other ornithologists have reached these spots before. Collections were there made of pelicans, cormorants, frigate birds, and other feathered creatures, including, on Contoy, a specimen of the great white heron, regarded as a great prize.

In the Bay Islands, belonging to the republic of Honduras, the expedition obtained snakes and lizards by the hundreds. Off Glover's Reef, British Honduras, using a special small motor cruiser carried aboard the larger vessel, the principal fish collections were obtained in the waters over a coral reef, fifteen miles long and five miles wide, which represents the ultimate development of coral reefs to be found in the West Indies. In the clear water, the fantastic and bizarre fish could be seen to depths of about 100 feet, swimming among coral "trees" as much as thirty to forty feet in height.

Other places in which collections were made are Misteriosio Bank, Rio Encantada (Enchanted River) in the Zapata Swamp of Cuba, and Turneffe Cay. The primary objectives of the expedition were to make an assay of the wild life of these little known places, and to obtain for the Museum exhibits and study collection a representation of the faunas of such circumscribed ranges for comparison with other faunas which usually range for thousands of miles.

## History of a Geographical Name

In 1799, when Alaska still belonged to Russia, a hunting party of Aleutians made a meal of sea-mussels of a species (Mytilus edulis Linné) which turned out to be poisonous. Shortly after their meal, more than a hundred of the men fell ill, suffered from painful convulsions, and within a few hours were dead. Russians thereafter called the place on Sitka Island, where this occurred, "the Pogibshi Way," which translates to "the Peril Way." This name has never been changed.

## Gutta-percha

Gutta-percha is obtained from a tree of the star-apple family, native to the Malayan Peninsula, Borneo, and other islands. The tree attains a height of sixty to seventy feet. It yields a milky juice which solidifies into a white rubber-like substance. The most important of the numerous uses of gutta-percha is for covering the electric wire of telegraph cables, because it is a perfect insulator, and it is said to be practically indestructible under salt water.

#### 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 2 (Labor Day).

## MUSEUM TO CONTINUE "HOW DO YOU KNOW?" ON RADIO

Field Museum's new series of weekly radio broadcasts, which began January 25, will continue during March, and for several more months. Those presented to date have been enthusiastically acclaimed in let-

ters from listeners, and in comments by the editors of newspaper radio pages and radio magazines.

The programs, which are given under the title "How Do You Know?" are presented from coast to coast over the Blue Network of the National Broadcasting Company. Outside Chicago, they are heard each Thursday from 1 to 1:30 P.M. (Central Standard Time). In Chicago they are rebroadcast on Saturday ofternoons from 4 to 430 o'clock over station WENR.

The programs are presented in co-operation with the University Broadcasting Council, of which Field Museum is a member. Members of the Museum's scientific staff supply the answers to the various questions of scientific fact and theory. The results of their own research, and also that of other scientists, are

drawn upon for the purpose. Preparation of the scripts is in the hands of Mr. William C. Hodapp, a radio writer of the NBC staff. Facilities and personnel for dramatic presentation are contributed by the National Broadcasting Company. The programs have the expert supervision of Miss Judith Waller, Director of Education, NBC—Central Division, and Mr. Allen Miller, Director of the University Broadcasting Council.

Following are the subjects scheduled for broadcasting during March:

National In Chicago Subjects: network

HOW DO YOU KNOW-

Mar. 2 —when the cliff houses were built?

Mar. 9 —the truth about super-Mar. 7 stitions?

-whales are not fishes, Mar. 14 Mar. 16 bats not birds, etc.?

Mar. 21 Mar. 23 -Irish potatoes are not Irish?

Mar. 28 Mar. 30 —how prehistoric people lived?

The questions upon which the programs are based are typical of the countless queries the Museum and members of its staff are constantly receiving from Museum visitors, children, teachers, the press, business houses. authors, and innumerable other sources which may be grouped collectively as "the

general public." Included not infrequently among the information seekers are professional writers and technicians concerned with various other radio programs in which some scientific question may arise. The



Museum Radio Script Conference

Before giving the public the answers to the questions propounded in the Museum's "How Do You Know?" radio series, Mr. William C. Hodapp (center), the script writer, first obtains the information in consultations with members of the Museum staff. In this photograph, Director Ciliford C. Gregg demonstrates facts about Museum methods with a reproduction of a Java watersnake. At right is Miss Judith Waller, who is Director of Education for the Central Division of the National Broadcasting Company.

"How Do You Know?" series, besides answering specific questions, illustrates vividly the wide scope of information the Museum has available for the answering of thousands of other questions, and calls attention to the many services it is equipped to perform for persons in practically any walk of life. The programs are arranged in a style having universal appeal and application. They are presented simply enough to be interesting and understandable to the school child, but they are definitely on a level suitable for adults.

#### Large Cycad Cones

Cycads produce cones, from the center of the cluster of leaves, which vary in size and form according to the various species. In a botanical garden in the East London region of Africa, one large plant of a species of Encephalartos produced three female cones which weighed more than 140 pounds. Single cones may weigh ninety pounds, but are not found in the wild state because the baboons carry them away before they are ripe. Specimens are on exhibition in the Hall of Plant Life (Hall 29).

Worthy of special attention by visitors interested in North American archaeology are the exhibits of rare Basket Maker and Cliff Dweller material in Hall 7.

# NATURAL HISTORY IN MUSIC-It's Most Pleasing to the Ear When It Isn't Over-done

BY HENRY HERPERS ASSISTANT CURATOR OF GEOLOGY

Everyone knows that certain aspects of natural history partake of the nature of music. The calls of many birds, the pleasant sound of a brook, or the sighing of the breeze through the trees in a forest come to mind at once, and a little thought will suggest various other examples of the "music" of Nature.

Since Nature surrounds us, it could hardly have escaped composers as a subject

fit to express through their medium, and every music lover can name a dozen musical works which reflect melodies of Nature. Many of the phenomena coming under the broad head of natural history either do not make sounds of themselves, or make sounds which would be difficult to reproduce, if they could be reproduced at all. Yet even such phenomena have been made the subjects of musical compositions. When we examine the means of expressing such subjects musically, we find that the composer often presents his natural history "impressionistically." In other words his composition will not make a sound like the subject, of his piece, but his skillful and artistic use of the instruments at

his disposal will convey to the listener the desired impression. The impression, naturally, is often made more vivid by the title of the composition, but in many cases the title does not need to be mentioned, especially if the listener has a good imagination. To be sure, some composers have tried to reproduce actual natural sounds in their works, but in most cases, it is for the purpose of adding color.

#### WHERE "GILDING THE LILY" IS JUSTIFIED

Attempts to reproduce the sounds of Nature generally do not lead to such pleasing compositions as result when Nature is presented entirely as an impression, and if attempts at natural sounds are introduced indiscriminately into a work, the artistic value is decreased. One of the reasons for this is that the timbres of the instruments in our orchestras do not correspond exactly with those of Nature's instruments. For example, at the close of the second movement of Beethoven's Sixth, or Pastoral, Symphony, the call of the European cuckoo is played on the clarinet, and although the musical notes and the rhythm in which they are played correspond closely to those in the bird call, one can still tell that the sound is that of a clarinet. Further, the sounds of Nature do not, by themselves, constitute music. Perhaps some persons may claim that the brook in the back woodlot makes music, or that the wind plays a symphony as it blows through the fir trees in the woods, but they would probably find it a bore to sit in Orchestra Hall and listen for forty-five minutes to the attempts of the musicians to reproduce those sounds exactly.

Animals have been the inspiration of many musical compositions. One of the more widely known of these is Rimsky-Korsakov's Flight of the Bumble-bee, a piece which not only suggests the noise made by the insect, but which also gives the listener an impression of the peculiar, irregular flight of the bee from place to place.



Nature Transcribed Into Musical Symbols

Score of the closing part of the second movement of Beethoven's Sixth Symphony (the Pastoral), showing the calls of birds, imitated by flute, oboe and clarinet. Beethoven inserted the names of the birds—Nachtigall means "nightingale," Wachtel means "quail," and Kuckuck is, quite obviously, the "cuckoo."

One of the finest pieces of music featuring Nature is the Sixth Symphony of Beethoven. The composer has, for the most part, used the impressionistic technique, but in several places natural sounds are reproduced within the limits of the orchestra. The second movement of the Sixth Symphony bears at its head the words, Szene am Bach (Scene by the Brook), and is, according to the famous music critic and composer, Vincent D'Indy, "the most admirable expression of true Nature in musical literature." The movement opens softly with a suggestive murmuring theme played by the violin against an accompaniment of gradually descending thirds played by the other strings. The theme is elaborated upon, and subordinate themes are introduced, but a soft, rippling song pervades the whole movement. In the closing, or coda, portion of the movement, the calls of the nightingale, quail, and cuckoo are introduced on the flute, oboe, and clarinet, respectively, bringing this portion of the symphony to a tranquil close.

#### EVEN A MUSICAL RAINBOW!

The third movement of the symphony symbolizes a jolly gathering of peasants. This is upset by a thunder-storm represented by the fourth movement, which follows without pause. Here the listener is treated to all the phenomena that accompany such a tempest. The muttering of thunder that heralds the approach of the storm is given forth by the 'cellos and the double basses

tremolo, while a suggestion of the rising wind is made by short passages played on the violins. Finally, the storm breaks fortissimo in full orchestra, with thunderclaps on the kettle drums, and impressions of lightning flashes made by sharp rising notes played on the piccolo. The full force of the string section is applied to suggest rain and wind, and at last the storm dies away, with the rumbling of the distant thunder again suggested by a tremolo passage on the 'cellos and basses. A broad descending figure on the oboe,

which appears at this point, has prompted some of the more imaginative critics to exclaim, "Ah, the rainbow!"—upon which the eminent critic, John N. Burk, comments, "Any listener is at liberty to agree with them."

## SAINT-SAENS' SATIRES

Effects, which in some measure duplicate Nature's sounds are found in the composition Carnival of the Animals, by the French composer Saint-Saëns. The Carnival of the Animals was composed for the entertainment of some friends of Saint-Saëns, and the composer refused to allow it to be performed publicly during his lifetime. The reason seems to have been that the composition is as neat a bit of musical satire as has been written.

and Saint-Saëns evidently did not wish to offend some of the composers whose works he had lampooned. The Carnival of the Animals opens with a passage intended to suggest the lion, in which the roars of the "king of beasts" are uttered chromatically by the bass sections of the orchestra. Next, clarinet and strings produce such a cackling as could only be made by a whole barnyard full of poultry.

A division of the work entitled Personages with Long Ears—Cuckoo in the Woods, leaves nothing further to be desired, for the violins bray unmistakably like donkeys, and the cuckoo is nicely imitated by the clarinet. The sounds of many birds, all calling at once, are imitated by the flutes, while the piano gives forth tones that twit and chirp in a highly realistic manner, and suddenly, a hundred birds dart across the scene—achieved by a rushing tremolo that sweeps through the orchestra.

In the section entitled Fossils, Saint-Saëns has introduced the familiar, xylophonic clatter of bones from his own Danse Macabre. The remainder of the division concerns itself with musical paleontology, being made up of some old French folk songs together with overplayed selections from Rossini's Barber of Seville, in addition to the popular (and perhaps fossilized?) skeletal rattling of the Danse Macabre.

In addition to all this imitation of natural sounds, Saint-Saëns produced both humorous

and beautiful effects by purely impressionistic treatments. He represents tortoises by a slow, deliberate rendition of a theme from Orpheus in Hades which is usually played at a tremendous speed, and which is familiar to everyone who has seen a newsreel of a An awkward, cumbersome horse race. theme in waltz time is intended to signify elephants-and Saint-Saëns here injected a bit of Berlioz's Waltz of the Sylphs to add an amusing, if satirical, touch. Kangaroos are represented by a curious, hesitant passage played alternately upon the pianos. Saint-Saëns achieved his most beautiful impression in a familiar portion of the Carnival of the Animals called The Swan. The gracefulness and smoothness of the music could represent no other thing than this lovely bird moving silently across the surface of a lake-provided one knows the title.

NIGHTINGALE ON PHONOGRAPH IN ORCHESTRA

Perhaps the most flagrant example of actual reproduction of a natural sound in music is found in The Pines of Rome, by the Italian composer Respighi. At one place in the score of this otherwise highly impressionistic composition the introduction of a phonograph record of the song of the nightingale is required!

By the use of the impressionistic treatment, the composer can write music using, as subjects, natural phenomena which make no sounds or which make sounds incapable of reproduction by the ordinary instruments of the orchestra. Some of the finest examples of the application of this technique are found

#### 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. Dailwig, the Layman Lecturer. Daily from Monday to Friday inclusive there will be presented guidelecture tours conducted by members of the Museum staff.

In addition, the message of science is being sent into the homes by Field Museum radio programs on Thursdays and Saturdays, and even by television on Fridays.

among the works of the Finnish composer Sibelius. Who has not heard his magnificent Swan of Tuonela? The composition is one of four written by Sibelius motivated by legends from the Kalevala-the Finnish national epic. One of the heroes of the Kalevala is told by the mother of his beloved that he can have his bride only-

"If the river swan you shoot me, Shoot the great bird on the river, There on Tuoni's murky river, In the sacred river's whirlpool, Only at a single trial, Using but a single arrow."

Tuoni is the god of the underworld, and his domain is called Tuonela. The adventures that befall the hero while in Tuonela are not treated with in Sibelius' composition, but the picture of the swan "on Tuoni's murky river" is perfect. The impressions of the dark underworld, and the slow gliding of the swan over the dark waters of the river are suggested by unusual combinations and uses of the various resources of the modern orchestra, without any introduction of strange or bizarre instruments.

#### THE FORESTS OF FINLAND

In the composition Tapiola, which many musicians consider his finest work, Sibelius has presented a picture of the great northern forests of his native land. In Finnish mythology, Tapio is the god of the forest, and Tapiola signifies the region over which he holds sway. The peculiar orchestration of Sibelius again conveys the impression of the dark fir forest and cold, clear air of the north country.

Among other natural phenomena that have been the subjects of musical compositions, the sea is depicted in Rimsky-Korsakov's Scheherezade suite and Debussy's La Mer. Wagner, in his opera Der Fliegende Holländer, has a rather realistic storm at sea, while in his Ring of the Nibelung operas one will find such varied things as fire, the rainbow, a storm, waves, forest birds, and even daybreak, nearly all of which are represented impressionistically. An interesting, and geologically and geographically nearly perfect, impression of the river Moldau was composed by the Bohemian musician Smetana. Anthropology finds a place in a composition called Assyrian Bas Reliefs by the modern Italian composer Martelli. Even such fantastic and unnatural animals as Lewis Carrol's "Jabberwocky" and "Looking Glass Insects" are the subjects of a musical composition by Deems Taylor, the well-known American composer and music critic.

In addition to the restorations of various races of prehistoric man in the Hall of the Stone Age, heads representing Pithecanthropus erectus, Neanderthal man, and Cro-Magnon man are exhibited in Stanley Field Hall (Case No. 3).

### MUSEUM'S BOTANICAL EXPEDITION MAKES PROGRESS IN GUATEMALA

Recent letters from Dr. Julian A. Stevermark, Assistant Curator of the Herbarium, report continued success for the Field Museum Botanical Expedition to Guatemala (1939-40). He left Chicago at the end of September and probably will be in the field until April.

More than a month has been spent with headquarters at Finca Pireneos, in the Department of Quezaltenango, western Guatemala, where every facility for work has been available through the kindness of Professor Ulises Rojas, Director of the Botanic Garden of Guatemala. Finca Pireneos lies at about 4,000 feet, in a deep valley between the great volcanoes of Santa Maria and Zunil. The nearby slopes are covered in many places with virgin forest, in which are great numbers of tree ferns and palms, and a wide variety of trees, most of them loaded with epiphytic ferns, aroids, bromeliads, and orchids.

Dr. Steyermark has made collecting trips in all directions from this center, including one of three days to the summit of Santa María. This is one of the highest volcanoes in the country, and one of the most celebrated in all Central America, especially because of the former unfriendliness of the local Indians toward visitors to the peak, which is closely associated with their religious practices. The summit of the volcano is of unusual botanical interest, because there, in a small area among the rocks, are found numerous alpine plants belonging to groups unrepresented in Guatemala except on the very tips of a few of the highest peaks.

From the Indian town of Zunil, on the Río Samalá, Dr. Stevermark, with two Indian guides, ascended the volcano of Zunil, another of the high peaks of Guatemala, and one seldom visited by scientists. They spent two nights camping in the fir forest at about 11,500 feet, and only a few hundred feet below the summit. The vegetation was found to be highly varied, and in many respects different from that of nearby Santa Marfa, principally because of more abundant moisture on Zunil, which almost every afternoon is enveloped in clouds. Some of the plants found in the high forest were snowberry, bearberry, lupine, California lilac, Potentilla, Viburnum, Botrychium, and two species of Pyrola or shinleaf, northern groups represented in the United States, but associated on Zunil with begonias, epiphytic ferns, and other tropical types. The numerous hot springs, many of them strongly impregnated with sulphur, that issue from the sides of Zunil, also afforded specialized collecting grounds.

After leaving the Samalá Valley, the expedition plans to proceed to the Department of San Marcos, to explore the slopes of the volcanoes of Tajumnlco and Tacaná, in the Mexican border region. -P.C.S.

#### Field Museum of Natural History

FOUNDED BY MARSHALL FIELD, 1893
Roosevelt Road and Fleld Drive, Chicago

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#### FIELD MUSEUM NEWS

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

## FRED W. SARGENT May 26, 1876-February 4, 1940

News of the death of Mr. Fred W. Sargent, on February 4, was received with regret at Field Museum. Mr. Sargent had been a Trustee of the Museum from 1929 until June 19, 1939, when ill health compelled

him to resign. He had a keen interest in this institution and its welfare, and served in many ways. For a number of years he was a member of the Auditing Committee of the Board of Trustees.

Mr. Sargent was one of the outstanding leaders in Chicago business and civic circles. He was a national



Fred W. Sargent

authority on transportation, and was President of the Chicago and North Western Railway for fourteen years, retiring from that post last May for the same reasons that caused him to discontinue his Museum Trusteeship.

As chairman of the Citizen's Committee on Public Expenditures, Mr. Sargent in 1932 was influential in bringing about reforms in local government bodies, and was awarded the Benjamin J. Rosenthal Foundation medal for outstanding civic service. He was prominent in the activities of the United States Chamber of Commerce, of which he was a director, and was chairman of the commission which supervised the carving of the Mount Rushmore Memorial in the Black Hills of South Dakota. In addition to his association with Field Museum, he

was a Trustee of Northwestern University, the Museum of Science and Industry, Lake Forest Academy, and Cornell College in Mount Vernon, Iowa.

# Another Contribution Received from Mrs. J. N. Raymond

Continuing her long established custom of making frequent gifts of funds for the support of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures, Mrs. James Nelson Raymond, Founder of that Division of the Museum, recently contributed another \$2,000.

The Foundation is continually increasing its activities, as will be evident from the numerous references to its work appearing in this issue of FIELD MUSEUM NEWS, and almost every issue. Such expansion of its usefulness has been possible only because of the unflagging interest and generosity of Mrs. Raymond. Her latest gift again emphasizes the great debt of gratitude owed to her not only by the Museum, but by the children, parents, and teachers of Chicago who benefit so notably from the educational work she has endowed and unceasingly supported.

#### TELEVISION PROGRAMS

The experimental programs in education by television, presented by Field Museum in co-operation with the Zenith Radio Corporation, of Chicago, over that company's station W9XZV, will continue each Friday evening in March, but the hour of presentation has been changed to 7:15 P.M. (formerly 7:45). The following programs are scheduled (subject to change of topic):

March 1-The Story of Man

March 8—The Melanesians of the South Seas, and Peoples of Africa

March 15-Pueblo Religion

March 22—Our Earliest Spring Flowers

March 29—From Abyssinia to Alaska

Members of the staff scheduled to speak, and in various ways demonstrate visually their subjects, are: Dr. Henry Field, Curator of Physical Anthropology; Dr. Wilfrid D. Hambly, Curator of African Ethnology; Mr. Alexander Spoehr, Assistant Curator of American Ethnology and Archaeology; and Mr. C. J. Albrecht, Staff Taxidermist. A non-staff member assisting is Miss Sophia Prior. Those who have appeared on previous programs are: Mr. L. Bryant Mather, Jr., Assistant Curator of Mineralogy; Mr. Sharat K. Roy, Curator of Geology; Mr. Elmer S. Riggs, Curator of Paleontology; Mr. Bryan Patterson, Assistant Curator of Paleontology; Mr. Paul O. McGrew, Assistant in Paleontology; Mr. Karl P. Schmidt, Curator of Amphibians and Reptiles, and Mr. John W. Moyer, Staff Taxidermist. The programs are managed by members of the staff of the James Nelson and Anna Louise Raymond Foundation.

#### MARCH 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 March:

Friday, March 1—Food Plants of the Old World.

Week beginning March 4: Monday—Man Feeds Himself (How the People of the World Procure Food); Tuesday—Various Birds (How and Why They Vary); Wednesday— Meteorites and Minerals; Thursday—General Tour; Friday—Food Plants America Has Given the World.

Week beginning March 11: Monday— The World's Housing Problem (Types of Houses all over the World); Tuesday— Bird's Mobility and Migration; Wednesday— Everyday Uses of Minerals; Thursday— General Tour; Friday—Shelter from Plants.

Week beginning March 18: Monday—Fashions from the Cave Men On (The Story of Clothing); Tuesday—Birds that Nest in The Chicago Region; Wednesday—The Story of Coal and Oil; Thursday—General Tour; Friday—Beverage Plants.

Week beginning March 25: Monday— How the World Amuses Itself (Games, Theaters, Dances, Puppet Shows, etc.); Tuesday—The Architecture of Birds' Nests; Wednesday—Ores and Metals; Thursday— General Tour; Friday—Medicinal Plants.

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.

## 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, Angust. 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 daya. 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 achoola, 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.

#### THINGS YOU MAY HAVE MISSED

# The Story of a Rare Statue from Ancient Egypt

A statue whose story has roots deep in the intrigue of a royal court is on exhibition in Field Museum's Hall of Egyptian Archaeology (Hall J). The court was that of Hatshepsut, queen of Egypt, who was the first great female ruler to appear in recorded history. She reigned about 1500 B.C.

Senmut, a notable architect, is the subject of the statue in the Museum. He was an influential power behind Hatshepsut's throne. Indeed, so well did he stand in the queen's grace that after her death, her long henpecked husband, Thutmose III, almost consigned Senmut to historical oblivion. The black granite statue now in this Museum—a superb example of the best sculpture of the Eighteenth Dynasty—is one of only a very few remaining figures of Senmut to escape destruction from the long pent-up wrath of Thutmose III, who was a sort of co-regent with Hatshepsut.

Hatshepsut obtained her scepter as the only surviving child of King Thutmose I and the queen mother. Carrying in her veins the aristocratic blood of her mother's family, she was supported for the reigning position by the nobles, to the consternation of her less well-bred half-brothers, of whom Thutmose III, as son of the new queen's father and an obscure concubine, was one. Defeated in his ambition to rule, he had assured himself at least of the succession by having married her, despite their blood relationship. The marriage had taken place before their mutual father, the king, had died.

Senmut, as court architect, designed the magnificent tomb-temple at Der el-Bahri where Hatshepsut's body was placed at her death. In the Museum statue he is depicted as he appeared when he was acting as tutor to the queen's eldest daughter. The figure is undoubtedly the work of one of the greatest court sculptors, as the inscription states it was "given as a favor on the part of the ruler." The statue was erected in the Karnak temple of Amon, which was supposed to give Senmut after his death the privilege of enjoying the companionship and festivals of his god.

Upon the death of Hatshepsut, Thutmose III at last was sole ruler and asserted himself with the vengeance of a man who for years had hated his wife. The statues and inscriptions of the favorites of Hatshepsut were hacked to destruction, and their corporeal persons disappeared from the scene even more suddenly. Senmut's name was one of the first to be chiseled from temple walls, and most of the statues of him were ruthlessly smashed and thrown contemptuously on dump heaps. Whether he discreetly fled for his life, or was captured and slain, is not clear from such records as remain.

During Hatshepsut's reign there occurred the first known use of the "ship of state" idea. A tribute to the queen, by a high ranking official, described her in nautical terms: "The low-cable of the South, the mooring-stake of the southerners, the excellent stern-cable of the Northland is she; the mistress of command, whose plans are excellent, who satisfies the Two Regions when she speaks."

—R.A.M.



Senmut, the Architect

Rare statue of a leading participant in the intrigues at the court of the first great woman ruler, Hatshepsut, queen of Egypt. The child is the queen's daughter. She for a time was tutored by Senmut, who was a prime favorite and confidant of the queen for many years.

#### STAFF NOTES

Mr. Henry F. Herpers, Assistant Curator of Geology, attended the meetings of the American Institute of Mining and Metallurgical Engineers at New York, February 12-15. He also visited the Massachusetts Institute of Technology, Cambridge, to confer on geological and chemical problems.

Mr. Karl P. Schmidt, Curator of Amphibians and Reptiles, lectured February 17 before the Pan-American Council on his recent experiences while in Peru on a Museum expedition.

Mrs. Margaret Jane Taylor has joined the Department of Zoology as a volunteer worker. She will assist Dr. Fritz Haas, Curator of Lower Invertebrates.

Mr. Paul G. Dallwig, the Layman Lecturer of Field Museum, recently spoke on "The Romance of Diamonds" before a meeting of the North Town Women's Club.

# 15,000 SPECIMENS OF PLANTS COLLECTED BY EXPEDITION

Approximately 15,000 specimens of plants, of which 2,500 are of flowering species, and 12,500 are cryptogamic (algae, mosses, etc.), have been added to the Herbarium, as a result of a Field Museum Expedition which recently returned to Chicago.

The expedition, sponsored by Mr. Stanley Field, President of the Museum, had been at work in the southwestern United States and the state of Sonora, Mexico, since last October. Dr. Francis Drouet, Curator of Cryptogamic Botany, was leader. With him was Mr. Donald Richards of the Hull Botanical Laboratory, University of Chicago.

Three weeks were spent at Las Vegas, New Mexico, in examining the cryptogamic flora. Special attention was given the many hot springs at the mouth of Gallinas Canyon at nearby Montezuma, and large collections of algae were prepared. Through the courtesy of the Agua Pura Company, of Las Vegas, a visit was made to the Peterson Reservoir at Montezuma, where the flora has been carefully protected since the beginning of the century. A trip to Hermit's Peak and El Porvenir yielded good collections of mosses, as did a short stay at the town of Pecos. Collections were also taken in the moist valley of the Rio Grande at Hot Springs, New Mexico. Sabino Canyon near Tucson, Arizona, and the Coyote Mountains which are some forty miles west, were likewise visited.

From Tucson the expedition moved to Hermosillo, the capital of Sonora, in the irrigated valley of the Río de Sonora. During the month of November, this valley and the surrounding dry hills were explored in all directions from the city. A two-day journey took the botanists to Bahía Kíno, on the Gulf of California to the west of Hermosillo. The seaweeds of the gulf are little known, but the few specimens brought back by other scientific expeditions have indicated the presence of an algal flora unique along the Pacific coast, containing a number of endemic forms. Hence, special attention was given to the collecting of seaweeds here and at other points on the gulf. A week's trip was undertaken into the mountainous country northeast of Hermosillo, in company with Mr. William A. Lockhart, of Los Angeles. Specimens of all groups of plants were taken at Ures, Baviácora, Cumpas, Nacozari, Pilares, Jécori, and Moctezuma. Still another trip was made to Magdalena and Imuris.

During December, headquarters were located at Guaymas, on the Gulf of California south of Hermosillo. At this season the mountains there were very dry, but the many small bays, coves, and tidal flats furnished excellent habitats for seaweeds. Alamos, Nevajoa, and the port of Yavaros (Huatabampo) also were visited. On the return trip to Chicago, Dr. Drouet collected near Yuma, Arizona, and Los Angeles.

#### RAYMOND FOUNDATION PRESENTS PROGRAMS FOR CHILDREN

The annual spring series of free motion pictures for children, presented by the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures, will be given on Saturday mornings during March and April. The main feature films on each program are educational in character, relating to various subjects in natural history. On most of the programs there will also be animated cartoons. Most of the films have talking and other soundeffects.

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 other adults.

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

March 2-Animals at Home Including animal cartoon

March 9-The Ups and Downs of Earth's

Including cartoon feature

March 16-The World of Trees

March 23-The Home of Dinosaurs Including Dinosaur cartoon

March 30-Far Flying Feathered Friends Including Silly Symphony on birds

6-Life Under Water April Including cartoon feature

April 13-Spring Comes to the Woodlands Including Aesop's Fables

April 20-Plant and Insect Partnerships Including cartoon feature

April 27-First Aid to Nature

## GIFTS TO THE MUSEUM

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

Department of Anthropology:

From Messrs. Grow and Cuttle, Chicago-7 Chinese ceramic specimens, China.

Department of Botany:

From S. A. Guarrera, Buenos Aires, Argentina-14 specimens of algae, Argentina; from Mrs. A. E. Hudson, White Plains, N. Y.-106 economic specimens, Persia and Arabia; from Dr. Bassett McGuire, Logan, Utah-14 specimens of algae, Utah; from Rev. Brother Elias, Caracas, Venezuela-25 herbarium specimens, Venezuela; from Professor José Badini, Ouro Preto, Minas Geraes, Brazil-27 herbarium specimens, Brazil; from Miss Dotha Seaverns, Bennington, Vt.-67 herbarium specimens, Canal Zone; from Hermann C. Benke, Chicago -191 herbarium specimens, Wisconsin and Illinois; from W. A. Daily, Cincinnati, Ohio -39 specimens of algae, Kentucky and Ohio; from Dr. W. R. Taylor, Ann Arbor, Michigan-35 specimens of Myxophyceae, Mexico; from Ernest G. Marsh, Jr., Mission, Texas-60 herbarium specimens, Texas.

Department of Geology:

From Dr. M. J. Groesbeck, Porterville, Calif.—2 specimens of rock, California; from Professor Lincoln R. Thiesmayer, Appleton, Wis.—6 dreikanters and ventifacts, Cape Cod, Mass.; from R. J. Goodman, Chicago-16 geological specimens, United States; from H. W. Plantz, Chicago—a precious opal, Honduras; from O. J. Salo, Red Lodge, Mont.-3 specimens of dahllite, Montana; from R. Schaap, Batavia, Java-8 tectites, Java and Philippines.

Department of Zoology:

From S. L. Loewen, Sterling, Kan.-A Great Plains lizard, Kansas; from Dr. S. M. Lambert, Utica, N. Y.—a skull of Crocodylus novae-guineae, New Guinea; from Lincoln Park Zoo, Chicago-an orang-utan; from Chicago Zoological Society, Brookfield, Ill.-13 birds, 3 water snakes, a flying squirrel, a lemur, and a kangaroo.

The Library:

Valuable books from Dr. F. C. Hoehne, Rio de Janeiro, Brazil; Santiago Pacheco Cruz; and Clifford C. Gregg, Karl P. Schmidt, and Dr. Albert B. Lewis, all of Chicago.

## STORY OF CAVE MAN OFFERED IN SUNDAY LECTURE TOURS

On his Sunday afternoon tours during March, Mr. Paul G. Dallwig, the Layman Lecturer of Field Museum, will present the subject "Digging up the Cave Man's Past." In this lecture, which includes a tour of the

Hall of the Stone Age of the Old World. Mr. Dallwig will trace for his audiences the physical evolution of man, from the earliest fossil finds. He will also discuss the

cultural developments which occurred during the Old and New Stone Ages, giving special attention to prehistoric art. In dramatized form, he will re-create typical incidents in the life of Neanderthal and Magdalenian people.

As the tours on each of the five Sundays of the month are limited to 100 adults (children cannot be accommodated), the Museum is compelled to require that reservations be made in advance by mail or telephone (Wabash 9410). The lectures begin promptly at 2 P.M., and end at 4:30. A half-hour intermission is provided midway in the tours, so that members of the parties who wish to do so may obtain refreshments in the Cafeteria, where special tables are reserved for them. There they may also

In April Mr. Dallwig's topic will be "The Romance of Diamonds from Mine to Man."

The minerals frequently mistaken for gold are exhibited in Frederick J. V. Skiff Hall (Hall 37).

#### **NEW MEMBERS**

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

> Life Members Hughston M. McBain Associate Members

Hubert Beddoes, Mrs. T. R. Benson, Clayton B. Burch, Dr. Richard J. Gordon, Mrs. Arthur S. Jackson, H. A. Kern, B. Botsford Young.

Sustaining Members Sanford Lassers **Annual Members** 

William S. Barranco, R. M. Beckler, Louis EtsHokin, Leo J. Georgen, Edward Gray, Charles Zane Henkle, Fred J. Hinds, Dr. Thesle T. Job, Bernhard R. Kagan, Miss Marie Leutz, Mrs. David K. Levinger, Milton H. Morris, Mrs. Miles F. Pencik, Dr. Sidney A. Portis, Joseph C. Reynolds, Joseph P. Rostenkowski, Richard A Trenk-mann, Dr. R. A. Ware, Miss Anna May Waugh, Walter H. Williams.

## Distinguished Visitors

Among distinguished visitors recently received at Field Museum are: Dr. Julian S. Huxley, Secretary of the London Zoological Society; Mr. Stanley P. Young, of the Bureau of Biological Survey, Washington, D. C., and Mr. T. J. Thomas, Assistant to the President of the Chicago, Burlington, and Quincy Railroad Company.

#### MEMBERSHIP IN FIELD MUSEUM

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 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 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 courtestes 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 informathe Museum without charge. Further informa-tion at out 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

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 guaran-teed against fluctuation in amount, and may reduce federal income taxes.

# Field Museum News

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# GROUP SHOWING CHICAGO AREA FLORA BRINGS 'ETERNAL SPRING' TO MUSEUM

BY JULIAN A. STEYERMARK
ASSISTANT CURATOR OF THE HERBARIUM

"If Winter comes, can Spring be far behind?"

The Department of Botany has completed a new spring woodland habitat group which makes it possible to say that *eternal* spring has come to Field Museum! In all future years, when winter comes, at this institution

spring will not only be not far behind—it will actually be here.

The springtime group is the second to be completed in the series designed to show characteristic plant ecological formations. It is installed in the Hall of Plant Life (Hall 29) adjacent to the group of alpine plants of the Rockies with which this series was begun in 1938.

The new diorama shows a bit of woodland such as may be seen in the latter part of May in various parts of the Chicago area. It illustrates a typical mesophytic forest of mixed hardwoods along a small stream. Such woods may still be seen near Chicago today in the

vicinity of Palos Park, Monee, Thornton, and a number of the Cook County forest preserves.

The principal trees and shrubs shown in the exhibit—sugar maple, white oak, linden, elm, ash, black cherry, witch hazel, and pale dogwood—are typical species nurtured by the rich soil of such woodlands. This type of forest is more or less duplicated over large portions of the eastern and central United States in areas of fairly rich soil and moderate rainfall. The trees shown in the diorama have reached a near climax stage in the forest succession. This is indicated by the relative abundance of such shade-tolerant species as sugar maple and linden. The seeds of these species germinate in dense shade and thrive under conditions

which are adverse to the more light-demanding types, and thus it is the shade-tolerant species which can succeed one another and become eventually the dominant ones present in the climax or near climax forest of this type.

It is in these rich mesophytic forests of the eastern and central United States that the most luxuriant and colorful spring flora

Springtlme Aspect of Northern Illinois Woodland

This diorama, construction of which was recently completed in the Museum's Hall of Plant Life, represents a scene typical of the Forest Preserves of Cook County during the latter part of May. It emphasizes what many Chicagoans are inclined to forget—that this region possesses one of the most luxuriant and colorful of spring floras.

is developed. In fact, some of the most picturesque and vari-colored wild flower displays are to be found in the spring of the year in such woodlands.

Most of the spring-flowering woodland species seen in the diorama have only a brief period of bloom. After lying dormant for a year, they respond to the warmth and rays of the sun, together with the increased moisture, and soon grow vigorously to produce a showy floral array. Then the woods become alive with bright colors rivaling those of the rainbow. Some of the most beautiful and most delicately flowered species are to be found at this time. The lily, crowfoot, violet, and mustard families are especially conspicuous. The lily family is represented in the diorama by white and

purple trilliums, Solomon's seal, and the dogtooth violet (adder's-tongue lily) which has begun to form fruit. In the crowfoot family are such species as the yellow-flowered buttercup, white and pink rue anemones, the handsome red and yellow columbine, and the hepatica, only the leaves of which show this late in the spring since the hepatica is one of the earliest of the

spring-flowering plants. Three kinds of violets appear: the common blue violet, the yellow violet, and the handsome spurred purple violet, the last named favoring moist habitats.

Within the confined space of the woodland scene a variety of habitats may be observed. The most conspicuous is that of various kinds of plants which occur in close proximity to the stream. This is a direct effect of the relatively more or less moist soil. It is striking, although perfectly natural, to find the beautiful blue clumps of bluebells (Virginia cowslips), and the brightly contrasting blue and white flowers

of the blue-eyed Mary, growing close to the stream and in the lower section of the woods. The buttercup (Ranunculus septentrionalis) is also an inhabitant of these low moist places.

In contrast to the moist habitat there is found the spring flora of the drier portions of the woodland. In such places occur plentiful clumps of the May-apple with its umbrella-like leaves surmounting the stem, the delicate pink-, rose-, and lilac-hued wild geranium, and the profuse lilac and blue-purple fragrant clusters of wild blue phlox (sweet William.) Grass-like clumps of the sedge (Carex) liven this portion of the woodland with splashes of yellow and green.

Also scattered throughout the rich woods, but favoring the moister portions, are Jackin-the-pulpit with its three-parted leaves and peculiar, striped, arching flower, and the dark green clumps of kidney-shaped leaves of wild ginger whose somber purplish-brown flowers hug the ground closely and are not easily seen unless the leaves on the forest floor are pushed aside.

The preparation of the group has been in charge of Mr. Emil Sella, Chief Preparator in the Department of Botany. He was materially aided by the skillful assistance of various Works Progress Administration artisans assigned to the Museum, who worked under his supervision. Mr. Sella was responsible also for the preliminary field studies and the collecting of required material. The background was painted by Staff Artist Arthur G. Rueckert from photographs and field sketches.

# THAT "FIRST SPRING ROBIN" WAS HERE ALL WINTER

BY EMMET R. BLAKE ASSISTANT CURATOR OF BIRDS

Each year considerable popular furor is created by the alleged return from the south of the first robin. Long before the winter snows and frigid temperatures are entirely dissipated, excited local observers telephone Field Museum authorities to report this first harbinger of spring. Usually the event is widely featured by the public press.

Actually, the first robin of the spring is a permanent resident in the Chicago area. Robins, like many other local birds, sometimes experience only partial or modified migration. As a species, they are much less numerous in winter than during the breeding season, and may even seem to have deserted the region entirely. However, a few hardy individuals usually linger all winter in sheltered situations where the active bird watcher may find them "conducting business as usual."

The reports of first spring arrivals often are based upon the unexpected identification in mid-winter of these scattered individuals. Among the migrant species which may be found in winter, at least occasionally, are kingfishers, red-breasted nuthatches, mockingbirds, brown creepers, brown thrashers, hermit thrushes, bluebirds, kinglets, cedar waxwings, bronzed grackles, cowbirds, towhees, white-throated sparrows, fox sparrows, song sparrows and purple finches.

Much can be done to encourage the wintering of species which normally migrate south by planting shrubbery or hedgerows and by providing sheltered feeding stations. The latter should not be undertaken, however, unless they are to be maintained throughout the winter. Migration is correlated with a finely adjusted seasonal physiological cycle which prompts and to some extent controls the birds' geographical movements. Once the peak of this cycle is passed, the migrating urge is modified to such an extent that the bird can no longer

migrate even though physically capable of extended flight. Migrants which have depended too long upon the bounty of artificial feeding stations usually starve if suddenly thrown upon their own resources in mid-winter.

## SOUR MUSICAL NOTES IN AFRICA BRING MAYHEM AS PENALTY

Wailing off-key saxophonists, unmelodious trombonists, and over-vociferous trap-drummers would do well to remain away from Africa. Members of certain tribes on that continent used to mutilate their own bad musicians for errors in harmony as well as for mistakes in transmitting messages by signal drums, according to Dr. Wilfrid D. Hambly, Curator of African Ethnology. They have no inhibitions against cutting off the ears, slitting the corners of the mouth, or chopping off the hands of those whose musciainship on their drums and other native instruments fails to meet approval.

Two large wooden drums from Cameroon, West Africa, elaborately carved with representations of mythical animals, ancestral figures, and mystical symbols, are now on exhibition in Hall D. Such drums, according to Dr. Hambly, are kept near the residence of a chief, and he alone may strike them, to call his men to war, or summon them to a palaver. A protecting hut is often built over the drum, and it marks the place of public assembly, symbolizes the dignity of chieftainship, and constitutes an idol to which a stranger entering the village is expected to pay his respects.

Signal drums, depending on atmospheric conditions, can carry messages between five and fifteen miles. Some are merely hollowed logs; others are skin-covered instruments. The study of the drum language is no easy task, and there are few white men who can interpret or make the signals. While drummers are subject to cruel penalties as above related for mistakes, they have some compensation in the fact that their art gives them an exalted social position among their fellows. The signal drums themselves are regarded as being endowed with life and sex instinct, and every part has a patron spirit to whom supplication is made.

The Africans have another type of drum, the friction drum, which leaders of American "swing" orchestras would find ideal as an addition to the various ear-splitting contrivances now in use. This drum has a wooden rod passing through the membrane, and projecting for about a foot and a half. The player first rubs his hand with resin, and then strokes his palm down the stick. This vibrates in such a way as to send out heart-rending wails and groans.

Fulgurites—sometimes called "lightning tubes" and "petrified lightning"—are exhibited in Clarence Buckingham Hall.

#### KNICKERBOCKER EGG COLLECTION RECEIVED AS A GIFT

A special exhibit of birds' eggs, selected for their rarity, and their variety of form and color, was placed in Stanley Field Hall of the Museum a few days before Easter. It will be continued on display through the month of April.

The eggs in the exhibit were chosen from a larger collection, assembled many years ago, and recently received by the Museum as a gift from the late Charles K. Knickerbocker, of Chicago. At the time these eggs were collected America was faced by no such conservation problems as exist today. In more recent years large scale collecting of eggs has been discouraged by museums and other organizations interested in wild life conservation, in order to help prevent the extermination of species which might otherwise occur in some cases. It has been felt that enough specimens have been collected by private individuals to serve the interest of the science of ornithology. This gift has made Field Museum a repository of valuable material for ornithologists of the future, as well as those of the present day, to study.

Of more than 1,400 known kinds of North American birds, some 500 are represented by eggs in this collection, which totals more than 10,000 specimens. With other large collections previously in the possession of the Museum, the institution has now virtually all species of North American birds' eggs in series adequate for study and statistical research.

Among the birds whose eggs are now rare, which are well represented in this collection, are the California condor, golden eagle, wild turkey, sandhill crane, everglade kite, Mississippi kite, and such shore birds as the rare solitary and pectoral sandpipers. The game birds are well represented, especially various species of grouse and ptarmigan. Also included are a number of exceptionally fine series of the eggs of various large birds of prey, such as the hawks and eagles.

—R.B.

#### 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.

#### MUSEUM RADIO BROADCASTS SCHEDULED FOR APRIL

Present plans call for the continuance of Field Museum's radio programs, presented under the title "How Do You Know?" each week until June 7. The broadcasts, which began January 25, are heard from coast to coast over the Blue Network of the National Broadcasting Company.

Outside Chicago, they are heard each Thursday from 1 to 1:30 P.M. (Central Standard Time).

In Chicago they are rebroadcast on Saturday afternoons over station WENR. The program of April 6 will be from 4 to 4:30 p.m. On April 11 and 13 there will be no "How Do You Know" program because of prior station commitments. Beginning with the April 20 rebroadcast in Chicago, the Chicago presentations will be from 4:30 to 5 p.m.

Following are the subjects scheduled for broadcasting during April:

National In network Chicago

go Subjects: HOW DO YOU KNOW—

April 4 April 6 —birds return to the (t p.m.) (t p.m.) same place year after year?

April 11 April 13 (No broadcast)

April 18 April 20 —the habits of prehis-(1 p.m.) (4:30 p.m.) toric animals?

April 25 April 27 — coal comes from (1 p.m.) (4:30 p.m.) plants?

The programs are presented in co-operation with the University Broadcasting Council, of which Field Museum is a member. Members of the Museum's scientific staff supply the answers to the various questions of scientific fact and theory. The results of their own research, and also that of other scientists, are drawn upon for the purpose. Preparation of the scripts is in the hands of Mr. William C. Hodapp, a radio writer of the NBC staff. Facilities and personnel for dramatic presentation are contributed by the National Broadcasting Company. The programs have the expert supervision of Miss Judith Waller, Director of Education, NBC-Central Division, and Mr. Allen Miller, Director of the University Broadcasting Council.

### Raymond Foundation Assists Teachers of Science

As a service to science teachers in the Chicago Public Schools, the staff of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures conducted a series of special meetings in the Museum Lecture Hall, and the exhibition halls, on Saturday mornings during March. A similar course to assist teachers was given by the Raymond Foundation in November, 1939, and the new course had been requested because of the success which attended the first one. The teachers participating are those conducting classes

from the third to the eighth grade, those of each grade meeting separately so that attention might be given to their specific problems in teaching.

# Field Museum to Participate in Persian Art Exhibit

Field Museum will be represented at the Exhibition of Persian Art to be held in New York City from April 15 to June 15. This exhibition, the largest of its kind ever attempted in this country, is designed to show the development of Persian art through six thousand years. The Museum will send stucco and pottery of the Sasanid period from a palace of King Shapur II (4th Century A.D.) excavated by the Field Museum-Oxford University Joint Expedition to Kish. The exhibition is arranged by the Iranian Institute and will be housed at Fifth Avenue and 51st Street.

Ethnological collections from the little known Rennell, Bellona and Santa Cruz Islands of the South Pacific, are included among the exhibits in Joseph N. Field Hall.

# ZENITH—FIELD MUSEUM SERIES IN TELEVISION CONCLUDED

The last of the series of twelve experimental television programs presented by Field Museum in co-operation with the Zenith Radio Corporation over the latter's station (W9XZV) was given on March 29. Mr. Clifford C. Gregg, Director of the Museum, and Mr. D. Dwight Davis, Assistant Curator of Anatomy and Osteology, appeared. Mr. Davis told of the value to museums of making collections of skeletons, and their uses in research work. He demonstrated his subject with specimens brought from the Museum laboratories.

Director Gregg concluded the program with an explanation of the work of the Museum, with special reference to the purpose of Field Museum in co-operating in this series of educational telecasts.

The program marked a milestone for the Zenith Corporation, because it was the first anniversary of that company's work in telecasting. During this year of experimental television programs, much progress has been made, and Field Museum has been able to contribute two series of programs.

#### THINGS YOU MAY HAVE MISSED

#### An Upside Down Courtship

The youth of the human race does many curious things in the throes of young love. Smitten schoolboys perform many "stunts" to show off their skill and provess, a classic



Prince Rudolph's Bird-of-Paradise
This is not a printer's error—the bird actually does swing in this upside down position while making its ecstatic nuptial display to attract a prospective mate.

example of which is standing on one's head to attract the admiration of a little girl who becomes the object of one's lower 'teen-age affections.

A direct parallel to this is found in the animal world—Prince Rudolph's blue bird-of-Paradise, which habitually hangs upside down from a branch during its period of courtship. In the case of the boy standing on his head, a temporary topsy-turviness of mental as well as physical condition is

indicated. Whether or not the bird enjoys (or suffers, as you will) a similar series of psychical elations and pangs while seeking to win the approval of a desirable mate is, of course, unknown in the present state of communication between man and animals.

All birds of Paradise are noted for their color and beauty, and Prince Rudolph's blue bird-of-Paradise happens to be the most ornate species of all. An example (see accompanying illustration) in full court-ship display is included among the exhibits in Field Museum's systematic collection of birds (Hall 21). The delicate form of its nuptial plumes bears marvelous pastel shades of blue, mauve, lilac, and maroon. During the display, the bird swings in its inverted position for several minutes, clinging to the branch with its feet, and quivering its plumes in an ecstasy of sheer abandon.

The Museum exhibit includes specimens of other beautiful species of birds-of-Paradise -the gorgetted, the king, the superb, the magnificent, and the great, by name. Exhibited with them are ravens, crows, and jays, which, despite their more somber characteristics, are by relationship actually first cousins to the birds-of-Paradise. While these relatives are found over a world-wide range, the birds-of-Paradise are restricted to New Guinea and near-by islands. The first specimens to reach Europe lacked the wings and feet. This led to legends that the plumes of the flanks supported them in the air, and that they needed no feet because they spent their lives in flight, continually turning their breasts to the sun. This idea caused Linneaus to give one of them the scientific name Paradisea apoda, meaning "Paradise bird with no feet,"

#### WHY SCIENTIFIC NAMES?

BY KARL P. SCHMIDT
CURATOR OF AMPHIBIANS AND REPTILES

(Editor's Note:—An article on certain anomalies in connection with the common names for animals appeared in the August, 1939 issue of FIELD MUSEUM NEWS. That the system of scientific names is much more orderly is made evident by Mr. Schmidt.)

The technical names that abound in the publications addressed by scientists to their colleagues form one of the barriers between the professional scientist and the public, and one of the hindrances to the popular diffusion of the current developments in scientific research. While many technical names have entered the language and become current, so that Azalea and Geranium, and even Hippopotamus, are used by the layman without effort, this happy linguistic success is all too rare. A large proportion of old-fashioned museum labels bore scientific names only, and must have prevented, rather than promoted, any constructively educational effect.

The functional use of most such terms is obscure to the beginner, who is likely to exaggerate their importance. The fact is that a scientific name or term should never be memorized as such. When a student engages on actual work in the classification of species with specimens on hand, or in first hand studies of anatomy, he presently finds that it is easier to know the name or anatomical term in question than not, and he is likely to find that he has learned all those that he really used without apparent effort. The affectation of overuse of technical terms, sometimes even without adequate understanding of their meaning, is then unlikely.

## ANALYSIS SIMPLIFIES NAMES

The amateur is likely to be so much frightened by a long scientific name that he becomes the victim of a sort of mental paralysis, so that he is totally unable to pronounce it, or, if asked to reproduce it, to spell it. If the amateur could only know how little agreement there is on the pronunciation of Latin terms among the most technical scientists, he might be relieved of some of his fright, for he could scarcely do worse himself by simply pronouncing as spelled. The analysis of technical names usually reduces them to words or syllables which are at least in some measure familiar in nonscientific English, and with the acquisition of a few Greek roots, whose meaning is often clear enough without the slightest knowledge of Greek, the difficulties of spelling also tend to disappear. There are, of course, unhappy exceptions, and the simple Rana sylvatica for the wood frog has a horrid counterpart in Rana warschewitschii, a Central American frog named for a Russian explorer, or in such elongate forms as Microstomatichthyoborus bashforddeani for a small African fish. However, even the worst of zoological and botanical names are outdone in length by

the compound chains of terms of the anatomists and chemists.

#### THE REASONS FOR SCIENTIFIC NAMES

The scientific names of plants and animals have several extremely useful functions. They were necessary in the first place to bring order out of a chaos of vernacular names for the kinds of animals and plants. Such names differ from country to country and from place to place in the same country for a single kind, or species. A chaos almost as bad grew out of the first cumbersome attempts at scientific description of these species. Some means of simple classification was necessary also to group the forms that could be seen to be related, much as the members of a family of human beings are distinguished by their given names and grouped by the surname.

The need for names, and the need for a simple method of grouping the species named, are both met by using two names, a generic name for the larger group and a specific one for each of its members. This practice rests on proposals formulated by the Swedish scientist Linnaeus, whose work on plants and animals took shape in successive editions of his Systema Naturae. The tenth edition of this work, published in 1758, has been adopted as the starting point for all scientific nomenclature of animals, while botanists begin their system with Linnaeus' Species Plantarum (1753). Thus, Homo sapiens is Linnaeus' name for man, and Lilium canadense for the wild yellow lily of northeastern North America. "Homo" and "Lilium" are names for considerable groups

#### 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 arranged for the entertainment and instruction of Museum visitors every day during 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 guidelecture tours conducted by members of the Museum staff.

In addition, the message of science is being sent into the homes by Field Museum radio programs on Thursday and Saturday afternoons by NBC.

of species, of which sapiens and canadense are examples. Linnaeus' relatively simple invention of a binomial nomenclature opened the world to botanical and zoological exploration, since the names made possible the description of plants and animals hitherto unknown, and these descriptions and names, when published, became a permanent body of knowledge. The generic names could easily be grouped, according to their natural relations, into families, the families into larger groups or orders, the orders into classes, and the classes into the major divisions of the Animal and Plant kingdoms. Thus, to use another familiar example, the lion was referred to by Linnaeus as Felis leo, the tiger as Felis tigris, and the genus Felis is now associated with other types to form the family Felidae; the family Felidae is grouped with the numerous other families of mainly carnivorous animals to form the order Cornirora: the Carnivora are one of the orders of the class Mammalia; and this in turn is one of the major divisions of the phylum Chordata. Thus, in reverse order, we have:

Kingdom—Animalia (all animals, contrasted with Plant and Mineral Kingdoms)

Phylum—Chordata (the backboned animals and their allies)

Class—Mammalia (the animals that suckle their young)

Order—Carnivora (the flesh eating mammals)
Family—Felidae (the cat-like mammals)
Genus—Felia (the true cats)

Genus—Felis (the true cats) Species—leo (the lion)

The classification of Man's own species is as follows:

Kingdom—Animalia Phylum—Chordata

Class-Mammalia

Order—Primates (named by Linnaeus for their apparent importance)

Family—Hominidae (man and his direct allies)
Genus—Homo (modern man)

Species—sapiens (named, probably in good faith, for his supposed intelligence)

The possibility of arranging animals by means of a natural classification in groups of ascending or descending rank afforded an immediate stimulus to comparative anatomy, which rapidly developed into an independent science, and which established the arrangement of the higher groups. As a by-product of this classification, it became possible to *identify* the species of animals already named, and thus to go on with the study and naming of those not yet described.

#### NAMES FOR NEW SPECIES

The use of Latin for the Linnaean names was natural enough, since it was the scholarly language of Linnaeus' day, and since it had the advantage, which it still possesses, of being an international medium. The immediate result of the success of the binomial system was to establish a permanent international nomenclature for plants and animals. Since this involved the use of the first names proposed, descriptive botany and zoology acquire some of the aspects of a game—a game played on an international scale, in which the privilege and honor of

proposing a new name is the prize. At first merely following Linnaeus' work as a model, more and more complicated rules were developed as the number of names increased. These rules have now been formulated into an "International Code of Nomenclature." The game of proposing new names for plants and animals still goes on, but with the number of described and named animals approaching a million, it has passed largely into the hands of specialists on particular groups. Many students of insects (by far the largest group of animals in number of species) confine their studies to a single order, or even a single family.

The addition of the describer's name as an essential part of the name, sanctioned by the codes of nomenclature, was doubtless intended originally as an aid to the finding of the original description. It must be admitted by any candid taxonomist, however, that this practice has had an insidious appeal to the vanity of botanists and zoologists engaged in the labor of describing "species new to science."

Whatever our opinion may be of those botanists and zoologists in whose hands the game of naming has become an end in itself, instead of a tool for the advancement of their respective sciences, Linnaeus' invention of binomial nomenclature, judged by its results in the body of knowledge accumulated and by its continuing usefulness, was a major event in the history of biology. We are still engaged in the botanical and zoological exploration of the world; and the more synthetic sciences, such as comparative anatomy, physiology, and ecology, are helpless without an orderly and permanent classification of their material.

In recent years the emphasis in university departments of biology has been more and more on the synthetic and more experimental aspects of both botany and zoology; and research in the descriptive branches, which rests largely on the accumulation of collected specimens, comes to be pursued mainly in museums. The reference collections in Field Museum, numbering hundreds of thousands of specimens, form the basis of the scientific knowledge that lies behind the planning of the exhibition halls. These still growing collections are used for reference by the scientific staff, which is charged with their care, with promoting their growth, and with the researches that fulfill the Museum's most fundamental aim-the increase and diffusion of knowledge.

## Museum Exhibit at Rotary Exposition

Field Museum will be represented by a special exhibit at the Rotary Business Exposition to be held at the Hotel Sherman, April 9 to 12, under the auspices of the Rotary Club of Chicago. The exposition will be open daily from 12:30 to 10:30 P.M. Two tickets of admission are enclosed with this issue of Field Museum News.

## A RARE CROCODILE IS RECEIVED FROM MR. LEON MANDEL

Although Field Museum's exhibition halls have only five of the twenty-four living species of crocodilians on display, this group is much better represented in the reference collection, where skulls and skins, or specimens in alcohol, of twenty-one forms may be examined or studied. The missing forms

the sponsor of the recent Mandel Caribbean Expedition. This specimen, received alive by the Museum, will furnish the basis of a model for exhibition, and an equally valued skin and skeleton for study purposes.

The name, Crocodylus rhombifer Cuvier, illustrates the subject of Mr. Schmidt's



Photograph courtesy of The Chicago Tribune

Crocodylus rhombifer, from Cuba

Mr. Leon Mandel (left), donor of important specimen for Museum collection, and Mr. Karl P. Schmidt, Curator of Amphibians and Reptiles, examine rare erocodile after its arrival, still alive, in the taxidermy shop. It will be reproduced in cellulose-acetate for exhibition, and the original skin will be preserved for the study collection.

include a dwarf crocodile from the heart of Africa, the gigantic species of the Orinoco, and one of the small caimans of the Amazon.

The missing species had included also the now rare Cuban crocodile (*Crocodylus rhombifer* Cuvier), which is found only in certain inland swamps in Cuba, until a specimen was secured in March by Mr. Leon Mandel,

article, "Why Scientific Names?" on page 4. Crocodylus represents the genus to which the animal belongs; rhombifer names the species, referring to the rhomb-shaped area on the snout which characterizes this crocodile (rhombifer—Latin for "rhomb-bearing"); Cuvier is the describer of the species, Baron G. L. C. F. D. Cuvier, famous French naturalist.

#### SUNDAY LAYMAN LECTURES IN APRIL—"THE ROMANCE OF DIAMONDS"

"The Romance of Diamonds from Mine to Man" is the subject of the Sunday afternoon tours to be conducted during April by Mr. Paul G. Dallwig, the Layman Lecturer of Field Museum. Illustrating his talk with the exhibits in the Gem Room (H. N. Higinbotham Hall) and other halls in the Department of Geology, Mr. Dallwig will dramatize not only the stories of the discovery, mining, cutting, and distribution of diamonds, but also the tales of hate, love, greed, and often murder which surround the history of many of the world's most famous diamonds. As the tours on

each of the four Sundays of the month are limited to 100 adults (children cannot be accommodated), the Museum is compelled to require that reservations be made in advance by mail or telephone (Wabash 9410). The lectures begin promptly at 2 P.M., and end at 4:30. A half-hour intermission is provided midway in the tours, so that members of the parties who wish to do so may obtain refreshments in the Cafeteria, where special tables are reserved.

In May Mr. Dallwig's topic will be "The Parade of the Races," based on the Races of Mankind sculptures by Malvina Hoffman.

## Field Museum of Natural History

FOUNDED BY MARSHALL FIELD, 1893 Roosevelt Road and Fleid Drive, Chicago

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

## FIELD MUSEUM'S BUILDING

BY HENRY F. DITZEL REGISTRAR

For a number of years prior to the construction of the present Field Museum building, every museum of note in the world was studied with the idea that this institution might profit by their good qualities and avoid their faults, thus fulfilling in the highest degree the needs of a great modern natural history museum. The importance of the collections and their vast educational value and influence, together with the unusual size of the building and its location in the very heart of the boulevard system of one of the greatest metropolitan centers, make it one of the most important buildings of this century, and its standard has set an architectural example for institutions in many other places.

The first consideration of importance in planning any successful museum building is to secure illumination of the objects in the cases so that they may be seen to the best possible advantage, yet, at the same time, be protected from fading by contact with excessive light or direct sunlight. For years this problem has been the object of considerable research, and repeatedly new methods of lighting have been introduced in an effort to reach eventually the highest possible standard.

The handling of the great crowds which on free days and holidays visit the Museum is also an important question. A simple, straightforward plan is absolutely essential to prevent confusion in a building of such great size. It was necessary to make conditions extremely favorable for crowds to find their way about easily. Of all the plans of great buildings, none has better succeeded in this respect than the plan of the great central nave (Stanley Field Hall) or avenue

of circulation which leads through the entire middle of the Museum building and handles the crowds perfectly. The top-lights of this nave have been reduced to the size of ordinary windows, thus giving only the subdued daylight necessary to show the architectural treatment, and the selected exhibits in this hall that introduce to the visitor the scope of the sciences embraced by the institution.

The general plan of the building divides the main and second floors into four groups of exhibition halls. This division does not necessarily correspond to any division of the Museum's work or material. The number



Photograph by Henry Fuermann and Sons, Chicago

of such divisions varies in different museums, and there does not seem to be any recognized classification by which nature, as represented in natural history museums, can be standardized so as to fall into a limited number of departments. Changes in classification as science progresses, and changes in personnel, often result in modifications of the grouping of the divisions.

The active educational work of the Museum, through its lectures, programs for children, study classes, libraries, and study collection facilities, has been provided for without interfering with the normal circulation of the public from one exhibition hall to another.

The ideal location of Field Museum of Natural History can challenge that of probably any other museum in the world. It symbolizes not only the eminence of the Museum in the scientific world, but its beautiful exterior and orderly surroundings may be considered complementary to the scientific arrangement of its contents. A park system perhaps more notable than that of any other city in the country places Chicago in the first rank among the beautiful cities of the world. Field Museum occupies a place of honor in this system contributing both added beauty and notable public service.

#### Staff Notes

Mr. C. Martin Wilbur, Curator of Chinese Archaeology and Ethnology, recently lectured before an audience at the Art Institute of Chicago on "Archaeology and the Art of the Han Period." Staff Taxidermist C. J. Albrecht recently lectured before audiences at museums in Philadelphia and Washington, D.C., and Staff Taxidermist John W. Moyer spoke before the West Chicago Women's Club. Mr. Loren P. Woods, of the Raymond

Foundation staff, was a recent guest speaker before the Chicago Aquarium Society.

Mrs. Leota Gregory Thomas, of the staff of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures, is the author of Seedless Plants, recently published by the American Education Press, of Columbus, Ohio. It is a "unit study" textbook on fungi for school children from the sixth grade up, and fills a specific place in the science curriculum of many school systems.

Mrs. Thomas was recently appointed

chairman of the Chicago Committee for the Museum-School Branch of the Progressive Education Association.

Mr. Emmet R. Blake, Assistant Curator of Birds, left Chicago on March 1 for visits at museums in Pittsburgh, Washington, D.C., Philadelphia, and New York. The

purpose of his trip was research in connection with collections made by the Stanley Field and Sewell Avery Expeditions to British Guiana which Mr. Blake conducted in 1937 and 1938.

### Illinois Birds

Birds known to occur in Illinois are given special attention in the systematic collection of North American birds in Hall 21. All such species are designated by red stars on the labels.

#### 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'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 Museum.

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

Free coursea 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 bussea 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.

## RAYMOND FOUNDATION PUBLISHES STORIES FOR CHILDREN

Have you—or your children—ever read one of Field Museum's stories prepared by the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures?

These are distributed to children attending the Saturday morning motion picture programs presented by the Raymond Foundation. Additional copies are available to other children upon request during the season of the programs. Later they are sold at the Museum Book Shop at the nominal price of one cent. The stories, correlated with the subjects of the programs in the James Simpson Theatre, cover a wide range of subjects in a style suited for juvenile readers. They are printed by Field Museum Press in leaflet form, and are punched for preservation in loose-leaf covers. Such covers, especially designed for this purpose, are on sale at the Book Shop at a low price. Each story leaflet has a blank page for the child to make his own notes from his observations at the motion pictures, among the Museum exhibits, or elsewhere.

Following is an example of a typical Raymond Foundation story:

#### ELEPHANTS OF TODAY

Most of us have seen circus elephants plodding along in the parade or performing at the commands of their trainer. We are familiar with the elephants in the zoo. It is fascinating to watch them lazily and rhythmically swinging their huge trunks to

and fro, first to one side, then to the other. One elephant may gather up a wisp of hay, roll it into a ball with his trunk, and then swing it up into his mouth; or he may flap his ears at us and wiggle his



tail. Sometimes his tiny eyes seem to look directly at us, but probably he doesn't see us at all because he has very poor eyesight. He has to depend upon his sniffing nose to tell him what is going on about him.

The nose, or trunk, of the elephant is his most priceless possession. Can you imagine an animal who smells and sniffs with his nose, and also uses it as a finger to lift objects ranging in size from a blade of grass to a tree trunk? The elephant may use his trunk as a weapon to "whack" things; as a bugle, which makes the plains and jungles quiver with its loud trumpeting; or as a shower spray with which he washes and cools his inch-thick hide.

Now let's shift scenes to Africa where there are no trainers or keepers to care for the elephants. There they wander through the forests, the grassy plains, and the low, hot lands. Occasionally the herd stops to feed. One elephant may pull the leaves off the branch of a tree; if another prefers the roots, he simply and easily butts his head against the tree and shoves it over. Possibly he places one foot on the trunk of the tree to help push it to the ground; then, by using his ivory tusks, he pries up the roots.

Elephants often travel fifty or sixty miles in a day, especially if they are searching for clear drinking water. When they find the water, each elephant drinks, and then takes a shower bath. If the elephants are not in a hurry, they may stop and wallow in the oozy mud.

Even an elephant needs sleep and rest. He usually sleeps standing, with his tiny eyes closed and his huge trunk hanging limply to the ground. An elephant with heavy tusks often places his head in the fork of a tree and then goes to sleep. He even snores, so some people say.

After resting through the night, the elephants wander on. Sometimes they seem to enjoy climbing hills. Can you picture one of these huge animals (the largest land animals in the world) climbing a steep hill? He goes up very slowly, but the fun begins when he reaches the top and starts sliding down the other side of the hill. He makes a terrifying noise, like a landslide.

In a herd of wild elephants, there are usually several young ones. Each mother elephant pushes her baby along beside or in front of her, guiding him with her trunk. Should he get mischievous, she spanks him with her trunk, but she always watches to see that no real harm comes to him. He swims beside his mother when the herd is crossing a river and if he gets tired, he hangs onto her ear while she pulls him across the stream. The baby elephant does not know how to use his trunk or what to do with it; it hangs as limp as a rope. As he grows older, he begins to swing it around; then his mother teaches him how to use it. The first few times the baby tries to drink water with his trunk, as his mother does, he only manages to blow bubbles, or he shoots the water off in the wrong direction, missing his mouth.

Africa is not the only native home of elephants; some live in India. The Indian elephants are not quite so large as the African ones. Their ears, especially, are much smaller. On the middle of his forehead each Indian elephant has a bump which is often called his "bump of wisdom." He has five nails on his forefeet, four on his hind feet; the African elephant has four on his forefeet, three on his hind feet.

Indian elephants have been tamed, and are trained to carry or pull heavy loads.

Each elephant has a "mahout," a man who takes care of him. After a long day of hard work the kindest thing a mahout can do for his elephant is to take him down to the river, where the elephant lies down in the shallow water and the mahout crawls over him and rubs his tough hide with a stiff brush. The elephant loves this brushing and he closes his tiny eyes and twitches his long nose in complete happiness while his back is being scratched.

Note: Look at the two African elephants in the middle of the main hall. One, his trunk flung upwards, is trumpeting, but the other, a rogue elephant, has his trunk down and is ready to charge.

-MIRIAM WOOD, Raymond Foundation

#### Distinguished Visitors

Among distinguished visitors recently received at Field Museum are: Mr. Arthur Upham Pope, Director, Iranian Institute of America, New York; Miss Mildred E. Manter, Director, Children's Museum, Boston; Mr. Stanley P. Young, of the Bureau of Biological Survey, Department of the Interior, Washington, D.C.; Dr. Paul H. Nesbitt, of Beloit College in Wisconsin; Dr. M. S. Dimand, Associate Curator of Islamic Art, of the Metropolitan Museum of Art, New York, and Miss Pauline Simmons, of the Far Eastern Department of the same institution.

#### Oysters Protected in 14th Century

In 1375, King Edward III of England forbade the collecting or removing from their beds of young oysters in any month of the year except May. His edict also prohibited the collecting of full-grown oysters from May to September. Both of these regulations represent the earliest known law ordering such protection, and were presumably due to biological experiences which indicated even in those early days the necessity for conservation of natural resources, says Dr. Fritz Haas, Curator of Lower Invertebrates at Field Museum. Furthermore, the measures taken were in accordance with the dictates of modern science, and thus the proper ones to achieve the purposes sought.

#### 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.

# SATURDAY LECTURES FOR ADULTS CONTINUE THROUGH APRIL

During April four more free lectures on science and travel for adults will be presented at Field Museum on Saturday afternoons in the annual spring course. Well-known scientists and naturalists have been engaged as speakers. The lectures are illustrated with motion pictures and stereopticon slides. All lectures begin at 2:30 o'clock and are given in the James Simpson Theatre of the Museum. Following are the dates, subjects, and speakers for the remaining lectures:

April 6—Snow Peaks and Flower Meadows in the Canadian Rockies

Mr. Dan McCowan, Banff, Alberta

April 13—Africa Smiles
Mr. Herbert S. Ullmann, Chicago

April 20—Birds of America Dr. Artbur A. Allen, Cornell University

April 27—Return to Malaya Mr. Carveth Wells, New York

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.

## APRIL 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 April:

Week beginning April 1: Monday—Man of the Stone Age; Tuesday—Colors and Patterns of Animals; Wednesday—The Earth before Man; Thursday—General Tour; Friday—Plants in Their Homes.

Week beginning April 8: Monday—Egypt's Past; Tuesday—Island Animal Life; Wednesday—Crystals and Gems; Thursday—General Tour; Friday—The Floral Parade.

Week beginning April 15: Monday—Desert and Jungle Dwellers of Africa; Tuesday—Life in the Ocean; Wednesday—Geology of the Chicago Region; Thursday—General Tour; Friday—Plants in Our Everyday Life.

Week beginning April 22: Monday—China and Tibet; Tuesday—Reptiles of Ancient and Modern Times; Wednesday—How Rocks Are Made and Remade; Thursday—General Tour; Friday—Plants That Have Helped Develop Trade.

Week beginning April 29: Monday—The Indians of the Woodlands, Plains and Deserts; Tuesday—Facts and Fallacies about Snakes.

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.

#### GIFTS TO THE MUSEUM

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

Department of Anthropology:

From Cenozoic Research Laboratory, Peking Union Medical College, Peking, China—a colored cast of Sinanthropus pekinensis, China.

Department of Botany:

From Professor A. O. Garrett, Salt Lake City, Utah—83 herbarium specimens, chiefly Utah; from Mrs. Alice S. Roberts, Chicago—214 herbarium specimens, Tennessee and Ohio; from Sister M. Marcelline Horton, Grand Rapids, Mich.—121 herbarium specimens, New Mexico.

Department of Geology:

From O. J. Salo, Red Lodge, Mont.—5 specimens dahllite, Montana; from C. M. Barber, Hot Springs, Ark.—3 specimens Plesiosaur vertebrae, Arkansas; from Paul O. McGrew, Chicago—8 specimens precious opal, Honduras.

Department of Zoology:

From Museum of Comparative Zoology, Cambridge, Mass.—52 lizards, British West Indies; from Dr. Ralph Buchsbaum, Chicago—a tree lizard, Canal Zone; from Dr. Marshall Hertig, Lima, Peru—a snake, Peru; from Armour and Company, Chicago—a hog and a sheep; from C. M. Barber, Hot Springs, Ark.—a skeleton of a South American turtle, Brazil; from Chicago Zoological Society, Brookfield, Ill.—2 birds, a mangrove snake, an agouti, and a bear cub.

The Library:

Valuable books from Carnegie Institution, Washington, D.C.; Dr. T. Just, Notre Dame, Ind.; and Dr. Albert B. Lewis, Bryan Patterson, and Loren P. Woods, all of Chicago.

## NEW MEMBERS

The following persons became Members of Field Museum during the period from February 16 to March 15:

#### Associate Members

Mrs. Giovanni Cardelli, Mrs. W. A. Douglass, Dr. Gustav L. Kaufmann, Dr. Charles H. McKenna, Victor W. Purcey, Mrs. John Ritchie, J. A. V. Turck.

#### **Annual Members**

Dr. Walter A. Adams, J. A. Anderson, John H. Ashum, R. U. Baughman, Mrs. Robert K. Clark, Joe Crites, Miss Elease E. Davis, Frank C. Engelhart, Mrs. D. H. Garen, Joseph B. Garnett, R. R. Lippincott, Dr. Ira M. Mason, F. J. McCarthy, Mrs. James Herbert Mitchell, Mrs. Ernest J. Norcott, Mrs. G. S. Roblin, John Pierre Roche, William A. Rowley, Max Schlossberg, D. G. Schneider, Robert J. Speer, Paul B. Thompson.

A good way to learn how to identify birds is to study the specimens in the systematic collection in Hall 21.

# MOTION PICTURES FOR CHILDREN ON SATURDAY MORNINGS

The annual spring 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 on Saturday mornings through April. The main feature films on each program are educational in character, relating to various subjects in natural history. On most of the programs there will also be animated cartoons. Most of the films have talking and other sound effects.

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

April 6—Life Under Water Including cartoon feature

April 13—Spring Comes to the Woodlands Including Aesop's Fobles

April 20—Plant and Insect Partnerships Including cartoon feature

April 27-First Aid to Nature

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.

#### 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 aix 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 fitty 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.

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 al out memberships will be seot on request.

#### BEQUESTS AND ENDOWMENTS

Bequests to Field Museum of Natural History may be made in securities, mocey, 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.

Eodowments 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. 11 MAY, 1940 No. 5

#### CHICAGO MEETS YOUNG CHINA IN FIELD MUSEUM EXHIBIT

BY C. MARTIN WILBUR

CURATOR OF CHINESE ARCHAEOLOGY AND ETHNOLOGY
Field Museum has always made special

efforts to provide in its exhibits material that would be of direct interest to children, as well as to adults. Children, with their literal-mindedness, are more exacting in their demands than grown-ups. They want more than representation of a subject by its

elements—they expect a realistic picture, preferably in three dimensions. An adult may be content to construct his own idea of another nation's culture from a display of garments, ntensils, weapons, etc. The child is not greatly impressed by these things unless they are so exhibited as to indicate something of life and action, through demonstration of their actual relation to and use by human beings. Although it is probably true, as many psychologists agree, that children possess stronger powers of imagination than their elders, and that imaginativeness wanes more and more as a person (at least, an average person) grows older-this applies principally in the building of the individual's own dreams. Where someone else's ideas, or mere factual data, are being presented, the child prefers that his instructor employ the more complete technique, and that demon-

strations be replete with reality (as distinguished from realism in its more recent and specialized connotations).

With this in mind, the Museum's Department of Anthropology, acting on a suggestion from the Raymond Foundation, recently set about the task of creating an exhibit which would introduce the modern school child of China to the children of Chicago. For an initial view of the culture of China, it was agreed that American children would be more interested in their contemporaries in age and era than in the men and things of long past dynasties.

Four Chinese children—two living in China, and two in Chicago—co-operated

with the Museum to make an exhibit showing what typical Chinese school children are like today. Shih-pin Wu, a boy in sixth grade, and Chih-ping Wen, a fourth-grade girl, both living in T'ung hsien near Peking, sent to the Museum their everyday clothes, their textbooks, some of their favorite toys, and samples of art work and exercises they did in class. (As reported in FIELD MUSEUM NEWS for July, 1939, these were temporarily installed until manikins could be prepared



Youth of Modern China at Field Museum

Chinese children in Chicago, as well as children living in China, co-operated with the Museum in the preparation of this exhibit (in Hall 24) consisting of life-size figures dressed in typical clothing, and accompanied by many objects used in classroom studies and in playtime.

for permanent display.) Then Roger and Eugene Moy, who live in Chicago and are Chinese by race, came to the Museum to permit an artist to make color notes of their skin, hair, and eyes, so that the heads and hands of the manikins could be tinted with accuracy.

Born in this country, Roger and Eugene Moy are cousins, 12 and 13 years old respectively. They are American citizens, and, as is characteristic of most children of immigrants, both boys have adopted American culture wholeheartedly. They are members of the "Panda Patrol," a unit of a Chicago boy scout troop made up of sons

(Continued on page 2, column 3)

#### PALEONTOLOGISTS TO COLLECT IN WESTERN STATES

A paleontological expedition of Field Museum left Chicago on April 29 to conduct operations over a period of about four months. Mr. Paul O. McGrew, Assistant in Paleontology, is the leader. He is accompanied by Mr. Henry Horback, of Chicago. In June, Mr. John Schmidt, recently returned from the Magellanic Expedition in South America, will join Mr. McGrew's party.

The major part of the summer will be spent along the Pine Ridge escarpment in northwestern Nebraska, southwestern South Dakota and eastern Wyoming. Along this escarpment deposits of Oligocene and early Miocene age are exposed which contain the fossilized bones of animals that lived during those geologic epochs. The Miocene deposits were laid down some fifteen million years ago, and the Oligocene approximately thirty-five million years ago. The principal desiderata of the expedition will be fossil mammals from the Miocene beds. Among the mammals which may be found are the following: various carnivorous forms ranging in size from that of a small weasel to a large bear; a small threetoed horse known as Parahippus, and a small camel, Stenomylus, which was only about three feet in height. There are also many forms in the region which are

known only from small fragmentary specimens. It is hoped that more complete material of some of these may be found so that a clearer picture of the extinct mammalian life of the Great Plains may be obtained through projected studies.

# Annual Report of the Director is Now On the Press

The Annual Report of the Director of Field Museum to the institution's Board of Trustees for the year 1939 is now on the press, and copies will soon be distributed to all Members of the Museum. The book will contain 174 pages, and twelve plates.

# CHIEF CURATOR W. H. OSGOOD RETURNS FROM EXPEDITION

Having completed his work in the region of the Straits of Magellan, including the island of Tierra del Fuego at the extreme southern tip of South America, Dr. Wilfred H.



Dr. Wilfred H. Osgood

Osgood, Chief Curator of the Department of Zoology, returned to the Museum just as this issue of FIELD MUSEUM NEWS was going to press. Dr. Osgood was leader of the Magellanic Expedition. Other members of this expedition who have returned are Mr. Karl P. Schmidt, Curator of Amphibians and Rep-

tiles, and Mr. John Schmidt, field assistant. Mr. Colin C. Sanborn, Curator of Mammals, is remaining in the field to continue work in certain parts of Argentina and Peru.

Dr. Osgood reports that the expedition was extremely successful, and has resulted in collections of several thousand specimens which will contribute to the expansion of knowledge about the faunas of southern Peru, central Chile, the coasts of the Straits of Magellan, and northeastern Argentina. Included in the collections are a number of species hitherto unknown to science.

A further account of the expedition will appear in a later issue of the NEWS.

#### NEGRO ART IN WEST AFRICA AND THE NEW WORLD

BY WILFRID D. HAMBLY CURATOR OF AFRICAN ETHNOLOGY

During the past few years, since the main installation of the African Ethnology Halls (D and E) was completed, several valuable objects have been acquired at Field Museum by presentation and exchange. These are now displayed in Case 13A, Hall D.

The objects which first arrest a visitor's attention are headdresses covered with cowrie shells, which were obtained by exchange with a Belgian museum. Under European influence there is a tendency for tribal initiation ceremonies to become obsolete, and ethnologists are therefore gratified to obtain such fine old specimens as these from the Belgian Congo. Regalia of initiation are treated with the utmost reverence and are carefully concealed from the eyes of women and uninitiated boys. The series of masks includes some exceptionally fine specimens from the Cameroons and Sierra Leone, Modern social movements have produced many of a feminist character, and from the Mendi tribe of Sierra Leone comes a mask used by girls who are graduating into a society which is concerned with

the promotion of women's rights. A peculiar form of wooden rattle shaken by boys is displayed near the masks.

Negro religion is based on a reverence for ancestors, and in this connection several wooden figures are of interest. Such sculptures should not be described as "gods" or "idols"; they are in all probability memorial figures commemorating some person of distinction now thought to be alive in the spirit world. One figure of this type, from Dahomey, was presented by Mrs. Laura C. Boulton, of Chicago.

The importance of social distinction in Negro Africa is illustrated by insignia of office such as carved wooden paddles, a large metal trident, hair combs, and ornaments. Two large ivory horns for blowing on ceremonial occasions are of a pattern difficult to obtain at the present day. Owing to European protection of elephants scarcely any ivory is now available for native use.

Among works of art which have no ceremonial meaning, mention should be made of mats woven from fiber of the raffia palm. This industry is carried on in many parts of West Africa, often by males who use a small loom. Dyes are manufactured by boiling vegetable fiber to extract the pigments. Two remarkably fine mats with inwoven designs of men and an antelope were presented by Mr. Stanley Field, President of the Museum, and Messrs. Henry J. Patten and Charles B. Pike, of Chicago.

Small brass weights from Ashanti recall the days when a king made revenue from his subjects by having an exceptionally heavy set of weights that he used only when buying gold dust, which was one of the chief mineral products of the country.

#### AFRICAN ART IN AMERICA

One principal object of this display is to show how African Negro art has been preserved in the New World. Religious beliefs, magical practices, and artistic skill have been handed down from slave ancestors who brought their culture from West Africa. Mr. Thorne Donnelley, of Chicago, is the donor of three drums from Haiti-these bear a remarkably close resemblance to African forms. The cultural connection of Bush Negroes of Dutch Guiana and the African Negroes who were their progenitors is further illustrated by a series of well-carved objects presented by Mrs. William G. Burt, of Old Lyme, Connecticut, and by Mr. and Mrs. Maurice Berkson, of Highland Park, Illinois.

#### Synopsis of the Plant Kingdom

The exhibits in the Hall of Plant Life (Hall 29) are planned to furnish a general view of the entire range of the vegetable kingdom, including various extinct groups of plants. Another object of this hall is to show as many as possible of the most important useful plants of the world.

# CHINESE SCHOOL CHILDREN

(Continued from page 1)

of Chinese. They play in a bugle corps which welcomed and serenaded Mei-mei, the giant panda, when it arrived in Chicago recently for the Brookfield Zoo. Eugene is a first-class scout and has earned merit badges for horsemanship, firemanship, leathercraft, handicraft, and personal health. Roger has merit badges for horsemanship and handicraft. The boys go to public school, but for several hours each afternoon when school is over, and on Saturdays, they attend a private Chinese school and study many of the things that Shih-pin Wen and Chih-ping Wu study in China. They must learn the difficult Chinese written language, study Chinese history, and read what Confucius really did say.

#### ART TALENT REVEALED

Now on exhibition (in Hall 32, Case 38) are replicas of a girl and boy from north China, dressed in typical blue cotton clothes, and with faces and hands tinted like those of Roger and Eugene Moy. Photographs show the T'ung hsien classrooms, while samples of the exercises and art work done in those fourth- and sixth-grade classes line the back of the case. Some of this art work is surprisingly good. It is interesting to observe that these Chinese children saw and reproduced nature not realistically, but in the same conventional manner that adult Chinese artists employ. The sixthgrade textbooks are for history, geography, readings in Chinese classics, and nature study. In the fourth grade Chih-ping Wen concentrates on learning to read and write Chinese, but also studies hygiene, arithmetic, nature study, and art.

Planned for children, the labels are written in non-technical language and placed conveniently low. The assistance of Mrs. Elizabeth S. Stelle, of T'ung hsien, and of Dr. Tzechin Lu, Chinese Consul-General for Chicago, made the exhibit possible.

#### "The Memory Lingered On"

A recent visitor to Field Museum told the Librarian that he had come to the Library in 1911, and had found so much of interest that he thereupon resolved to return at the first opportunity. That opportunity finally came on April 13, 1940, when he again came to Chicago and spent a day in the reading room.

#### 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 2 (Labor Day).

#### NEW GUINEA CHARMS

A passive form of waging economic warfare against an enemy by means of a charm for destroying crops was long ago conceived by tribes of New Guinea. Contrariwise, they had charms for increasing crops for their own benefit, and for producing a host of other boons, such as fattening pigs, winning a girl's love, stimulating a dog's hunting abilities, and extending a small supply of food to make it suffice for any number of guests.

An interesting collection of such charms is on exhibition among the South Pacific exhibits in Joseph N. Field Hall (Hall A). Charms (both good and bad), and other forms of magic and sorcery are common throughout the whole of New Guinea. The use of most of the charms is accompanied by magical ceremonies and formulae. Some of the charms are very old and achieve a fame that endows their owners with great influence and power in the community. Regarded as particularly valuable are those charms reputed to have the power of injuring others. These are often much in demand by vengeful persons wishing assistance, and thus the owners acquire wealth and notoriety from their hire.

The charms are usually peculiarly shaped stones or other objects whose form or characteristics suggest in some way the object or effect desired. One of the charms for destroying crops, shown at the Museum, is a stone painted with red ochre and sulphur. In use, it was placed with "magic plants" in a special bowl, together with smooth stones taken from graves. After several days the latter stones were placed in graves of the opposing family, and this was believed to cause their fields to dry up and their crops to wither. The price at which this charm was valued exceeded that usually paid for a wife!

#### Coal Exhibits Extensive

A comprehensive treatment of the subject of coal is offered in the Museum's Department of Geology. In Ernest R. Graham Hall is a large diorama representing a coalage forest as it appeared in life 250,000,000 years ago. In Hall 36 are shown numerous varieties of coal, including specimens from many of the world's most important fields. A vertical section of a coal seam five feet thick represents the fuel as it lies in the mine. A stump of a tree which was growing at the time coal was formed confirms the vegetable origin of coal. A synoptic collection is especially devoted to the origin of coal and the relation of the several kinds to each other. There is also a large collection of the by-products obtained from coal during the manufacture of illuminating gas.

Totem poles and grave posts representing the culture of Northwest Coast Indian tribes are a feature of the exhibits in Hall 10.

# TELEVISION AN IDEAL EDUCATIONAL MEDIUM FOR FUTURE

By CLIFFORD C. GREGG DIRECTOR

(Managing Editor's Note:—As reported in recent issues of FIELD MUSEUM NEWS, notable experiments in education by television have been conducted for several months by the Museum in co-operation with the Zenith Radio Corporation. Twelve programs were given over Zenith's station, W9 XZV, with speakers from the staff of each of the scientific departments of the Museum demonstrating their subjects with various kinds of specimens. Lecturers of the James Nelson and Anna Louise Raymond Foundation managed the programs, and appeared as interviewers. On the final program, given March 29, Director Gregg was one of the speakers.)

The authorities of Field Museum are grateful for the opportunities, made available by the Zenith Radio Corporation, to experi-

ment with television as a new method of dissemination of knowledge.

Teaching, of course, is one of the great purposes of Field Museum. Five principal media have been employed for educational purposes-(1) the Museum's exhibits, (2) its publications, (3) its popular lectures, lecturetours, and school extension lectures, (4) its traveling exhibits for school use, and (5) the various educational programs it has sponsored on the radio.

Looking to the future we see in television a peculiarly efficacious opportunity for the distribution of information to hundreds and thousands

of persons simultaneously. It is conceivable that simultaneous instruction, visual as well as auditory, may eventually be transmitted from a central point to school classrooms in every state in the union, even as we are today giving auditory classroom instruction by radio. Through television we will have many additional advantages, by being able to demonstrate, as well as tell about The children will learn our subjects. through their eyes, as well as their ears, since we will thus be able to bring our materials to them—living animals plants, as well as inanimate objects. Further, it will be possible to demonstrate methods with action. In this way many children will see objects, living creatures, and processes which would not be otherwise available to them. In some instances demonstrations may safely be given by television which, if given in individual classrooms or assemblies, might involve hazards, as in the case of chemical experiments, or as in the Zenith-Field Museum series where during a lecture on reptiles, living poisonous snakes were held up to view.

It is highly appropriate that Field Museum, which is not only a teaching institution, but a research organization as well, should be among the pioneers in the discovery of and experimentation with new and better methods of accomplishing its purpose. Therefore we especially welcome television as a new outlet through which to give the world the results of scientific discovery.

In speaking of the great promise which television holds, it is necessary to emphasize a fact which is constantly stressed by the Zenith officials and engineers—that is, television apparently is not yet "just around the corner" so far as the general public is concerned. What has been done to date



Science Aids Science

Scene in Zenith Radio Corporation's television studio, whence, due to the progress made by physical science, Field Museum was able to transmit lessons in zoology, botany, geology, and anthropology in both auditory and visual form "over the air." Mr. Karl P. Schmidt, Curator of Amphibians and Reptiles, is seated at table, lecturing and demonstrating his subject with a live turtle. At left is Mr. Loren P. Woods, of the Raymond Foundation staff, holding another turtle.

is regarded as purely experimental. It is not to be expected that television is on the verge of becoming adopted immediately and generally, like radio. Many problems, both technical and economic, remain to be solved. Facilities for telecasting on a broad scale comparable to the present great networks of radio stations must yet be organized, and plans for sustaining them must be devised. Production and distribution of television receivers on a basis within reach of average purchasers still remain to be developed. Then, too, there is the arduous task of organizing sufficient sources of material and talent to provide a constant supply of acceptable programs, so that the transmitting stations may have an adequate quantity and quality of telecasts to justify their operation, and to satisfy the demands of those who invest in receiving sets.

It took years to bring the radio industry to its present high state of development. It must be expected that television, still in its infancy, will likewise require considerable time to fulfill its ultimate great promise.

# AMERICA'S WHITE-TAILED (OR VIRGINIA) DEER STILL FLOURISHES OVER A WIDE RANGE

BY WILFRED H. OSGOOD CHIEF CURATOR, DEPARTMENT OF ZOOLOGY

(Editor's Note:—For years the "four seasons groups" of white-tailed deer, in Hall 16, have ranked among the Museum's most popular exhibits. They were prepared by the late Carl E. Akeley, who while connected with Field Museum become the available most with Field Museum became the world's most famous taxidermist. At this season it is appropriate to publish the photograph presented herewith of the spring group. Equally beautiful are the groups representing the deer

in its summer autumn, and winter phases, showing changes in coat, and growth and shedding of antlers. They will repay any nature lover for a visit to the Museum. The accompanying article is an abstract of a more complete leaflet by Dr. Osgood, copies of which are available at a nominal price.)

The common deer of eastern North America was one of the first of large mammals brought to the attention of early settlers. Originally abundant in Massachusetts and other parts of New England, it was reported especially from Virginia by early

French writers who called it Cerf de Virginie. It was then given the scientific name Cervus virginianus, and so came to be known generally as the Virginia deer. This name proved to be misleading, for the same species, or varieties differing slightly, was found over most of the eastern and central United States. Another name, therefore, has gradually come into use-white-tailed deer. This is an appropriate name, for the deer's tail is entirely white on the under side and when held erect is conspicuous.

The white-tailed deer withstands the advance of civilization better than most large mammals and is still common over much of its original range. In regions where elk, bison, bears, congars, and wolves have completely disappeared, the whitetail still flourishes. This is mainly on account of the protection afforded by good game laws, but partly due to the animal's habits which are very adaptable. It will often maintain itself for years in a small piece of woodland. Its original range included all of eastern North America from the mouth of the St. Lawrence to the Rocky Mountains and the Gulf of Mexico. In some plains states it is now wholly exterminated, but elsewhere it remains common. Except in the extreme western part of its range it is the only species of deer to be found. In southern Michigan and Wisconsin it has retreated before civilization and intensive cultivation of the land, but in the northern parts of these states it is exceedingly abundant.

The whitetails of the eastern United States

are divided into several varieties or sub-

White-tailed Deer in Spring

One of the "four seasons groups" of an animal which ranks among the most common, and most beautiful, of America's larger mammals. The deer exhibits, prepared years ago by Carl Akeley, hold a place with the Museum's most popular groups.

species. There are various other whitetails, or closely allied species, in Mexico, Central America, and northern South America. The whitetails, as a group, have more extensive distribution than any other American deer.

Because it is so common and well known, the whitetail does not always get full credit for its grace and beauty which are scarcely excelled by any other member of the deer family. Its outward appearance shows marked differences with the change of the seasons. In summer its hair is relatively short and thin and the color of its coat is rich reddish rufous. It has sometimes erroneously been called "red deer," a name which properly belongs to a very different European species. The red coat is worn from May until September when the horns are attaining their annual growth. In the fall it is replaced by a beautiful gray coat which gradually grows longer and thicker as cold weather comes on. In midwinter it is full and heavy, forming ample protection against the severest weather. In spring the coat is more brownish, and is apt to have a ragged and faded appearance, especially just before it is shed. The fawns, usually born in May or June, are reddish. but are beautifully spotted with white. Late in the fall when the first coat is shed. the fawns lose their spots and become grayish. Two fawns are commonly born at a time although often only one survives.

Like other deer, the whitetail buck sheds and renews its horns annually (the does, or females, never have horns). The shedding takes place in late winter or early spring

and there is a short period when there are no horns. The mature horns simply drop off and fall to the ground, leaving only a slight bony knob or pedicel. Almost immediately new horns begin to grow, appearing at first as soft prominences covered with the peculiar fuzzy skin known as "velvet." They rapidly elongate and send out branches. In a few months their growth is practically completed and, except for their velvet covering and clubshaped tips, they have much the appearance of mature antlers.

About September, the bucks rub their antlers against trees and bushes and the velvet comes off in bloody strips and shreds until the fully hardened, smooth horn is exposed ready for fighting. Antlers vary in size and form according to the age of the animal. The young buck in his second year has simple unbranched prongs and is called a "spike" or "spikebuck." In his third year, several additional points are gained. Full development of the gracefully curved and branched antlers comes in the fourth, fifth, and sixth years. Normal life is seldom more than ten years.

Habits of the whitetail vary according to the region it inhabits, but it always frequents the thickest cover available. In summer, the whitetail feeds to some extent on aquatic plants to secure which it wades in lakes and ponds. It is an excellent swimmer and will voluntarily cross large lakes. When pressed by wolves or dogs it frequently takes to the water. It has even been found swimming in the sea from island to island or point to point on the coast of New England. Aquatic plants form only part of its food during the summer, for it eats a variety of browse.

In the fall, the deer usually move to higher ground and spend much time in tracts of burnt-over land where the second growth affords good cover. When beechnuts or acorns are available, they feed extensively on them.

As the rutting or mating season approaches, the bucks become restless and roving. The period of the rut extends from late October to early December. When two bucks meet, a fight is almost a certainty, and if they are well matched may last several hours. They rush together head on and, after locking horns, push each other backward and forward with mouths open and eyes glaring until one or the other acknowledges defeat by leaving the field. They seldom gore each other seriously, but occasionally there are fights to the death. Not infrequently their antlers become inextricably locked and the poor beasts struggle to the point of total exhaustion and death.

The antlers of the whitetail may be distinguished from those of other American deer by several characteristics. The two main branches or beams have a pronounced forward curve and the points all rise from the back and top of these beams almost perpendicularly. The pair of points nearest the base of the beams is much longer and more upright than in other American deer. The number of points is variable, but normally a full grown buck has five or six well-developed points on each side.

The whitetail, especially in the northern part of its range, often finds the winter season a great hardship. The deep snows do not prevent it from feeding, for it is able to browse upon twigs and to paw the snow away to secure other food in protected places; but snow interferes greatly with its freedom of movement and makes it an easy prey to its arch enemy, the wolf.

#### NORTHERN VARIETY LARGEST

Among the different varieties of whitetail there is much variation in size. The northern variety is much the largest, and full-grown bucks from northern New England, Michigan, Wisconsin, and Minnesota average slightly more than 200 pounds live weight. Many weigh more than 300 pounds. The does are smaller, weighing perhaps 150 pounds on the average. The small Florida deer weighs scarcely more than half as much as its northern relative. The Virginia variety is intermediate in size between the northern and Florida varieties.

The whitetail has always been a favorite object of the chase. The Indian pursued it before the coming of the white man and made good use of its hide, its horns, and its flesh. The pioneer settler did the same, and buckskin breeches, horn implements, and venison steaks meant almost as much to him as they did to the aborigines. In later years, deerhunting has furnished fascinating sport for

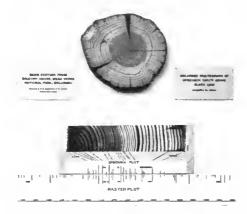
thousands of Americans of all classes in practically every state in the Union.

No game animal affords better evidence of the effectiveness of good game laws than the white-tailed deer. In some of our most populous states it is still abundant, and during the short open season each year thousands are killed by sportsmen. In Vermont, where it was nearly extinct, and in New Jersey, where it was quite so, it has re-established itself successfully after a period of complete protection. In New York and Pennsylvania it is probable there are more deer now than fifty years ago, although of course they are not so widely distributed. In northern Michigan, Wisconsin, and Minnesota, deer are perhaps as abundant as ever they have been. These results have been accomplished by wellconceived and well-administered game laws. Another development has been the establishment of public and private preserves and game refuges. Game farming is also practiced successfully. With the good laws now in force and with the demonstrated capacity of the deer to thrive in limited areas in close proximity to man, there is every reason to hope that the white-tailed deer may remain an attractive feature of our woodlands for years to come.

#### THINGS YOU MAY HAVE MISSED

## Tree Rings—Nature's Calendar for the Archaeologist

To the uninitiated the methods by which archaeologists determine the age of the various objects they dig up are often most mysterious, especially when the material



Forestry's Ald to Researchers

Part of an exhibit in Hall 7, showing how, by comparing tree rings on timbers from ancient ruins with a master chart, archaeologists are enabled to establish dates for various structures at sites they excavate.

antedates civilization's written records. Their calculations are based on so many things that laymen usually just take their word for the dates without understanding how they were reached.

But at last there has been uncovered by an astronomer who very much wanted weather records extending back much farther than our modern weather statistics—an actual weather calendar preserved in the trees and in the logs taken from them.

And this is how it happened. Dr. A. E. Douglass, Director of the Steward Observatory, University of Arizona at Tucson, wanted weather records that could show the relation between sun spots and the earth's atmospheric conditions. In his need, he hit upon the fact that trees add a ring for each year of growth and that these rings vary according to the moisture supplied to the trees by rain and snow-wet years produce broad rings, and dry years narrow rings. Also, there are trees in the southwestern region of the United States which are very old. By careful study of hundreds of these trees, Dr. Douglass has derived an unbroken succession of tree-ring patterns giving a continuous weather record for this section of the country for more than 1,200 years, or extending back to A.D. 643. In no instance has the pattern produced in any section of this calendar been duplicated in another; therefore, any given pattern can be fitted into its place.

The adaptability of Dr. Douglass's method to other research, particularly that of archaeologists, was soon recognized. At Field Museum it has been especially applied in connection with dating material excavated from ruins in southwestern Colorado and New Mexico by the expeditions led during the past ten years by Dr. Paul S. Martin, Chief Curator of Anthropology.

Equipped with this calendar furnished by the trees, archaeologists can definitely date logs of roof beams and door lintels in ancient ruins. In actual practice, when a beam is to be dated, the very broad and narrow rings, representing wet and dry years, respectively, are plotted on ruled paper, not as rings but as straight lines. Then, by sliding this graph along the master plot of the 1,200-year chronology until the pattern sequences of the principal dry and wet years coincide, the date on which the beam was cut is obtained.

An exhibit graphically illustrating the application of the Douglass method of dating prehistoric ruins by means of treering chronology is on view in the Hall of Archaeology and Ethnology of the Southwestern United States (Hall 7). It shows how the tree-ring calendar was built up, and how an ancient wooden roof beam is dated from it, by means of actual specimens, charts, photographs, and other material.

It should be noted that, as the weather conditions vary in different sections of the country and of the world, wood from other sections than that for which a tree-ring pattern has been worked out cannot be dated by that pattern. It is only a matter of time, probably, before other such tree-ring patterns will be graphed. The master plot from the southwestern United States has proved invaluable to archaeologists in solving problems of dating ruins in Utah, Colorado, Arizona, and New Mexico.

#### Field Museum of Natural History

FOUNDED BY MARSHALL FIELD, 1893 Rooseveit Road and Field Drive, Chicago

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#### FIELD MUSEUM NEWS

CLIFFORD C. GREGG, Director of the Museum....Editor
CONTRIBUTING EDITORS

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

#### FROM THE DIRECTOR'S DESK-

#### Recreation Commission Endorses Museums Tax Restoration

At the regular April meeting of the Chicago Recreation Commission, that organization adopted a resolution endorsing the bill which will be presented before the special session of the Illinois legislature authorizing the Chicago Park District to levy a tax for the partial maintenance of museums located in the parks.

Full consideration was given to the demand that such legislation be contingent on the inauguration of evening hours for museums. The commission decided, however, that it could make no recommendation on evening hours without a thorough study of the additional costs involved. It was recognized that the museums of Chicago had been brought from their inceptions to their present high degree of efficiency and world-wide renown through the unselfish and intelligent direction of boards of trustees consisting of eminent and civicminded business and professional men and women of Chicago. Failure to restore to the museums the support lost due to a decision of the Illinois Supreme Court last August would seriously impair the efficiency of these world famous institutions.

The resolution stated, in part: "It is in the best interest of the city of Chicago and its people that these institutions be maintained at their present high level of efficiency.

"Therefore, it is recommended by the Chicago Recreation Commission to the State Legislature that the proposed financial aid to the museums be granted without conditions other than those at present existing."

Needless to say, the administration of Field Museum concurs in the Commission's view, and appreciates the support being given to this institution and the other museums concerned.

—Clifford C. Gregg, Director

#### New Exhibit of Ducks, Swans, and Geese

There was recently installed in Hall 21 a new exhibit of one of the most interesting and widespread groups of birds—the ducks, swans, and geese. Twenty-nine species are shown, representative of all parts of the world. They give an excellent idea of range of variation and types of adaptation in this family of birds. The installation and most of the preparation was done by Staff Taxidermist John W. Moyer.

All swans, geese, and ducks belong to one family of birds, but there are numerous subfamilies, ten in all, some of which are restricted to limited areas.

The largest birds of the family are the swans, of course. It is a curious fact that of the seven known species, the five that occur in the northern hemisphere are entirely white. The two from the southern hemisphere both have black in greater or lesser degree in their plumage. In the exhibit, the black swan of Australia is shown with two downy cygnets.

Perhaps the most beautiful of ducks is the Mandarin duck of Asia with its bizarre yet softly blended pattern of buff, green and dubonnet, and exaggerated scapular feathers used in nuptial display. Yet others such as the rosy-billed duck of South America or the garganey teal of southern Europe are attractive in their own way.

There is no family of birds that shows such widespread distribution, nor is there any family in which specific characters are so constant. This is undoubtedly due to the fact that ducks are strong-winged and wide-ranging as individuals. As a result, any heritable mutations that may arise are quickly distributed throughout the whole population of the species.

—R.B.

#### Staff Notes

Mr. Emmet R. Blake, Assistant Curator of Birds, recently made studies of the colonies of nesting egrets at Avery Island, Louisiana, where he was the guest of Mr. John A. Holabird, Mr. Holabird's son Christopher, and Mr. E. A. McIlhenny. Mr. Blake brought the Museum a representative collection of Gulf Coast vertebrates.

Mr. Karl P. Schmidt, Curator of Amphibians and Reptiles, made a visit of several weeks to Rochester, New York, to assemble data for preparation of a history of Ward's Natural Science Establishment, an organization which had an important influence on the development of science and scientific museums in this country.

In southern Georgia and northern Florida on a vacation, Dr. Henry Field, Curator of Physical Anthropology, spent much of his time in collecting specimens, of which he brought back several hundred, for the Museum's Departments of Botany, Geology, and Zoology.

Mr. Henry W. Nichols, Chief Curator of Geology, Mr. Elmer S. Riggs, Curator of Paleontology, Mr. Bryant Mather, Assistant Curator of Mineralogy, and Mr. Henry Herpers, Assistant Curator of Geology, attended the concurrent sessions of the American Association of Petroleum Geologists, Society of Exploration Geophysicists, and Society of Economic Paleontologists and Mineralogists held in Chicago, April 9–12. Mr. Mather has been appointed chairman of the Chicago committee to represent the Marquette Geologists' Association in the promotion of the Midwest Federation of Mineralogical Societies.

#### **Botanical Expedition's Progress**

Dr. Julian A. Steyermark, Assistant Curator of the Herbarium, who has been conducting a botanical expedition in Guatemala for the Museum since last October, reports that his last month in the field will be spent in collecting in the jungle areas. These contain the country's richest flora. He has made large collections on the slopes of volcanoes, and anticipates that many of the plants will prove to be of new species. Dr. Steyermark will return shortly.

#### 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.

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.

#### FIVE MORE "HOW DO YOU KNOW" RADIO PROGRAMS ON AIR

With four more programs in May, and one in June, the "How Do You Know" radio broadcasts presented by Field Museum will end. The programs, which began January 25, are heard from coast to coast over the Blue Network of the National Broadcasting Company.

Outside Chicago, they are heard each Thursday from 1 to 1:30 P.M. (Central Daylight Saving Time).

In Chicago they are rebroadcast on Saturday afternoons over station WENR from 4:30 to 5 P.M. daylight time. There will be no program on May 30 (or June 1 in Chicago) because of a prior station commitment.

Following are the subjects scheduled for broadcasting on the remaining programs:

National Chicago

Subjects:

#### HOW DO YOU KNOW-

May 2 May 4 —which stones are gems? (1 p.m.) (4:30 p.m.)

May 9 May 11 -that the Chinese in-(1 p.m.) (4:30 p.m.) vented paper and printing?

May 16 May 18 -what constitutes good (1 p.m.) (4:30 p.m.) manners?

May 23 May 25 —the meaning of Egyp-(1 p.m.) (4:30 p.m.) tian hieroglyphics?

May 30 June 1 (No broadcast)

June 7 June 9 -when you have the cor-

(1 p.m.) (4:30 p.m.) rect answer? (a program demonstrating the vicissitudes of scientists). The programs are presented in co-opera-

tion with the University Broadcasting Council, of which Field Museum is a member. Members of the Museum's scientific staff supply the answers to the various questions of scientific fact and theory. The results of their own research, and also that of other scientists, are drawn upon for the purpose. Preparation of the scripts is in the hands of Mr. William C. Hodapp, a radio writer of the NBC staff. Facilities and personnel for dramatic presentation are contributed by the National Broadcasting Company. The programs have the expert supervision of Miss Judith Waller, Director of Education, NBC-Central Division, and Mr. Allen Miller, Director of the University Broadcasting Council.

#### FIELD MUSEUM'S EXHIBIT AT ROTARY EXPOSITION

Su-Lin, famous giant panda, was the central feature of a special Field Museum exhibit at the Rotary Business Exposition in the Hotel Sherman, April 9 to 12.

The exhibit, which was seen by at least 20,000 persons, contained many other features illustrating the work of the Museum as an educational and scientific institution. as well as its various services to business and industry. Not generally known is the

fact that the Museum's Department of Botany has been of great assistance to the lumber, wood-working, and furniture manufacturing industries in the determination of woods. This is but one of many forms of service rendered to business by the Museum's botanists. Likewise, the Department of Zoology has in various ways assisted the fur and livestock industries-and even the automobile industry by making available specimens of the most colorful exotic birds of the world, which were the basis of the popular iridescent colors used in painting some motor cars. The Museum's Department of Geology has rendered aid to many industries concerned with minerals and mineral products. The Department of Anthropology, with its collections representing the arts and crafts of peoples in all parts of the world, has furnished much material used as the basis of designs by many manufacturers.

A business document nearly 4,000 years old—a real-estate transfer from the ancient Babylonian city of Kish, recorded on a cuneiform tablet, dated in 1969 B.C.-was shown. There were also other antiquities from Kish, including seals corresponding to the seal of a modern notary public.

A question constantly asked of members of the Museum personnel is, "How do you prepare the thousands of exhibits?" The great diversity of exhibits, and of the techniques employed in their preparation, makes impossible a comprehensive answer. However, at the Rotary exhibit, the meticulous attention to scientific accuracy which characterizes the Museum's work was demonstrated by Mr. A. J. Franzen, taxidermist, who mounted specimens of birds, explaining various operations for visitors.

Part of the exhibit was devoted to the vast amount of scientific knowledge internationally disseminated through the publications of Field Museum Press. Special activities conducted for Chicago's half a million school children were represented by examples of the traveling exhibition cases circulated in the schools by the Department of the N. W. Harris Public School Extension, and by material illustrating the activities of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures.

#### Preparator Harrison Retires

On April 30, 1940, after completing a long and faithful service of 35 years, Mr. John William Harrison, Preparator in the Department of Anthropology, will retire from active service. Mr. Harrison came to the Museum in the spring of 1905, and played a prominent part in the installation of a large portion of the anthropological exhibits now on display.

After his retirement, which was brought on by impaired health, Mr. Harrison expects to live at Coloma, Michigan. The good wishes of all his associates go with him.

#### "PARADE OF RACES" IS TOPIC OF SUNDAY LECTURE TOURS

The current season of Sunday afternoon Layman Lecture Tours at Field Museum by Mr. Paul G. Dallwig will close with

the presentation on the four Sundays in May of "The Parade of the Races." This is one of the most popular of Mr. Dallwig's subjects, and is illustrated with the famous Races of Mankind sculptures by Malvina Hoffman in Chauncey Keep Memorial Hall. As the tours are limited to 100 adults on each Sunday (children cannot be accommodated). the Museum is compelled to require that reservations be made in advance by mail or telephone (Wabash 9410). lectures begin promptly at 2 P.M., and end at 4:30. A half-hour intermission Copyright Field Museum

is provided midway in African Dancing Giri the tours, so that members of the parties who wish to do so may obtain refreshments in the Cafeteria, where special tables are reserved.

Mr. Dallwig will resume his lectures next November. Several new titles will be announced at that time.

#### Court Sentences for Animals

During the middle ages animals, as well as men, could be brought to trial for crimes they had committed. In Falaise, France, in the year 1386, a sow which had attacked a baby, and eaten part of the child's face and arm, was formally sentenced by the court to have its snout and foreleg chopped off by the executioner. The punishment was intended to correspond to the injuries done to the child. In 1389, at a locality not exactly known, a horse was sentenced to die because it had kicked a man to death.

These sentences, and many others of a similar nature, offer but a superficial resemblance to modern court procedures in which animals are involved, of which the most common is that of a dog sentenced to death because of repeated attacks on humans. In the latter case, the dog's extermination is ordered because he is dangerous and a menace to the populace; whereas, in the ideology of the middle ages the animal was regarded as consciously responsible for its deeds and therefore liable to punishment on moral grounds in the same way as human malefactors. —F. H.

Impressive for its large size is the fruit cluster of a raffia palm exhibited in Hall 25.

#### MAY 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 May:

Wednesday, May I—The Work of Atmosphere and Water; Thursday—General Tour; Friday—Development of Plant Life.

Week beginning May 6: Monday—Primitive Man and His Art; Tuesday—Apes and Monkeys; Wednesday—Tracking the Dinosaur; Thursday—General Tour; Friday—Romance of Strange Plants.

Week beginning May 13: Monday—Masks; Tuesday—Skeletons of Man and Beast; Wednesday—Our Mineral Resources; Thursday—General Tour; Friday—Pines and Palms.

Week beginning May 20: Monday—Gods, Spirits, and Demons; Tuesday—Forest Dwelling Animals; Wednesday—How the Earth's Crust Is Deformed; Thursday General Tour; Friday—Spring Flowers.

Week beginning May 27: Monday—Burial Customs of the World; Tuesday—Animals of Plains and Deserts; Wednesday—Everyday Uses of Minerals; Thursday—no tour, Memorial Day holiday; Friday—Our Native Trees.

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.

#### GIFTS TO THE MUSEUM

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

#### Department of Botany:

From William A. Daily, Cincinnati, Ohio -76 specimens of algae, Ohio and Indiana; from Donald Richards, Chicago-20 cryptogams, Illinois and Minnesota; from Dr. William R. Taylor, Ann Arbor, Mich.-39 herbarium specimens; from Dr. M. J. Groesbeck, Porterville, Cal.—21 specimens of algae, California; from Edwin Guest, Kuala Lumpur, F. M. S.—10 fruits of Nipa, Federated Malay States: from Professor Maximino Martínez, Mexico City-16 herbarium specimens, Mexico; from R. M. Tryon, Cambridge, Mass.-24 herbarium specimens, Indiana; from George L. Fisher, Houston, Tex.-66 herbarium specimens, Texas (chiefly); from James Zetek, Balboa, Canal Zone—30 herbarium specimens, Panama; from Arturo E. Ragonese, Santa Fe, Argentina-43 herbarium specimens, Argen-

#### Department of Geology:

From Professor Lincoln La Paz, Columbus, Ohio—a meteorite, Texas; from George E. Mead, Chicago—jaw of Cynarctos acridens, Nebraska; from Alfred Look, Grand Junction, Colo.—a specimen of Barylambda faberi, Colorado; from F. C. Worth, Chicago—28 specimens of ores and rocks, Washington, California, and Mexico; from Henry L.

Herpers, Chicago—10 specimens of rocks and minerals.

#### Department of Zoology:

From J. D. Todd, Chicago—124 shells of marine snails and bivalves, off Florida coast; from A. Pfleuger, Miami, Fla.—2 Florida ducks; from Dr. Henry Field, Chicago—2 snakes and 3 turtles, Georgia; from E. A. McIlhenny, Avery Island, La.—2 small mammals, Louisiana; from John A. Holabird, Chicago—4 woodrats, a raccoon, and 20 miscellaneous birds, Louisiana; from H. B. Conover, Chicago—9 birds and 3 shells of birds' eggs, Africa, Ecuador, and Paraguay; from Chicago Zoological Society, Brookfield, Ill.—41 snakes, 16 frogs, 3 salamanders, a peripatus, a palm civet, 2 kit foxes, 5 birds, and 8 nestlings.

#### The Library:

Valuable books from John Day & Company, New York City; and Clifford C. Gregg, Dr. Albert B. Lewis, Miss Helen C. Gunsaulus, Dr. Henry Field, and D. Dwight Davis, all of Chicago.

#### Distinguished Visitors

Recent distinguished visitors received at Field Museum include: Mr. E. P. Henderson, Curator, Department of Applied Geology, United States National Museum; Dr. Lincoln R. Thiesmeyer, Professor of Geology, Lawrence College, Appleton, Wisconsin; Dr. Arthur A. Allen, ornithologist of Cornell University; Mr. Frederic D. Schultheis, Assistant Professor of Oriental Studies, the University of Washington; Professor Lincoln LaPaz, of Ohio State University, who is a distinguished student of meteorites as well as a noted mathematician; Dr. T. H. Kearney, of the Bureau of Plant Industry, United States Department of Agriculture: Dr. E. H. Sellards, University of Texas, and Dr. Claude Hibbard, Museum of Paleontology, University of Kansas.

#### **NEW MEMBERS**

The following persons became Members of Field Museum during the period from March 16 to April 15:

#### Associate Members

Kenneth E. Armstrong, L. H. Barkhausen, Richard W. Canman, Mrs. George W. Childs, Miss Henrietta Engel, Dr. E. M. K. Geiling, Albert C. Pobloske, Jacob S. Pohn, M. J. Rosenfeld.

#### Annual Members

Frank Barbour, Gary Barthell, Henry C. Bartholomay, George A. Bates, Harry A. Bates, Jos. J. Bauman, Morris Beifus, Dwight W. Bennett, Leon J. Caine, Robert Carpenter, Dr. Cyril V. Crane, Mrs. Helen E. Fair, Mrs. W. W. Grainger, Edwin I. Guthman, Dr. Henry E. Irish, Jerome J. Kahn, Mrs. Fred J. Koch, William Levine, E. G. McDougall, Oscar L. Moore, Mrs. John B. Morse, Morris Norian, Thorvald Petersen, Joseph Schwartz, J. C. Spencer, Charles E. Springer, Kurt Stoehr, W. C. Teare, Mrs. Rowland L. Williams.

## RAYMOND FOUNDATION AIDS RECREATION LEADERS

A new activity undertaken by the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures is a course of training for recreation leaders which was begun April 15, to continue for ten weeks. The purpose of the course is to assist staff members of various agencies conducting recreation activities, including WPA recreation leaders, in utilizing opportunities for recreation through nature. The main objectives are threefold: —(I) to accumulate a body of knowledge in the fields of natural science; (2) to formulate a working philosophy for the use of the knowledge thus accumulated, and (3) to develop techniques whereby the recreation leaders may teach others such subjects as the story of the earth, plant life, animal life, man's place in the universe, and conservation of natural resources. The course consists of illustrated lectures, tours of Museum exhibits, class discussion, and program planning for group leaders. Mrs. Leota G. Thomas, of the Raymond Foundation staff, is in charge of the project.

The chief commercial starches of the world, together with their respective plant sources, are on display in Hall 25.

#### 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 aix consecutive years, after which they become Associate Members and are exempt from dues. Life Members give \$500 and are exempt from dues. Non-Resident Life Members pay \$100, and Non-Resident Life Members \$950; both of these classea 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 acats 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 alou: memberships will be sent on request.

#### BEQUESTS AND ENDOWMENTS

Bequests to Field Museum of Natural Hiatory 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.

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#### LACQUERED WOODEN VESSELS TELL INCA HISTORY

BY ALEXANDER SPOEHR

ASSISTANT CURATOR OF AMERICAN ARCHAEOLOGY
AND ETHNOLOGY

Lacquered wooden vessels from Peru, examples of the beautiful workmanship of the Incas, have been installed in Stanley Field Hall. They take the place of the giant panda, Su-Lin of Brookfield Zoo fame, which has been transferred to a case con-

taining the animals most closely related to it, in the systematic collection of mammals, Hall 15.

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The vessels in the new exhibit include bowls, cups on elaborately carved bases. and keros or vases of wood from which the Incas, both before and after the Spanish conquest of Peru in 1532, drank their chicha or wine. The dark wood of which these vessels are made forms a pleasing background for the colored design. and subdues somewhat the beautiful,

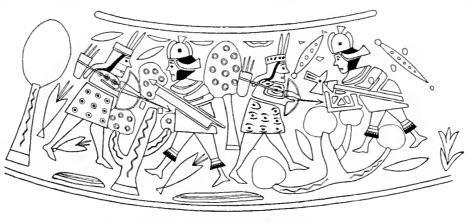
bright colors of the lacquered decorations in red, yellow, black, green, and white. The combination gives these vessels a mellow, rich appearance.

The lacquered and carved decorations and the functional parts are heavily laden with religious and historical significance for those able to ferret it out. For instance, jaguars such as the two carved supports of the small seat in the center of the case often represent the Peruvian creator-god, who was at the same time the god of fertility. The jaguar also appears in the carved bases for the stone seats displayed in the aisle of Hall 9 (Peruvian Archaeology Collection), as well as in the form of carved decorations for various vessels, and as masks on the figures depicted in them.

#### WEAPONS AND BATTLE METHODS

An example of the historical records contained in some of the decorations is shown by one of the wooden bowls in this exhibit (see accompanying illustration) on which is depicted warfare between Peruvian soldiers armed with mace and thrusting

spear, and their enemies from the trans-Andean region, armed with bows and arrows. To defend themselves, the Peruvians used round or square shields, apparently of wood, in addition to wooden helmets and padded cotton quilts. This bowl is one of the vessels made in the Peruvian highlands during the period of the Incas. Such vessels contain much authentic information concerning the wearing apparel, fighting habits, and other ethnological matters.



War in Peru under Inca Emplre

Scene from the history-revealing decorations on a Peruvian lacquered wooden vessel now exhibited at Field Museum. By force of arms the Incas welded together the most extensive New World empire of pre-Columbian times, conquering as far north as Ecuador, and as far south as northern Chile. The Peruvian soldiers are recognizable in picture above by their helmets, maces, and thrusting spears, while their less civilized opponents, jurgle tribesmen, are armed only with bows and arrows. The vessel was made at about the time of the Spanish conquest in 1532.

The presence of a variety of animals, birds, fishes, and reptiles is noticeable not only on these Incan and colonial vessels, but also on the earlier vessels of pottery in the Peruvian cases in Hall 9. Viracocha, the creator-god, usually represented by the jaguar or puma, was supposed to have the power of transforming himself into other animals and also of causing thunder, lightning, rain or hail. In addition, the first in the lineage of each clan was supposed to have been turned into a falcon, condor, or other bird or animal. Hence, the Peruvian wares are fairly alive with figures of birds, fishes, and animals, as well as human figures -sometimes in conventionalized formwearing masks and costumes representing these other figures.

The tendency of many of the early potters to conventionalize makes it difficult to understand many of their designs. For instance, a personage shown on two vases on the east side of Case 29 in Hall 9 requires some explanation. The first thing that

(Continued on page 2, column 3)

#### EXPEDITION TO GUATEMALA **OBTAINS 25,000 PLANTS**

BY JULIAN A. STEYERMARK

ASSISTANT CURATOR OF THE HERBARIUM,
AND LEADER OF EXPEDITION

The Field Museum Botanical Expedition to Guatemala, sponsored by Mr. Stanley Field, President of the Museum, and conducted by the writer, completed its work in May, after having been in the field since last September. Mr. William H. Coibion,

of University City, Missouri, accompanied the expedition as volunteer assistant.

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The expedition was highly successful. bringing back for the Herbarium 25,000 dried and pressed plant specimens. representing 11,000 separate collections. In addition, 200 living orchids, ferns, bromeliads, aroids, begonias, cacti, and many other kinds of beautiful and odd tropical plants were obtained to be grown for display in Garfield Park Conservatory. About 100

separate lots of seeds were also brought back to be grown at the conservatory and at botanical gardens elsewhere in the United States. These seeds were collected from some of the most beautiful and ornamental types of tropical plants found on the trip.

ZOOLOGICAL SPECIMENS ALSO

A dried specimen of "teosinte," indigenous to Guatemala and long held to be the only wild relative of corn, was collected for exhibition in the Museum's Hall of Plant Life. Some of the crude natural chicle or chewing gum, as it flows from the sap of the tree, as well as preserved leaves and flowers of the tree, were obtained for an educational exhibit on the source and preparation of chewing gum, to be prepared by the N. W. Harris Public School Extension. For the Department of Zoology, some bats, mice, frogs, lizards, snakes, fishes, mountain crabs, snails, "screw worms" (the larval stage of a fly), and other specimens were collected.

During the seven months, plants were collected from many regions never before explored by botanists. Hundreds of species new to Guatemala or Central America were obtained, and many of the plants found are new to science. About twentyfive different mountains and volcanoes were visited. Six weeks were spent exploring all parts of the two highest volcanoes in Central America, namely Volcán Tajumulco and Tacaná. These rise to heights of 13,800 and 13,300 feet respectively, and harbor a wealth of plant life, ranging from rich rain forest jungles to pine, oak, and fir forests, and to alpine herbaceous vegetation such as is found on the high peaks of the Rocky Mountains. Another six weeks were spent exploring the rich flora of Volcán Santa Mariá, Santa Tomás, and Zunil. Ascents were made to the summits of each volcano and mountain, and some, like Volcán Zunil, had never before been scaled. In the Oriente (eastern) part of Guatemala, a botanically unexplored section, three months were devoted to collecting in the departments of Zacapa, Chiquimula, Jutiapa, and Jalapa. Within this region there were explored, for the first time by a botanist, Volcán Ipala, Volcán Quezaltepeque, Cerro Brujo, Volcán Suchitán, El Barriol, Tixixí, Nonojá, Volcán Jumay, Montaña Miramundo, the desert of the Motagua River valley, Sierra de Las Minas, and Lakes Guia, Atescatempa, Ipala, and Retana.

#### NOTABLE VARIATIONS IN FLORA

The most interesting result from these explorations was the discovery that each of the mountains and volcanoes has many species not found on any of the others. In other words, endemism is very accentuated, and this indicates how remarkable and diversified is the flora of Guatemala. Much more exploration will be needed to gain a clear idea of the wealth of the flora.

The expedition's last six weeks were spent in exploring the jungles of the Atlantic area. This included trips to the Montaña del Mico, the picturesque canyon of the Rio Dulce, Lake Izabal in which many alligators and some manatees live, the low-land jungles of the Motagua River valley, and the mountains and coast around Puerto Barrios.

The tops of many of the smaller volcanoes, ranging from 4,500 to 7,000 feet, were found to be luxuriantly covered with beautiful cloud forests. These forests are the natural habitat of the quetzal, national bird of Guatemala (which is represented by a group in Hall 20 of the Museum). Such forests, because they are daily washed by the moisture of hanging clouds, have abundant dampness, manifested by a dense jungle of vines and large trees whose limbs are everywhere covered by masses of hanging mosses and liverworts, epiphytic orchids, ferns, aroids, bromeliads, begonias, peperomias, and other plants. Masses of "Spanish moss" festoon the branches of the trees, and everywhere in these cloud forests are

gorgeous tree ferns, towering to heights of fifty and sixty feet. The effect is a scene lovelier than can be described. Yet, although presenting an appearance completely tropical, like that of the hot rain forest jungles of the lower elevations, the cloud forests are very cool and immediately change the visitor's idea of tropical weather. The climate throughout the highlands and mountains in Guatemala is cool enough to necessitate the use of blankets at night.

DIVERSIONS AND PERILS In some remote areas traversed by the expedition, as many as seven mules were required to carry equipment and collections. Among many interesting experiences was singing American popular music and dancing at night around a fire to amuse a hutfull of Indians, who considered such an exhibition only a proper and just reciprocation by the expedition members for the hospitality extended. Other memorable experiences included descending a 2,000-foot treacherous steep barranco; exploring for plants around waterfalls; hiking twenty-five to thirty miles up or down a mighty volcano in one day, and making the return trip the next, in order to find rare plants and study ecological zonal changes; returning at night over slippery pitch-black mountain trails and having to go gingerly without light until pine was found for torches; swimming in a lake infested with alligators; climbing after orchids in trees alive with molesting ants, and falling chest-high into treacherous quagmires and floating mats of aquatic vegetation surrounding mountain lakes.

The purpose of the expedition was to gather data and herbarium material to serve as a foundation for a flora of Guatemala upon which the writer is collaborating with Mr. Paul C. Standley, Curator of the Herbarium.

#### A GEOLOGICAL EXPEDITION TO WORK IN MARYLAND

Mr. Bryant Mather, Assistant Curator of Mineralogy at Field Museum, will leave June 10 to engage in a geological expedition in Maryland for a period of approximately three months. Geologists from the Maryland Geological Survey and the Johns Hopkins University will be associated with him from time to time.

Intensive work will be confined to the Catoctin Mountain—South Mountain region. A thorough knowledge of the features of these mountains, and of the rocks of which they consist, is of importance to the understanding of the geology of the eastern United States. In a central valley the underlying metamorphosed volcanic lavas are exposed, while the two adjacent mountain ridges are composed of very ancient sandy sediments. In addition to having been uplifted into a great overturned arch fold, the rocks of the region have been subjected to extreme pressures and high temperatures, as a result of which

only traces remain of their original structures and stratification. Secondary structures have been imposed upon them, two types of which are of especial significance: first, laminations or cleavages in directions unrelated to the original stratification; and second, the linear stretching of the mineral grains of which the rocks are composed. Field studies of these and other features will be made, using recently devised techniques.

It is expected that the expedition will yield many specimens for laboratory study and microscopic investigation, as well as for exhibits demonstrating remarkable geological phenomena.

#### LACQUERED WOODEN VESSELS

(Continued from page 1)

strikes the eye is a large face, greatly exaggerated in size. A mouth-mask with whiskers, a turban-like headdress, pendant ear-ornaments, and a number of incidental faces are a part of this design. To the left of the face are seen the figure's two hands grasping a club. The body is represented to the right of the face by the striped lower section of the design. Above that, extending to the right and encircling the vase, is a cloak representing a caterpillar with its long, spotted body and its many feet on either side. At the end of the caterpillar there appear a small head and two hands (or feet?). This vase evidently was made by someone whose tribal ancestor was supposed to have been turned into a caterpillar.

Probably most enchanting to the casual observer are the animal and portrait jars belonging to what is called the Early Chimu period. The bodies of many of these jars are animal figures, with hollow handles above forming a semi-circle from the top of which extends the neck or spout through which the liquid in the jar was poured. The modeling of these jars is very interesting and brings to mind the modern use of animals for such things as flower pots, charms, and decorative pieces. The Peruvian jars, however, probably had religious significance.

This recently installed lacquer-work exhibit in Stanley Field Hall, as well as the Peruvian pottery, gives an insight into the tastes, skills, habits, and religious traditions of the ancient South Americans. The textiles, gold work, and other examples of South American arts and crafts on exhibit in Hall 9 and in Stanley Field Hall are a rich field for those who wish further knowledge of the life and times of these early peoples who left no written record behind.

Largest of all seals is the elephant seal. A habitat group containing an enormous bull and four other elephant seals, collected on the beach of Guadalupe Island off the northwestern coast of Mexico, is in Hall N.

## YUCATAN EXPEDITION OBTAINS REMARKABLE COLLECTIONS

One of the largest and most comprehensive collections of birds and reptiles ever collected in the states of Yucatan and Campeche, Mexico, has recently been received by Field Museum. The bird collection numbers 731 specimens, including 200 different forms, the majority of which are from southern Campeche, a region but little known ornithologically. The herpetological collection of more than 1,000 specimens, mostly from northern Yucatan, includes some 600 snakes, by far the most comprehensive collection made in that area. Naturally, in a collection of this size, a great many rare forms are included.

These collections are the results of the expedition co-sponsored and conducted by Messrs. Melvin Traylor, Jr. and E. Wyllys Andrews during the fall and winter of 1939–40. The two explorers attended the International Congress of Americanists in Mexico City last August, and after completing their preparations there, flew to Yucatan late in September. October and November were spent collecting at Chichen-Itza in northern Yucatan, where work was greatly facilitated by the co-operation of the Carnegie Institution of Washington which made available the use of its hacienda.

The party left for southern Campeche early in December. Through the kindness of Mr. Cecil Branson, Manager of the Laguna Corporation, the collectors were able to make their headquarters for a month at Matamoras, the main chicle camp of that company. From there they flew to Pacaitun, on the Candelaria River, where six weeks were spent completing the collections. During the stay in Campeche, Mr. Andrews took several extensive reconnaissance trips, making the first complete archaeological survey of the area.

The expedition returned to Merida, Yucatan, in March, and to Chicago in April.

#### WPA Exhibit at Museum

A special exhibit illustrating the scope of the work in which Field Museum has been assisted by the Work Projects Administration was held in George M. Pullman Hall, May 20–25. It was part of the national exhibits presented by WPA projects in all parts of the country during what was termed "This Work Pays Your Community Week."

At present the number of WPA workers on the Museum project is 170—as many as 219 have been employed in the past. The work done by these men and women, as was illustrated in the special exhibit, is extremely varied, and includes archaeological restorations, preparation of paleontological specimens, the making of anatomical models, fabrication of accessories for use in habitat groups and dioramas, preparation of botanical models, different types of art work,

photography, printing, and many forms of clerical work. Work actually in progress was demonstrated for the public, and guides conducted tours to point out the parts of various exhibits in the preparation of which WPA workers played an important role.

#### THINGS YOU MAY HAVE MISSED

#### The Tasmanian Devil

One of the most vicious faces to be found in the animal kingdom, and an extremely savage temperament in accord with this visage, are presented by the little Tasmanian devil. It is one of the strange marsupials or pouched mammals which are now confined to Australia and the Americas (represented by the common opossum in the United States).

In the exhibit of Australian marsupials in Hall 15 of Field Museum, the Tasmanian devil formerly shown has recently been



Hls Snarl is Perpetual

Australia'a little Tasmanian devil has one of the meanest faces to be found among animals. His disposition is reputed to be likewise extremely unfriendly.

replaced by a much better specimen. This one is a gift to the Museum from the Chicago Zoological Society, and was mounted by Staff Taxidermist W. E. Eigsti.

The Tasmanian devil is a carnivorous burrowing mammal of nocturnal habits, and preys on birds, small wallabys, other small mammals, and even sheep. It also feeds on fish and frogs, and on carrion.

Its normal facial expression suggests a perpetual snarl. In confinement, both in zoos and where individuals have tried to make a pet of it, it has usually proved untamable. It resists human approaches by uttering a low whining growl, and by biting. It attains a size approximating that of a badger. Like most marsupials, it carries its young in an abdominal pouch.

The order of marsupials, which includes, besides the Tasmanian devil and the opossum, such animals as kangaroos, wombats, and koalas among others, was formerly more widely distributed. Those that reached Australia and were there cut off from their northern relatives, and from competition with more modern types, developed a unique variety of structure and habits under their long continued isolation in that "island continent."

Impressive for its large size is the fruit cluster of a raffia palm exhibited in Hall 25.

#### BOOK ON MISSOURI FLORA BY MUSEUM BOTANIST

A Spring Flora of Missouri, by Dr. Julian A. Steyermark, Assistant Curator of the Herbarium of Field Museum, was recently published jointly by the Missouri Botanical Garden, of St. Louis, and Field Museum. It is the most comprehensive spring flora ever issued for any state. Each of the 1,400 species of plants which bloom before June 1 is illustrated by a drawing, and there are more than 400 diagrams for keys to families. genera, and species included in its 582 pages. The book is notable for presenting its data in simple non-technical English, yet with thorough scientific accuracy. Thus it satisfies the needs both of the lay reader and the scientist. The illustrated keys, the use of both metric and English measurements, and a glossary of the English meanings of all the specific scientific names of species, are all departures from the usual style in works of this kind, and increase the book's usefulness for convenient reference.

The contents include extensive information about the wild flowers, trees, and shrubs. Most of the plants described and illustrated are found in Illinois and adjacent states, so the book's value is not limited to Missouri. It is available in paper binding at \$2.75; in cloth, \$3. It may be obtained from The Book Shop of Field Museum (prepaid mail orders will be accepted).

#### Museum in Recreation Conference

Field Museum was a co-sponsor of the Conference on Nature Recreation and Education held April 24 under the auspices of the Illinois Federation of Women's Clubs, with the Chicago Park District co-operating. The Museum was represented by Mr. John R. Millar, Curator of the N. W. Harris Public School Extension which prepared an exhibit illustrating the educational work of the institution, and Mrs. Leota G. Thomas, of the staff of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures. Thomas was one of the speakers in a symposium on "Opportunities Offered in Nature Education."

The conference was called to bring together and co-ordinate the efforts of organizations in the Chicago area concerned with leisure activities and informal education. Other agencies represented included the University of Illinois, University of Chicago, Adler Planetarium, Chicago Academy of Sciences, Trailside Museum, Morton Arboretum, Forest Preserve District of Cook County, Chicago Recreation Commission, National Park Service, Wild Flower Preservation Society, Catholic Youth Organization, Chicago Board of Education, Chicago Council of Social Agencies, Garden Club of Illinois, Illinois Congress of Parents and Teachers, Izaak Walton League, and Progressive Education Association.

#### POISON IVY—HOW TO IDENTIFY IT—AND WHAT TO DO IF YOU COME IN CONTACT WITH IT

(Editor's Note:—Summer vacation time is at hand, and with it the height of the poison ivy season. The following article, abstracted from a Field Museum bolanical leaflet by James B. McNair, former Assistant Curator of Economic Botany, tells how to avoid the poisonous plant, and what to do in case one is so unfortunate as to come into contact with it. Reproductions of poison ivy plants in fruit and flower are on exhibition in the Hall of Plant Life.)

Of all plant pests poison ivy, poison oak, and poison sumac are the most dreaded. The slightest contact with the sap, the broken leaves, or branches gives rise to painful irritation of the skin. Some persons are so susceptible that they are seriously affected by merely handling things that have come into contact with poison ivy, such as garden tools or clothing. Few are naturally immune.

The plants that cause ivy poisoning all belong to one genus, *Rhus*, which includes also harmless and attractive sumacs. The first and most common of species in the eastern United States is the poison ivy itself. Its species name, *toxicodendron*, means "poison-tree."

#### RECOGNIZING THE IVY

Poison ivy is easily recognized by its compound leaves of three leaflets. Its flowers are clusters of inconspicuous, greenish-white bloom, followed by waxy white berries. Poison ivy usually appears as slender, stiffly erect, branched shrubs from winding underground stems. The bark is rather smooth and light gray. The height is usually one to three feet, may reach four or five. In some places it is also common as a climber. The main stem clambers up trees and over rocks or walls, sending out clinging aerial roots. As a rule poison ivy is found as a shrub where the woods are open and rather dry, and as a vine where they are rich and moist. In the "hammocks" of Florida poison ivy vines are found nearly a foot in diameter.

Closely resembling poison ivy are two species of poison oak: one found along the coast from New Jersey to Texas; another in California, Oregon, and Washington.

Most vicious of this undesirable clan is the poison sumac. Fortunately, this small tree is usually restricted to the margins of seldom visited swamps. Sometimes, on a road built through a bog, a clump of poison sumac will cause trouble. Its leaves closely resemble those of the common wayside sumac, but the common sumac never grows in bogs, while the poisonous variety never grows anywhere else. The fruits, both of common and staghorn sumac, are red and grow in stiff, erect clusters or panicles—the fruit of the poison sumac is a drooping bunch of white berries. A good general rule for the guidance of laymen is: white fruited species of sumac may be regarded as poisonous, while red fruited ones may usually be considered safe.

#### HOW POISONING OCCURS

Sometimes the woodbine or Virginia creeper, an ornamental vine, is confused with poison ivy, but the woodbine has five leaflets whereas poison ivy has three. Hence the adage: "Leaflets three, let it be." Moreover, the woodbine does not support itself by aerial roots, but climbs like a

grape with tendrils terminating in disks. Finally, its fruit forms a drooping, flattened bunch of purple berries.

It was formerly thought that the pollen of poison ivy, poison oak, and poison sumac was carried by the wind and caused the poisoning. Their pollen, however, is sticky, is never carried by the wind, and is not poisonous. It may be rubbed on the skin and no poisoning will result. Experimentation shows that neither the bark, the plant hairs, the surface of young branches, nor the surface of uninjured leaves will normally cause poisoning by touch.

The only part that will cause poisoning is the sap. If a stem be cut in half, a somewhat milky juice will come out in small drops from the outer portions. Under a microscope, the resinous sap is

seen to come from small tubelike canals in the inner layer of the bast. A new set of these canals forms with each spring and fall growth of wood, and each separate canal is surrounded by glandular cells which pour their poisonous secretion into the canals. The canals extend from the smallest roots to the smallest branches and exist even within the flowers, fruits, and leaves. In the stalk of the leaf a row of about a dozen canals is found. The midrib and large veins have at least one canal each. These poison canals extend out into the fine network of veins in the leaf. In the fruit many poison canals surround the seed. It is not possible to break any part of the plant without rupturing some of these canals. This causes the poisonous sap to come out on the surface where it may infect a person touching it.

The young leaves are more easily injured than the mature ones. When people are enjoying the first warm days of spring the plants are just budding out and not easily noticed. It is especially at this time that cases of ivy poisoning occur. The plants are poisonous the year around, but during autumn the leaves become red and bright



From Rost and Gilg.

Flowers and Fruit of Polson Ivy

yellow, and thus are easily noticed and avoided if a person is at all observant.

#### NATURE OF THE POISON

The poison canals have the same structure as the resin canals in pine trees and other plants, so one might expect the poison to be of a resinous nature. The poison, if not a resin, is at least intimately mixed with one. It is a clear amber-red, sticky, non-volatile liquid which floats on water. It adheres to the skin with the tenacity of pitch.

#### SUSCEPTIBILITY TO THE POISON

About one person in eighteen is badly poisoned by ordinary contact. Resistance seems to run in families. In some families all members are easily poisoned; in others

no cases of poisoning occur. In still others, one parent may be easily poisoned, and the children not susceptible, or some of the children may be victims. Generally if both parents are not easily poisoned, the children are also resistant. However, if the pure poison is placed on the skin of a person considered immune, poisoning will take place. A person may be easily poisoned one year and not easily poisoned sometime later, or vice versa. Many people, wishing to gain resistance, have chewed the leaves, or swallowed tea made from them. This has been followed by severe cases of internal poisoning. It is doubtful if immunity can be acquired in this manner, as the poison is not a protein and no other substances are known to produce immunity. A susceptible person may be severely poisoned repeatedly during the same year. Immunity seems to be mostly a matter of thickness and condition of the skin. Animals are generally not susceptible.

#### DESCRIPTION OF THE DISEASE

The poison may penetrate the skin through the sweat glands, the oil glands, the hair follicles, or even the surface of the skin itself. In from twelve hours to a week a reddening and itching is noticed. The poisoning may never become more severe, or it may cause blistering. If blisters form they may break and allow the serum to run freely over the surface. After about a week the injured skin falls off in flakes. Poisoning is most often experienced between the fingers, on the back of the hands, on the forearms, or the face. Very seldom does poisoning take place in portions of the body thickly covered by hair. The inside of the hands and soles of the feet are seldom poisoned because of their thick skin. The ears may swell to a large size; the eyelids may become so swollen as to interfere with vision. The changes in the skin caused by this poison are not easily distinguished from conditions caused by some other poisons and skin diseases.

#### REMEDIES FOR IVY POISONING

There is no real cure or preventative that will take the place of caution. Various salts of lead and zinc have been used as poison ivy remedies. They neutralize the poison to a certain extent, but not completely. The best and most effective preventative is salts of iron, particularly iron chloride, which completely neutralizes the poison. It is effective only if used in the very early stages. The use of iron chloride to the extent of 5 per cent in a half-and-half mixture of alcohol and water is recommended. If hands and face are bathed freely in this solution either before or immediately after one goes into a region known to contain poison ivy or its kindred plants, no ill effects need be expected. The remedy is easily obtainable at any drug store, and is non-poisonous and safe.

In ivy poisoning cases that become acute the treatment is based on a recognition of the nature of the injury. The effects of ivy poisoning on the skin are much like those of a burn, and the treatment suggested resembles that successfully used in some burn cases. The affected parts are first bathed with iron chloride solution, to neutralize the poison. Then the skin is dried, and melted paraffin painted over it. A thin sheet of cotton is laid over the wound, and this also is covered with paraffin. The affected area is thus protected from the air and from rubbing, and new skin is given a chance to form.

#### A NEW REMEDY

Since the writing of the preceding article, a recent issue of the *New York Times* appeared with the following note:

"Ole Gisvold (University of Minnesota) recommended alkaline peroxide as a remedy for poison ivy rashes before the recent meeting of the American Pharmaceutical Association. First, he sponges the alkali over the affected skin. This he follows with peroxide. There is nothing empirical about the method. Gisvold first made chemical studies which convinced him that the phenolic poison of the ivy must be chemically counteracted. Out of these studies came the peroxide treatment. Gisvold tried his remedy on himself with success."

#### TWO NEW STAFF APPOINTMENTS

Effective June 1, Mr. Clifford H. Pope will join the staff of Field Museum's Department of Zoology as Assistant Curator of Reptiles. Mr. Pope is well known for his explorations in China for the American Museum of Natural History (New York), for his published researches on the reptiles and amphibians of China, and for his recent popular books, Snakes Alive and How They Live and Turtles of North America.

Mr. Pope was educated at the University of Georgia and the University of Virginia. His first foreign field work was at the tropical experiment station maintained in British Guiana under the direction of Dr. William Beebe. In 1921 he joined the staff of the Third Asiatic Expedition of the American Museum of Natural History, and collected mammals, reptiles, and fishes in various parts of China for several years. His studies on these collections resulted in the publication of a quarto volume on the Reptiles of China, an authoritative review of the reptiles of the Chinese region. A book on his travels in China is in press.

Mr. Rupert Wenzel was appointed Assistant Curator of Insects, and began his duties May I. He is a graduate of the Y. M. C. A. College, and has completed two years of post-graduate work at the University of Chicago. He has engaged in considerable research on beetles, and has published five scientific papers on the family Histeridae. His work at the Museum will at first be concentrated on classification of the vast insect collections, and on preparations for a new program of insect exhibits.

#### FINAL RADIO PROGRAMS

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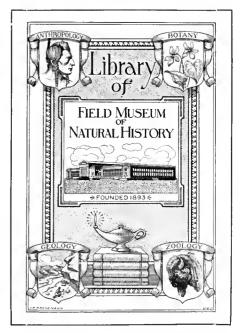
The last broadcasts in Field Museum's "How Do You Know" series will be given June 6 and June 13 at 1 p.m. Central Daylight Saving Time on stations of the Blue Network of the National Broadcasting Company outside Chicago, and will be rebroadcast in Chicago at 4:30 p.m. on Saturday, June 8 and June 15. The subjects will be "How Do You Know What Constitutes Good Manners?" and "How Do You Know When You Have the Correct Answer?" Mr. Clifford C. Gregg, Director of the Museum, will appear as a speaker on the final program.

The programs began in January and have been given weekly, except for a few weeks when prior station commitments compelled their omission. Their educational value has received wide recognition and acclaim, and they have brought intimate views of many scientific subjects to an audience which must have numbered millions of persons. The Thursday afternoon broadcasts were especially aimed at children in schools where radio receivers are used as part of the educational equipment.

The Museum is indebted to the National Broadcasting Company and the University Broadcasting Council for their co-operation.

#### NEW BOOK PLATE FOR LIBRARY OF FIELD MUSEUM

Reproduced herewith is a new book plate adopted for use in the approximately 118,000 volumes on the shelves of the Library of Field Museum. The sketches



in the four corners of the plate symbolize the four scientific departments of the Museum. The "lamp of knowledge" surmounts the stack of books. The plate was designed by Mr. Carl F. Gronemann, the Museum's Staff Illustrator.

#### Field Museum of Natural History

FOUNDED BY MARSHALL FIELD, 1893 Roosevelt Road and Field Drive, Chlcago

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#### FIELD MUSEUM NEWS

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

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H. B. HARTE	Managing Editor

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

#### DIRECTOR'S ANNUAL REPORT REVEALS BENEFACTIONS

Field Museum received gifts and bequests of funds totaling more than \$730,000 last year, it was revealed with the publication in May of the Annual Report of the Director, Mr. Clifford C. Gregg, to the Board of Trustees.

Outstanding donor was Mr. Marshall Field, a Trustee, whose gifts of cash and securities for the year 1939 totaled \$508,771. Other outstanding gifts and bequests listed in Mr. Gregg's report are as follows: from the estate of the late Martin A. Ryerson, \$120,125; from the estate of the late Mrs. Carrie Ryerson, \$27,500 (these are additions to proceeds received from the Ryerson bequests in preceding years); from two donors who specified that their gifts be anonymous, \$30,000 and \$5,000; from Mr. Stanley Field, President of the Museum, \$17,239; from the estate of the late Cyrus H. McCormick, \$10,000; from Mrs. James Nelson Raymond, \$6,000; from Mr. Leon Mandel, \$1,200; from Mr. Clarence B. Mitchell, \$1,000; from Mrs. Clarence C. Prentice, \$1,000, and sums of varying amounts from Mr. Boardman Conover, Mr. Carl Colby, and others.

A large part of the contribution of Mr. Marshall Field was for the purpose of establishing the new and liberal pension plan for employees of the Museum, inaugurated last July.

"The other funds received from Mr. Field were given to meet the huge deficit incurred by maintaining the traditional high standards of Museum operation and progress in the face of declining income," writes Mr. Gregg. Elsewhere, in reporting the condition of the Museum's endowment income and other revenues, Mr. Gregg states, "Steadily decreasing rates

of return from investments, and some degree of fear for the future on the part of citizens, resulting in fewer contributions, combine to make the financial administration of this Museum and other institutions similarly supported an increasingly difficult problem.... Continuation of the splendid educational work, the research, and the service of this institution to the public will depend to an ever increasing degree on the realization by the public that the institution is operated in their behalf and is worthy of their support."

#### Staff Notes

Field Museum was represented at the important Eighth American Scientific Congress by Dr. Wilfred H. Osgood, Chief Curator of the Department of Zoology. This notable scientific meeting, held at Washington, D. C., May 10–18, as part of the program commemorating the fiftieth anniversary of the founding of the Pan American Union, was attended by many of the leading scientists from all parts of the United States, and from all the other countries of North, Central, and South America. Dr. Osgood was honored by being appointed to preside at one of the sessions in the Section of Biological Sciences.

Mr. Stanley Field, President of the Museum, is a member of the Advisory Committee of the Congress.

Mr. Paul C. Standley, Curator of the Herbarium, was a member of the Section Committee on Biological Sciences.

Dr. Paul S. Martin, Chief Curator of Anthropology, has been elected President of the Central Section of the American Anthropological Association. He has also been appointed a member of the Committee on the Conservation of Archaeological and Historical Sites of the Illinois State Academy of Science.

Mr. Karl P. Schmidt, Curator of Amphibians and Reptiles, lectured before the Society of Sigma Xi at the University of Wisconsin, May 3, on "A Naturalist in the South Seas."

Mr. Bryant Mather, Assistant Curator of Mineralogy, has been elected to membership in the Johns Hopkins Chapter of the Society of Sigma Xi, honorary natural history society.

#### Distinguished Visitors

Among distinguished visitors recently received at Field Museum were Dr. Arthur L. Howland, Professor of Mineralogy and Geology at Northwestern University; Mr. L. F. Brady, Curator of Geology at the Museum of Northern Arizona, Flagstaff, Arizona; Mr. Paul H. Allen, of the Tropical Station of the United States Department of Agriculture, Summit, Canal Zone; Mr.

William B. Pitts, Honorary Curator of Gem Minerals at the Museum of the California Academy of Sciences, San Francisco; Dr. Ralph Linton, Chairman, Department of Anthropology, Columbia University (formerly a member of Field Museum's staff): Mr. William Vogt, biologist for the Compania Administradora del Guano, of Peru; Mr. Harry Raven, of the Department of Comparative Anatomy at the American Museum of Natural History; Dr. William B. Pettus, President of the College of Chinese Studies in Peking; Dr. Forrest Shreve, Desert Botanical Laboratory, Tucson, Arizona; Dr. Ralph W. Chaney, Paleobotanist of the University of California, Berkeley; Dr. Adolfo D. Holmberg, Director of the Zoological Gardens and professor in the University of Buenos Aires, Argentina; Mr. Spencer W. Stewart, of New York, who with Mr. Robert J. Sykes is co-donor of a whale shark specimen in the Museum; Dr. Albert O. Hayes, Professor of Geology, Rutgers University, New Brunswick, New Jersey; Mr. Harold Cook, oil geologist and paleontologist, and proprietor of the Agate Springs Fossil Quarry, Agate, Colorado; Mr. J. J. Pelkwijk, of the National Museum of Leiden, Netherlands; and Professor Samuel J. Record, Dean of the School of Forestry, Yale University, and Research Associate in Wood Technology for Field Museum's Department of Botany.

Skeletons of the world's principal vertebrates, ranging all the way from fishes, frogs and their relatives, through the birds and mammals to man, are shown in Hall 19.

#### 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 aerves visitors. Rooms are available also for those bringing their lunches.

Chicago Motor Coach Company No. 26 busses provide direct transportation to the hussen provide direct transportation to the 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 MAGELLANIC EXPEDITION

BY WILFRED H. OSGOOD

CHIEF CURATOR, DEPARTMENT OF ZOOLOGY

(Editor's Note:—Dr. Osgood, as briefly noted in the May FIELD MUSEUM NEWS, returned a few weeks ago from South America where he was leader of the Magellanic Expedition, sponsored by Mr. Stanley Field, President of the Museum.)

The Magellanic Expedition covered a wide field in southern South America. Although the expedition devoted itself especially to the region about the Straits of Magellan, it was able also to make important collections in southern Peru, in central Chile, and in east-central Argentina.

Besides the writer, the party included Mr. Karl P. Schmidt, Curator of Reptiles, Mr. Colin C. Sanborn, Curator of Mammals, and Mr. John M. Schmidt, field assistant. By dividing this personnel from time to time it was possible to reach localities representing a considerable variety of conditions. Collections of the fauna, numbering thousands of specimens, were obtained, and these open wide vistas of research.

#### "TOP OF THE WORLD" MAMMALS

In August and September work was carried on in southern Peru in the region south and west of Lake Titicaca, where a very distinct highland fauna was found allied only to that of a limited neighboring area in Bolivia, and quite distinct from that of other parts of the Andes. In this region mammalian life ranges to the unusual altitude of 18,000 feet, perhaps higher than anywhere else in the world.

In November, Mr. Karl Schmidt returned to Chicago, and the other members of the party proceeded to south central Chile, going first to the Sierra Nahuelbuta and its interesting forest of araucarias or "monkey puzzle" trees. From here, brief trips were made to Laguna Maule in the main range of the Andes, and to Lake Todos Santos and Mount Osorno in that part of Chile famous for its beautiful scenery and sometimes called the "Switzerland of South America." Although this region is frequented by tourists at certain seasons, much of it is wild and practically unexplored, and the expedition obtained here in a few weeks' time examples of some of the rarest and most interesting small mammals of South America.

#### SOUTHERNMOST LAND'S-END CITY

Early in December, the party sailed from Puerto Montt southward through inland passages along the uninhabited western coast of Chile to the important port of Punta Arenas, southernmost continental city in the world, situated on the north side of the Straits of Magellan, practically at the very tip of the southern continent. This city, with a population of 30,000, is far removed from other parts of South America and is the metropolis of a little world of its own, in a region devoted almost

exclusively to large-scale sheep raising. Although the population is mainly Chilean and the government that of a Chilean province, with Spanish as the universal language, there is a large foreign element including English, Scotch, Jugo-Slav, and Scandinavian.

With Punta Arenas as headquarters, the expedition made a series of short excursions in various directions both on the mainland and on some of the islands near-by, first and foremost of which was the large and famous island of Tierra del Fuego, "Land of Fire" of the early navigators. This island, with an area of some 20,000 square miles, is about the size of Nova Scotia. Although it is literally almost at "the bottom of the world," it is not so bleak and inhospitable as generally supposed, especially during its summer months of December, January, and February. Except for its extreme southern and western coasts and a few mountain peaks behind them, Tierra del Fuego is beautiful grassland, rolling or level, and now practically all under fence and private ownership. There are no small farms, however, and the large ones have their management and personnel concentrated in particular localities which are now connected by telephone lines and motor roads. The sheep, which are numbered by hundreds of thousands, are able to range in the open through the winter, with some supervision, of course, but it is evident that the winter climate cannot be exceedingly severe. Temperatures below -10° Fahrenheit are rare.

#### VISITED BY DARWIN A CENTURY AGO

It is just 106 years ago that Charles Darwin, during the famous voyage of the Beagle, visited Tierra del Fuego and neighboring coasts, making general zoological and botanical collections. Since he was working from a ship which entered the region through the stormy Cape Horn Islands lying immediately south of Tierra del Fuego, he was confined mostly to the coast, and his accounts of conditions, as well as those of other early travelers in the region, give an undue impression of The sailor rounding Cape Horn against gales of wind and seeing only snowy peaks in the near view can have little idea of the lovely woodland park-like glades and the lake-dotted grassland that lies beyond. Unfortunately, the sheep ranching and general exploitation of the country have had the usual and inevitable result of greatly reducing or even exterminating the native wild life. The mere presence of the sheep has been sufficient to eliminate certain burrowing rodents which could not stand the trampling of thousands of sharp hoofs. Larger animals have succumbed to man either in his efforts to protect the sheep or to profit himself in other ways. The few fur-bearing animals, such as foxes and skunks, have suffered especially from the wandering sheep herder

who, in the winter months, finds himself unemployed and turns to trapping even after animals have become so scarce that this otherwise would have no attraction as a vocation.

#### PATAGONIAN GIANTS NEARLY EXTINCT

The aborigines also are practically gone. The famous giants encountered by early Spanish and English explorers are now so few that they may be called extinct. There were three principal tribes, the Tehuelche of the Patagonian mainland, the Ona of northern Tierra del Fuego, and the Alacaluf of the southern and western coasts. All are reduced to such small numbers that any hope of their preservation is out of the question. On Tierra del Fuego the expedition encountered only two full-blooded Onas, both advanced in years, speaking Spanish, and now employed in the sheep business.

The expedition was successful in obtaining examples of various animals discovered by Darwin and other early travelers and heretofore unrepresented in American museums. Several species of small mammals previously unknown were discovered and many others were taken which add greatly to knowledge of distribution and contribute to studies of the origin of the South American fauna. This region will no longer be a blank on our maps so far as mammalian life is concerned. Previous expeditions from Field Museum and other institutions had studied the fossils, the birds, and the archaeology, but this was the first to make an exhaustive study of the living mammals.

## THE TURTLES OF NORTH AMERICA

are described and handsomely figured by new photographs in *The Turtles of the United States and Canada*, by Clifford H. Pope, one of this country's foremost herpetologists, who is joining the staff of Field Museum on June 1.

"A much needed account of the rich and varied turtle fauna of the North American continent," says Mr. Karl P. Schmidt, Curator of Amphibians and Reptiles at Field Museum. "It will be especially valued by amateur naturalists, in whose interest technical language has been avoided, but it fills an equal need of the serious student, since it assembles a literature scattered through hundreds of scientific papers. Both groups will be stimulated by its excellent suggestions for field observation, in which the new work forms a companion volume for Snakes Alive by the same author."

On sale at THE BOOK SHOP of FIELD MUSEUM—\$3.75.

#### JUNE 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 June:

Week beginning June 3: Monday—Mammals through the Ages; Tuesday—General Tour; Wednesday—The Story of Primitive Man; Thursday—General Tour; Friday—Life before Man.

Week beginning June 10: Monday—Spring Wild Flowers of the Chicago Region; Tuesday—General Tour; Wednesday—The Diversity of Living Things; Thursday—General Tour; Friday—Archaeology in the Americas.

Week beginning June 17: Monday—Minerals That Are Used for Gems; Tuesday—General Tour; Wednesday—Plants We Eat; Thursday—General Tour; Friday—Animals of Polar Regions.

Week beginning June 24: Monday—The American Indians; Tuesday—General Tour; Wednesday—The Changing Earth; Thursday—General Tour; Friday—Plants Used for Clothing.

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.

#### GIFTS TO THE MUSEUM

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

Department of Anthropology:

From W. Dwight Bunnell, Puyallup, Wash.—a human skull from "burial ground" near east coast of Vancouver Island, Canada; from Estate of Sidney C. Eastman, Chicago—3 American Indian ethnological specimens.

Department of Botany:

From Donald Richards, Chicago—38 specimens of cryptogams, Illinois; from Dr. G. J. Hollenberg, Redlands, Cal.—85 herbarium specimens, southern California; from Howard Johnson, New Plymouth, Idaho—a branch of Idaho white pine; from Dr. Jules Brunel, Montreal, Canada—37 herbarium specimens, Quebec; from Rev. Brother Apolinar-María, Bogotá, Colombia—98 herbarium specimens, Colombia; from Charles C. Deam, Bluffton, Ind.—50 herbarium specimens, Florida; from Hermann C. Benke, Chicago—83 herbarium specimens, Wisconsin; from Rev. Padre Cornelius Vogl, Caracas, Venezuela—87 herbarium specimens, Venezuela; from Rev. Brother Elias, Caracas, Venezuela—31 herbarium specimens, Venezuela.

Department of Zoology:

From Chicago Zoological Society, Brookfield, Ill.—131 birds and 11 snakes; from John A. Holabird, Chicago—6 bird skeletons and 66 reptiles and amphibians, Louisiana; from Dr. Henry Field, Chicago—229 specimens of fish, one mammal, 230 lower invertebrates, 5 snakes, 77 amphibians, and 29 insects, Florida and Georgia; from Melvin Traylor, Jr., Chicago—731 miscellaneous bird skins, Yucatan and Campeche, Mexico; from Kenneth Knickerbocker, Chicago—223 miscellaneous birds, North America; from Lincoln Park Zoo, Chicago—3 snakes and 3 amphibians; from Gordon Grant, Los Angeles, Cal.—436 lower invertebrates,

California; from E. Wyllys Andrews, IV, Cambridge, Mass.—66 specimens of fish; from E. A. McIlhenny, Avery Island, La.—a specimen of nutria, Louisiana; from General R. E. Wood, Highland Park, Ill.—3 bear skulls, Alaska; from Mrs. Robb White, Jr., Thomasville, Ga.—8 frogs, 3 salamanders, 6 snakes, and one siren, Georgia; from George Artamanoff, Chicago—a land snail, Venezuela; from Margaret Storey, Stanford University, Cal.—51 fish specimens, Florida.

The Library:

Valuable books from American Museum of Natural History, New York City; Art Institute of Chicago; and Dr. Henry Field (100 volumes), Charles B. Cory, Dr. Albert B. Lewis, Dr. Paul S. Martin, D. Dwight Davis, and Dr. Earl E. Sherff, all of Chicago.

#### Harwa, Field Museum Mummy, Again at N. Y. Fair

The mummy of an ancient Egyptian named Harwa, from the collections of Field Museum, is again being exhibited, as it was last year, in a fluoroscopic demonstration by the General Electric X-ray Corporation at the New York World's Fair. In 1939 Harwa was viewed by approximately 4,000,000 persons, according to a tally kept by General Electric.

The mummy, with its coffin lid near-by, is displayed in an installation whereby a visitor first sees its exterior. Then, by pushing a button the visitor shifts a fluoroscopic screen in front of it, and simultaneously activates a 125,000-volt x-ray machine which projects the image of the mummy's skeleton upon the screen.

#### 8,150 PERSONS HAVE HEARD THE LAYMAN LECTURER

Mr. Paul G. Dallwig, the Layman Lecturer of Field Museum, concluded his 1939–40 season of Sunday afternoon lecture tours on May 26. He will resume this activity on November 3, when the 1940–41 season, extending into May of next year, will begin. Acceptance of reservations will commence October 1.

Since Mr. Dallwig's first appearance, in October, 1937, he has lectured on Sundays during the autumn, winter and spring months to an aggregate of 8,150 persons (approximately—because of FIELD MUSEUM NEWS press time, attendance of the last lecture, May 26, had to be estimated on the basis of previous experience).

During the season just ended, his audiences aggregated approximately 2,710 persons, or an average of 90 for each of the 30 Sundays on which he appeared. The popularity of his unique lectures is indicated by the fact that requests for reservations were received from 6,080 persons. Of these, 3,370 unfortunately had to be placed on waiting lists because of the necessity of limiting tour parties to a size practicable for comfortable handling, and for complete enjoyment of those participating. The aggregate of requests for reservations since Mr. Dall-

wig's first appearance in 1937 has been approximately 15,260.

The subjects of Mr. Dallwig's lectures in the past season were: "Gems, Jewels, and 'Junk,'" "The Parade of the Races," "The Romance of Diamonds from Mine to Man," "Prehistoric Monsters in Nature's 'March of Time,'" and "Digging Up the Caveman's Past." Some of these subjects will be repeated in the next season, and some new subjects may be introduced.

#### **NEW MEMBERS**

The following persons became Members of Field Museum during the period from April 16 to May 15:

#### Associate Members

Mrs. H. Durward Ludlow, Herman J. Mayer, Jr., Mrs. David E. Shanahan.

#### Annual Members

Mrs. Alma K. Anderson, Wallace H. Anderson, Mrs. Louis Binstock, Nathan S. Blumberg, Robert Y. Bradshaw, William Curran, Thomas Drever, Edward B. Dunigan, Dr. Harry Gomberg, Arthur P. Good, C. M. Green, Harry H. Hagey, Jr., L. C. Hodges, Joseph Kohout, Jr., Albert Maling, Alfred W. Mansfield, Leopold Metzenberg, Philip H. Oleson, Miss Marion Schaffner, Mrs. George J. Silbernagel, Dr. Elmer E. Simpson, Mrs. Charles F. Spalding, Frank Hall Stephens, Charles G. Stiles, H. A. Swigert, Mrs. Wallace Wakem, William C. Weidert.

#### 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 Lassociate 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.

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 Cbicago, 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. 11 JULY, 1940

#### MARVELS OF BOOK CRAFT EXHIBITED TO MARK 500th GUTENBERG ANNIVERSARY

BY H. B. HARTE PUBLIC RELATIONS COUNSEL

The Library of Field Museum has placed on display in Stanley Field Hall for the month of July a special exhibit of some of the world's oldest, and some of the world's most beautiful, books on natural history. Among the oldest are works on science and travel published in various countries during the sixteenth and seventeenth centuries.

Among the most beautiful is one of the volumes of the great "elephant folio" edition of John James Audubon's The Birds of America representing probably the most magnificent, and certainly the most notable in respect to size and generosity of execution, of all attempts ever made at colored pictorial reproduction in book form.

With this special exhibit —the first in a series of similar displays planned by the Library-Field Museum joins with publishers, printers and libraries all over America in commemoration of the five hundredth anniversary of the invention in Europe of printing with movable type. The invention has been generally attributed. not without some doubt from the standpoint of historical accuracy, to Johann Gutenberg (1398-1468) known as an ingenious mechanician who lived in Mainz. Even the city of his domicile is not known with certainty, some claims having been made on behalf of Strasbourg.

The year 1940 is also the four hundredth anniversary of printing in the New World.

The United States is perhaps almost alone among the nations in paying tribute at this time to this great inven-

tion, for while it ranks high among Europe's greatest contributions to civilization, probably little attention is being given to this anniversary on that unhappy continent. Over there presently all efforts seem to be

furiously bent upon disproving that "the pen is mightier than the sword." If that adage was, or is, true, certainly its truth was multiplied to an incomputable degree by the printing press which gave to the pen its real might. Modern mechanized military equipment has increased immensely the striking force of an individual soldier. Even more did printing increase the potentialities of disseminating the knowledge,

Golden-winged Woodpecker, as Depicted by Audubon

Reproduction of one of the plates in the original elephant folio edition of *The Birds of A merica*. A volume of this rare and beautiful book is included in Field Museum Library's special exhibit devoted to the quincentennial celebration of the invention in Europe of printing with movable type.

thoughts, ideas, and discoveries (scientific and otherwise) of men who could write whether writers who record the results of research, writers of literature and history, or alas, writers of various destructive propagandas (as well as constructive ones).

No. 7

Outstanding feature of the Museum Library's special exhibit in July is the immense Audubon volume. The colored plates of birds, printed on sheets 39½ by 26½ inches in dimensions, represent an epochal triumph of science, of art, and of technical excellence in printing and engraving. From the scientific standpoint, ornithologists rank Audubon's paintings among

the finest examples of accurate observation of bird life that any man has ever produced. As art, critics are almost unanimously agreed that he occupies a unique and unassailable position in the top rank of those painters who devoted themselves to recording the beauty of nature. From the technical standpoint of the printer, it is generally conceded that the Audubon elephant folios represent the largest, and one of the most excellent, printing and engraving feats ever undertaken.

Audubon lived from 1785 to 1851. His travels, ornithological research, and painting over a large part of the American continent earned for him the designation of "the American Woodsman." He was his own publisher of The Birds of America, the first edition of which appeared in London between 1827 and 1830, the four folios being issued in parts. Although possessing only the most modest resources, Audubon by sheer perseverance, and that quality we designate as "personality," obtained sponsors for the tremendously expensive task which he had set for himself in financing and carrying out the printing of He built up a subscription

his volumes. He built up a subscription list of enough wealthy patrons, including some of the royal personages of his day, to publish about 200 complete bound sets of the folios at the equivalent of about \$1,000 per set. Leading scientists of the time, recognizing the value of his work, aided him to some extent in making the necessary contacts with patrons.

Each plate in the folios is engraved from a water-color painting, and is a hand-colored impression from a copper plate. The plates are aquatint engravings printed on double elephant folio sheets of a heavy finely made stock known as Whatman paper. There were 435 plates in all. The first ten plates were engraved by William H. Lizars of Edinburgh; the rest by Robert Havell and Son, London. An octavo edition was published by Audubon in New York (and J. B. Chevalier in Philadelphia) in 1840–44, and about twenty years later a lithographed edition similar in size to the original was produced in Philadelphia.

Today it is believed that not more than 100 complete sets of the elephant folios are in existence, as many of them were broken up by dealers, and the individual plates sold as art works. The value of a complete elephant folio set, originally published at about \$1,000, varies today between \$12,000 and \$15,000, depending on condition and other factors. The individual plates are sold at prices ranging from about \$35 to \$1,000 each.

Field Museum's set, one of the best of those known to remain in existence, came to this institution among the many generous gifts of the late Edward E. Ayer, first President of the Museum. He founded the Edward E. Ayer Ornithological Library which constitutes one of the largest and most important units in the Museum Library, and comprises several thousand volumes. So far as is known, only two other complete sets of the original Audubon edition are owned in Chicago.

The remainder of the Library's special exhibit, which occupies three cases in Stanley Field Hall, consists of a number of very old and valuable books containing the records of early explorers, naturalists, and pioneers in scientific endeavor. Chiefly they represent works published in the sixteenth and seventeenth centuries in Great Britain, France, the Netherlands, Venice (then an independent state), and Germany. Contrasted with these in the exhibit are also a few volumes of representative modern scientific works. One of the oldest books is Histoire Naturelle d'Oiseaux, by Pierre Belon, published in 1555. Others of outstanding interest are Pliny's Natural History (1669), botanical works entitled Herbals (16th century), and a book of early travel by Guglielmo Piso (1658).

As was pointed out by Mr. C. Martin Wilbur, Curator of Chinese Archaeology and Ethnology, in FIELD MUSEUM NEWS (October, 1939, p. 4, in an article on ancient Chinese type characters presented to the Museum by Mr. Thomas E. Donnelley of Chicago and now exhibited in Hall 32), the Chinese invented metal type cast in molds

at least half a century earlier than it appeared in Europe. But this does not contradict the validity of the Gutenberg celebrations, for the European and Chinese inventions, while in their basic essentials duplicating each other, were produced independently, and without influence one upon the other. It was purely a historical coincidence which Mr. Wilbur aptly explained in these words: "A common knowledge of certain preliminary essentials for 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."

#### METEORITIC IRON IN WEAPONS OF EAST INDIAN TRIBES

BY HENRY HERPERS
ASSISTANT CURATOR OF GEOLOGY

Meteorites, as "our only tangible source of knowledge regarding the universe beyond us," have always been especially prized by naturalists for their scientific worth. Other people have valued meteorites for reasons connected with superstitions or religions, and still others have fashioned a variety of utilitarian articles from them.

The people inhabiting certain parts of the Netherlands East Indies have used the metal of meteorites in the manufacture of the type of weapon known as the *kris*, a peculiar sort of dagger. Meteoritic iron was used together with terrestrial iron, and appears to have served not only the purpose of making a stronger blade, but also of adding certain symbolic and decorative qualities to it. Not all krises contain meteoritic iron, for the metal is rare.

Krises containing meteoritic iron are characterized by elaborate designs on the blades. The designs resemble inlays, but are produced by an entirely different process. They often have the appearance of contour lines, and in some cases they truly are contours of the surface of the blade. The pattern on the blade is called *pamor*, a native word. Meteoritic iron is called *pamor*iron and a kris made of this material is known as a kris-pamor.

The art of making the *kris-pamor* seems to be a modification and an improvement of an ancient method of working iron which has been widely used throughout certain portions of the East. Long ago, the people of those regions discovered that better blades could be made by hammering small pieces of iron into long, thin plates which were then stacked up and welded together by repeated heating and hammering, an improvement on the older method of fashioning a blade from a single large lump of iron.

The people of Java and Bali, capitalizing on the fortuituous falls of several meteorites, began to intercalate plates of meteoritic iron among those of the terrestrial material. When the blade had been shaped and smoothed it was stained by treatment with an arsenic compound, which colored the

terrestrial iron a rich, velvety black, but which left untouched the parts of the blade composed of meteoritic iron. The meteoritic iron, by virtue of its high content of nickel, acted like a modern stainless steel and remained bright. Thus the bright "contours," which are the exposed edges of the plates of meteoritic iron, were produced. The most primitive blades show only patches of bright (meteoritic) iron on the gray terrestrial metal, but as skill in the art of making pamor increased, the most intricate patterns were produced, many of which have special symbolic significances.

Pamor is frequently imitated, and some krises which have pamor-like patterns on their blades are found, upon examination, to be decorated with a sort of silver damascene. Ridging of the blades by pure smith work is often resorted to as a means of producing imitation pamor, and, since their introduction by Europeans, nickel and nickel steel are often used to make pamor. In many instances the imitations are so cleverly made that only an expert can distinguish them from the genuine article, and pamor made with modern alloy steels can be distinguished, if at all, only with the greatest difficulty. In modern times, Dutch officials have had krises made of ordinary steel and nickel-steel alloys. In some of them as many as 300 plates of alloy steel were used to produce elaborate patterns.

The metal for these interesting weapons came from several meteorites which fell upon Java. The natives broke up the stone meteorites, which always contain quantities of free metal, and gathered the metallic particles; but they had more trouble with the iron ones. They managed to obtain pieces of the iron meteorites by heating them to redness and hammering off sizeable chunks of the highly-prized metal. Natives who possessed the sources of the metal received rather large prices for their goods, meteoritic iron selling for from 2.5 to 10 guilders (about \$1 to \$4) per réjal, a native unit of weight approximating one ounce.

The Prambanan meteorite, an iron one, fell about 1785 near the town of that name in Java. Search by the natives disclosed two masses of meteoritic iron which were brought to the Kraton of Soerakarta. From time to time pieces were removed until by 1865 nothing remained of the smaller individual. In 1866 a mass of the larger individual, weighing 250 grams, was brought to the Netherlands, and of this Field Museum possesses sixteen grams. The Museum also possesses specimens of the Tjabe, N'gawi, Bandoeng and Djati-Pengilon stone meteorites, all of which fell upon Java. These meteorites may have been partially destroyed to furnish metal for krises.

Excellent examples of the *kris-pamor* may be seen in Case 59 of Hall G, Department of Anthropology, while specimens of the above mentioned meteorites are on display in Hall 34, Department of Geology.

#### THINGS YOU MAY HAVE MISSED

#### Dolls That Teach Indian Children About "Rain-making" Ritual

Rain is a life giver.

This fact—in recent years impressed upon our own people by the tragedies of the dust howls—has always been uppermost in the minds of Indians in the Southwest. If the rains fail, the crops fail, and hunger, possibly death from starvation, follows. No wonder, then, that in their religious ceremonies so much emphasis is placed upon rituals intended to evoke from the heavens the essential moisture to give life to the things that give life to man.

Among the Hopi the children are educated to the idea of supplicating the gods for rain by means of "katcina dolls" which show in miniature the headdresses, masks, ornaments, and clothing worn by the masked dancers who impersonate katcinas or deities in the rain rituals. An extensive exhibit of dolls of this type may be seen in Field Museum's Hall of Southwestern Ethnology and Archaeology (Hall 7). Such dolls are never worshiped, and are not idols in any sense. At the conclusion of one of the great rainmaking ceremonies the masked dancers run through the village streets distributing these dolls and other presents to the young children. From them, the children learn the symbolism of the various elements of costume, and the importance of rain is instilled into their consciousness from almost their earliest days.

"Indians of the Pueblos, such as the Hopi and Zuni, are more aware of nature than we are," says Mr. Alexander Spoehr, Assistant Curator of American Ethnology and Archaeology. "All of them get at least a part of their living by farming. Therefore everyone is concerned with such natural phenomena as rain, for rain bears directly on the life of the individual and involves far more than wet sidewalks and slushy streets. The religion and ceremonies of the Pueblo tribes are directed largely toward adjusting man and nature so that crop failure, famine, and pestilence may be avoided. The Pueblo Indian, however, does not see his life as an endless conflict with the forces of nature. Nor does he see it as a conflict between good and evil, or life and death. Rather, man and the universe about him are parts of a harmonious whole. Day follows night, the seasons unroll, man dies, but mankind remains. The process is one of order, and the order continues as long as the deities who control these things function properly. Pueblo religion is concerned with a large number of ceremonies performed at stated times during the year and designed to keep this sequence of events running in traditional channels.

"The katcina dolls typify the Katcina dancers. Among the Hopi the katcinas represent a class of supernatural beings who normally live high in the mountains; among the Zuni they are believed to live under the earth and its waters. Since these deities no longer come in the flesh, they must now be impersonated by men disguised as katcinas, say the tribal priests in explaining the reason for their dances. This is the legend they tell:

"In some far past time, long beyond the memory of living man, the gods (or katcinas)



Katcina Doll

During the ceremony of the Hopi to invoke rain, dolls like the above are distributed to the children.

lived with the people, and taught them to hunt, to plant their crops, to make pottery and baskets, and build their houses. But the people finally fell from grace with the katcinas, who thereupon withdrew to the mountain heights. The rains then ceased to fall-the thirsty soil yielded no crops-desolation and misery struck down the people. At last the gods relented to a degree, and the message was conveyed to the people that they might wear masks and costumes to represent

the gods, and that they might perform the katcina dances which bring the rain. If all instructions were sincerely and properly carried out, the gods promised, the dancers would thus be 'possessed' by the katcinas and the rain would fall.

"Therefore, the people still faithfully carry out these ceremonies and believe that when the rains fall plentifully and the harvests are bountiful, it may be attributed to the ritual, and when the rains and crops fail, it is due to some failure within themselves in the performance of their duties."

#### Skeleton of Extinct Giant Beaver

The Museum recently placed on exhibition in Ernest R. Graham Hall (Hall 38), a splendid mounted skeleton of the giant beaver *Castoroides ohioensis*. This skeleton is of Pleistocene age and was found near Fairmount, Indiana. The animal in life would have been nearly as large as the modern black bear.

The giant beaver is one of the largest rodents known. Its fossil remains are found throughout the wooded region of the central states. Most of them are recognized from skulls and jaws. The only other skeleton known is preserved at Earlham College. As the name *ohioensis* indicates, the first specimen was discovered in Ohio.

#### SEND CHILDREN TO MUSEUM ON VACATION DAYS

With the schools closed for the long summer vacation, Field Museum calls the attention of parents to the advantages this institution offers for children. Thousands of parents have found the Museum a safe haven for leaving their children for a day, or half of a day, when, for one reason or another, there is to be no one at home to look after the youngsters. Admission to the Museum is always free of charge to the children, and it is open every day of the summer months from 9 A.M. to 6 P.M.

Visits to the Museum combine entertainment with a continuance of education on a basis different from that of the school classroom, and observation definitely shows that children enjoy absorbing information in this manner. In addition, the Museum building is a cool and refreshing place to be no matter how sweltering is the weather outside. Special lunchrooms for children are available, where tables and chairs are provided for box lunches which they may bring, and where they may also buy their lunches at low cost if they do not bring them.

#### Museum Flagpoles Reconditioned

The tall flagpoles in front of the north terrace of Field Museum were recently thoroughly reconditioned. As part of this task, the cast bronze balls surmounting them, each 19 inches in diameter, and weighing 195 pounds apiece, were removed. New gold leaf was applied to their surfaces, and they were then reinstalled. The gold leaf, in addition to improving appearance, is considered the best covering for resisting the ravages of weather. The operation of removing and lowering the heavy balls from the poles, which are 75 feet in height, required considerable ingenuity with blockand-tackle, and was performed by professional steeplejacks.

The west pole, which was leaning slightly due to settlement of the ground in which it is based, was straightened. Checking of the timber in both poles was "pointed up," and they were thoroughly repainted with extra-durable zinc base paint. Sheave bushings were replaced, and new halyards installed. The poles had last been reconditioned four years ago.

#### The Antelope Called "Bongo"

"Bongo" sounds like the name of an animal from a myth or a children's story-book, but there actually is such a creature. It is one of the most beautiful of antelopes, and an excellent group, shown in a reproduction of its African bamboo forest habitat, is on view in Carl E. Akeley Memorial Hall (Hall 22) at Field Museum.

The remarkable range of color and form displayed by quartzes is illustrated by an exhibit in Stanley Field Hall.

#### THE PREHISTORY OF AVIATION—WARFARE FROM SKIES FORESEEN IN CHINA CENTURIES AGO

The war has made the world air-conscious as never before. With aviation so much to the fore in the thoughts of practically everyone, a book published by Field Museum Press in 1928—The Prehistory of Aviation\*—has acquired new timeliness and interest. It was the work of the late Dr. Berthold Laufer, former Curator of the Department of Anthropology.

"The desire to fly is as old as mankind," Dr. Laufer wrote, and then proceeded to trace the history of the idea of flying, and the earliest attempts at actually doing it. He also presented many of the myths and legends of early peoples relating to flying, and sought to extract from them the realities in which some of these stories may have had at least part of their origin.

#### STARVATION, AND MEDICINE, TO FLY

Starvation to achieve the ability to fly (as contrasted to the modern application of forms of semi-starvation to reduce one's avoirdupois for reasons of health and personal appearance) is one of the most curious of the ideas developed by "airminded" persons among the ancients. Another was the idea of taking a bitter medicine which was believed to produce levitation of the human body and thus make aviation possible without either wings, machinery, or gas bags. The idea of starving to fly was developed by the Taoists of China, and is partially traceable to early India, the book states. "Live on air to conquer the air" was the slogan of this school. The application of internal remedies to fly was also a Taoist idea. T'ao Hung-king, physician of A.D. 452-536, compounded a "flying elixir" composed of mixed gold, cinnabar, azurite, and sulphur. This had a very bitter taste, but when swallowed was believed to produce levitation.

Dr. Laufer did not regard the history of aviation, as the average person does, as having been confined to the last few decades during which, by intensive efforts, flying has been developed to its present-day success.

"Our airplanes are pedigreed from kites which have their origin in China," he wrote. "Our modern progress is not solely due to efforts of the present generation, stupendous and admirable as they may be, but presents the process of a gradual evolution of ideas which have grown out of the imagination, endeavors, experiments, triumphs, and failures of many past ages. Stress must be laid on the word 'imagination,' for there is no field of human exertions in which the imagination and romantic dreams have played a greater role and have proved more fertile than in the development of aviation.... We have conquered the air in this age of science and unprecedented progress of mechanics, but in the last instance this conquest goes back to the trend of man's mind toward the romantic and adventurous. Describing merely the gradual perfection of mechanical devices does not make a complete history of aviation. It is the spirit and idea behind the devices that count—the idea itself means everything."

The book is filled with historical and legendary tales which prove the existence

of the idea of flying, and the attempts made, in earliest times and in many lands. The titles of the chapters indicate the wide scope of the work, viz .-"The Romance of Flying in Ancient China," "Kites as Precursors of Airplanes," "The Dawn of Airships in Ancient India," "From Babylon and Persia to the Greeks and Arabs," and "The Air Mail of Ancient Times.'' The writer's thesis throughout is that man's inspiration to fly has been derived from the birds, that nearly all of his attempts have been basically imitative of the manner in which birds fly, and that his ultimate success today, and his hopes for the further development of today's planes, still rely in the last analysis upon imitation of the flight of birds.

THE FIRST PARACHUTE

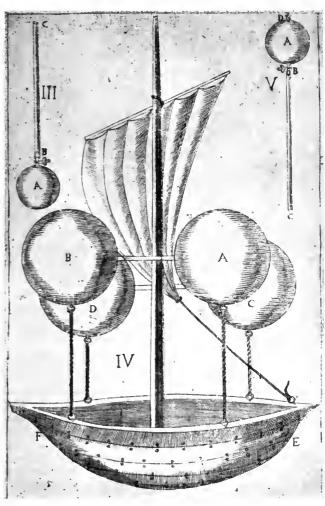
In view of very recent events in Europe, particularly the use of parachute troops, the following passage from Dr. Laufer's book seems extremely timely:

"Among the many singular coincidences of events that loom up in ancient books of the East and the West, none perhaps is more captivating than that an imperial flyer appears at the threshhold of the earliest recorded history of

China, and that a royal flyer opens the chapter of the early history of Great Britain. Bladud, the legendary tenth king of Britain, father of King Lear and founder of Bath, is said to have made wings of feathers by means of which he attempted an aerial flight that unfortunately resulted in his death in the year 852 before our era.... The [legendary] Chinese emperor Shun... [ascribed to the third millenium before the Christian era] is not only the first flyer recorded in history, but also the very first reputed to have made a successful descent

in a parachute—an experiment first made or repeated in the midst of our civilization as late as A.D. 1783."

Related is the myth of Huang Ti, one of the ancient legendary emperors of China, reputed to have had a long-bearded dragon to transport his wives and ministers, more than seventy persons, the most important of whom had seats on the dragon's back, while those of lower rank clung to hairs



Francesco Lana's Flying Boat

Famous boat-shaped aerial car, as theoretically conceived and illustrated in A.D. 1670 in the inventor's *Prodromo*, published at Brescia, Lombardy (Italy). Lifting power was intended to be furnished by the four hollow globes of copper, from which all air was to be extracted. Propulsion and direction were to be obtained by sails and oars. A Chinese legend tells of a similar aircraft supposed to have been built centuries earlier and destroyed because of an emperor's fears.

of the dragon's beard like straphangers on a street car. There are other stories of Chinese "flying chariots," accompanied by the comment that even in modern times the Chinese expression for designating an airplane is composed of words which translate to "flying chariot."

#### AERIAL WARFARE LONG FORESEEN

Cited are a number of stories pertaining to the idea of aerial warfare:

"True it is that the first actual bombardments from the air took place but recently during the World War (1914-18), but the

<sup>\*</sup>This book (96 pages, 12 collotype illustrations) is still available at The Book Shop of Field Museum—price \$1. Prepaid mail orders accepted.

idea itself was not novel. It was anticipated in the seventeenth century by Francesco Lana, and the first air-bombardier was the giant bird Rukh when he hurled huge boulders at Sindbad's ship.'

There is the legend of a "flying chariot" reputedly constructed by an ancient Chinese mechanic known as Ki-kung. The Chinese emperor, in this story, "caused the airship to be destroyed, as he did not wish his own people to see it. He evidently was anxious to remain intrenched on his throne and to steer clear of innovations that might menace the safety of his realm....

"The famous boat-shaped aerial car, theoretically conceived by the Jesuit Francesco Lana (1631-87) . . . exhibits some affinity with Ki-kung's machine. . . . It was Lana's idea to lift his ship into the air by means of four large hollow globes of very thin sheets of copper, from which the air had been wholly extracted, thereby causing them to weigh less than the surrounding atmosphere, and enabling them to rise and support the weight of the ship in the air; propulsion and direction were to be obtained by sails and oars.... If, in Lana's sketch, the four copper globes are replaced by four powerful paper kites, we may realize what the Chinese Ki-kung's aerostat might have been.... Lana, in his Prodromo (1670), gives us the best explanation of the reasons which may have prompted the Chinese autocrat to destroy Ki-kung's machine. Having developed his plan of an airship, Lana writes:

"'I do not see any other difficulty that could prevail against this invention, save one, which seems to me weightier than all the others, and this is that God will never permit such a machine to be constructed, in order to preclude the numerous consequences which might disturb the civil and political government among men. For who sees not that no city would be secure from surprise attacks, as the airship might appear at any hour directly over its market-square and would land there its crew? The same would happen to private houses and to ships crossing the sea, for the airship would only have to descend out of the air down to the sails of sea-going vessels and lop their cables. Even without descending, it could hurl iron pieces which would capsize the vessels and kill men, and the ships might be burnt with artificial fire, balls, and bombs,' "

From ancient tales of India Dr. Laufer obtained a description of an early conception of a dirigible airship. Schemes for harnessing birds to draw vehicles through the air, conceived by ancient Babylonians, Persians, and Greeks, are discussed. In the chapter on "ancient air mail" the history of the use of carrier pigeons is given.

A complete set of masks used by the Navaho Indians in their Night Chant Ceremony is shown in Hall 6.

#### THE MAGELLANIC EXPEDITION CONCLUDES ITS WORK

The work of the Magellanic Expedition of Field Museum was concluded in June with the return of Mr. Colin Campbell Sanborn, Curator of Mammals, who was the last member of the party to leave the field. The expedition began zoological collecting in various remote parts of South America nearly a year ago. Other members who returned previously are Mr. Karl P. Schmidt, Curator of Amphibians and Reptiles, who came back in December; and Dr. Wilfred H. Osgood, Chief Curator of the Department of Zoology, and Mr. John Schmidt, field assistant, who arrived home in April. The expedition was sponsored by Mr. Stanley Field, President of the Museum.

Mr. Sanborn had remained to carry on a special project in certain regions of Argentina and southern Peru. He brought back extensive collections of the fauna of those countries for addition to the Museum's study collections. Included are a number of rare specimens, and a large representation of species of small mammals hitherto lacking in any museum except the British Museum. The London institution possesses the less complete collections made by P. O. Simons forty years ago. Of particular interest among Mr. Sanborn's collection are an extremely rare parrot, and a mouse-opossum from the highlands which previous knowledge had indicated was confined only to lowland habitats. Mr. Sanborn also laid the groundwork for future research, and made arrangements for collecting by local scientists in Bolivia and Peru.

The expedition as a whole collected in the Lake Titicaca region of southern Peru, in an area high in the Bolivian Andes, in various parts of Chile, along the shores of the Straits of Magellan, and on the island of Tierra del Fuego at the southernmost tip of the continent. The last named region had not been zoologically explored since Darwin collected there 106 years ago.

#### THE FOREST OF NAHUELBUTA, A CHILEAN SANCTUARY

BY WILFRED H. OSGOOD CHIEF CURATOR, DEPARTMENT OF ZOOLOGY

The araucaria forest of the Parque Nacional Nahuelbuta in central Chile should rank as one of the sights of the world. Chile may well be as proud of it as California is of her sequoias. It is included in an area of 5,000 hectares (about 12,500 acres) and has been set aside as a national park, but it is difficult of access and very few visitors reach it.

Our trip to this forest while en route to southern Chile on the Magellanic Expedition of Field Museum, was made on horseback for two days, with oxcarts carrying our baggage over roads which are only passable in the summer season. The beauty of the great trees, more than 100 feet high, their

unique prehistoric appearance, and the lovely setting in which they are found, were fascinating to a naturalist, and should be equally so to any one. From one high point among them rises a great granite rock called Piedra de las Aiguilas (Eagle Rock). This was near our camp, and on a clear day we could stand on this rock and see the Pacific Ocean on the west. In the opposite direction, across the central valley, appeared the high ranges of the Andes and a series of five or six somewhat isolated snow-covered volcanic cones, every one fit to be classed with Fujiyama and other famous mountains of the world. At present the park has little care, and the trees are endangered by fire and insect pests. Also, there is pressure by private interests to exploit the forest for profit, and unless Chile develops national pride in these trees it is not unlikely they may be despoiled. They should have at least a resident ranger, and the roads should be improved. Chile is poor, however, and funds for such things are difficult to get. The man in charge at present is obliged to live at a distance, has no assistance, and has many other duties. There is one other forest of Chilean araucarias in the southern Andes which is more accessible, but it can scarcely be more beautiful.

In the future, if the park were developed. it would be possible to introduce interesting animals, for this part of Chile has no large mammals. Among those that would be suitable are the American elk, bison, Scotch red deer, white-tailed deer, etc. There is an abundance of forage for them, and the climate should be right although sometimes the winter is fairly severe.

Araucarias, like our own sequoias, are survivors of a prehistoric period and at one time were widely distributed. Besides the Chilean species (Araucaria imbricata), there are still a somewhat similar species in southern Brazil and several species in the Australian region, each confined to a limited area. The Chilean species has often been successfully transplanted, and in parks and botanical gardens is sometimes called the "monkey-puzzle" tree.

#### IF YOU WOULD BE A HOST TO BIRDS

read Margaret McKenny's Birds in the Garden and How to Attract Them.

"This fascinating book will be an invaluable boon to all who delight in profuse bird life and wish to create sanctuaries about their homes," says Mr. Emmet R. Blake, Assistant Curator of Birds at Field Museum. "In it are many practical hints leading to a more complete enjoyment of the outdoors."

On sale at THE BOOK SHOP of FIELD MUSEUM—\$5.

#### Field Museum of Natural History

FOUNDED BY MARSHALL FIELD, 1893 Roosevelt Road and Field Drive, Chicago

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#### FIELD MUSEUM NEWS

CLIFFORD	c.	GREGG,	Director	of	the	Museum	 . Edito	ľ
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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-

#### Museums Tax Restored

It is gratifying to note that the Legislature of Illinois, at its recent special session, passed the measure restoring the tax funds allotted to museums located within the Chicago Park District, and that Governor Horner signed this bill so vital to the welfare of these institutions. The tax benefits previously received by museums had been lost through court action last year, due to certain discrepancies in the levying method formerly employed.

Restoration of the tax implies recognition by the legislators and the governor of the educational benefits extended to the public by Field Museum and its sister institutions. The tax support in past years has aided materially in defraying the cost of maintenance of the museums, especially since depression curtailed their income from endowments and from other sources. Its continuation now sustains their efforts to render ever greater service to our citizenry.

The administration of Field Museum is grateful to the officials of the Chicago Park District for the co-operation extended by them at all times in this, and in other matters pertaining to the museums, in which their support has been so frequently and notably helpful.

-CLIFFORD C. GREGG, Director

#### Museum Hall Named in Honor of Martin A. Ryersons

In memory of the late Martin A. Ryerson and the late Mrs. Carrie Ryerson, both notable benefactors of Field Museum, the Museum's Hall of Plant Life (Hall 29) has

been renamed "Martin A. and Carrie Ryerson Hall." Action to this effect was taken at a meeting of the Board of Trustees held May 27.

In this, the largest hall in the Department of Botany, the Museum has exhibits which aim to furnish a general view of the entire range of the vegetable kingdom from the tiniest bacteria (shown as they would be seen through a high-power microscope) to the most elaborate flowering plants.

The choice of this particular hall was considered by the Trustees especially appropriate because of the deep and constant interest in plant life and in the preservation of wild flowers which was manifested by Mrs. Ryerson for many years.

Mr. Ryerson was one of the original incorporators of Field Museum, and was actively associated with the operation of the institution as a Trustee and as First Vice-President from the founding of the Museum in 1893 until his death in 1932. Both he and Mrs. Ryerson made notable gifts to the Museum during their lifetimes, and left extremely generous bequests to the institution.

#### Mrs. Raymond Continues Support of Foundation

Continuing the generosity which she has manifested several times a year for many years, Mrs. James Nelson Raymond, of Chicago, recently made another contribution of \$2,000 to Field Museum. The money is allocated to the support of the activities of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures. Mrs. Raymond founded this division of the Museum in 1925, providing a large endowment for it. The present gift is the second such sum received from her in 1940. Among the services which the Foundation renders are: series of free motion picture programs for children in the James Simpson Theatre of the Museum during the spring, summer and autumn months; the sending of extension lecturers out to the schools; guide-lecture service at the Museum for groups of children brought from schools and other centers; publication of natural history stories for children, and a variety of other activities.

#### Mexican Rubber Exhibit

An exhibit showing a branch of the Mexican rubber tree (Castilla elastica), together with a trunk showing the scars of incisions made for tapping the latex, is a recent addition to Hall 28 in the Department of Botany. The Mexican tree is of interest because it was the species selected for planting when rubber plantations were first established. Its latex was known in pre-Columbian days, and was used by the Indians in making rubber balls. Adjacent to this exhibit is material representing other species of rubber trees.

#### Staff Notes

Dr. Wilfred H. Osgood, Chief Curator of the Department of Zoology, attended the meeting of the American Society of Mammalogists held at Denver, June 25 to 28.

Miss Miriam Wood, Chief of the Raymond Foundation, Mrs. Emily M. Wilcoxson, Librarian, and Mr. James H. Quinn, of the Department of Geology, represented Field Museum at the annual meeting of the American Association of Museums in Detroit. Mr. Quinn presented a paper on a phase of museum technique.

Mr. Loren P. Woods, of the Raymond Foundation, was a speaker at the Kennicott Club. His subject was "Chicago Fisheries."

Dr. Julian A. Steyermark, Assistant Curator of the Herbarium, lectured on "The Wild Flowers of Illinois and Missouri' before the Men's Garden Club, Highland Park, June 27.

Dr. Steyermark has been elected Vice-President of the Chicago Aquarium Society.

#### Distinguished Visitors

Among distinguished visitors recently received at Field Museum were Dr. Donald Brand, Chairman, Department of Anthropology, University of New Mexico; Dr. S. K. Basu, Department of Anatomy, Carmichael Medical College, Calcutta, India; Dr. F. K. G. Mullereid, paleontologist at the University of Mexico, and Dr. Harold W. How, a Trustee of the Santa Barbara (California) Museum.

#### 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 entertain-ments 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 pre-sented in the James Simpson Theatre on Satur-day afternoons (at 2:30 o'clock) in March, day afternoons (at 2:30 o'cl April, October, and November

A Cafeteria serves visitors. Rooms are able 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 auto-mobiles at the Museum.

#### ANCIENT HORSESHOES

BY HENRY FIELD CURATOR OF PHYSICAL ANTHROPOLOGY

On exhibition in Case 15 in the Hall of the Stone Age of the Old World (Hall C) is a pair of small iron horseshoes. These relics of the latest cultural phase of the Lake-Dweller period were excavated on the shore of Lake Neuchâtel in Switzerland by Dr. J. Thiessing, some fifty years ago. No accurate date can be assigned to them.

In ancient times socks or sandals were devised to protect the horny casing of a horse's hoof against wear and tear, but there is some evidence that iron horseshoes were used as early as 333 B.C. at the Battle of Issus. They were commonly known by the fifth century and in regular use in the Middle Ages. It is said that William the Conqueror introduced into England the custom of shoeing horses, and the importance he attached to the practice is shown in a story to the effect that he gave the town of Northampton to the inspector of the farriers, and bestowed upon that gentleman the name Ferrers. The coat of arms of the Earl of Ferrers is still adorned with a horseshoe. Northampton is famous today for the manufacture of boots and shoes.

The origin of the belief that "a horseshoe brings good luck" is not known. There is one theory that it grew out of the use of charms; another, that it is connected with the belief that there is good luck in the crescent moon, owing to the similarity in shape. The Irish say that a horse was in the stable where Christ was born and that the magic came from this circumstance; and some people believe that the superstition originated at the time of the feast of the Passover, when blood sprinkled over doors in the pattern of an arch saved the children of the Jews from the wrath of God. There are many other theories. At any rate, as early as the first century of our era the horseshoe was being recommended by Pliny as a protective charm and even as a healing agent.

It is common in country places to-day, in different parts of the world, to see a horse-shoe nailed on a stable door, hung on the ceiling over the horses, or fastened to the wall of a cow-barn, "to keep off the pixies." Even in our urban world the custom of wearing a miniature horseshoe on a chain or watchfob is not unusual, and the door of many an inn bears this emblem of a superstition based, in modern times, on the vague tradition that a horseshoe brings good luck.

#### Adult Graduation in Simpson Theatre

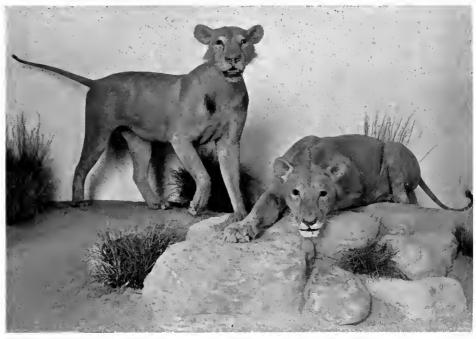
The adult department of the Chicago Public Schools held its graduation exercises in the James Simpson Theatre of Field Museum on June 13. More than 1,000 men and women, mostly foreign born, received certificates and diplomas.

#### A FAMOUS GROUP—THE MAN-EATING LIONS OF TSAVO

The lions shown in the group illustrated here are known as "the man-eaters of Tsavo." Of all records of man-eating lions, theirs is the most extraordinary. They were known to have killed twenty-eight coolie laborers, several white men, and many African natives, and were thought to have been responsible altogether for the deaths of more than one hundred human beings.

Lions usually prey upon game animals, especially zebras and antelopes, and they rule rather than the exception. In fact, wild lions never have such fully developed manes as do those kept in captivity.

The group, a gift to the Museum from President Stanley Field, is on exhibition in Carl E. Akeley Memorial Hall (Hall 22). The lions were shot by Lieutenant-Colonel J. H. Patterson, of the British army, engaged as a civil engineer during the building of the Uganda railroad, whose laborers were the lions' victims. An illustrated leaflet by Colo-



Kllfers of More Than One Hundred Men

The "man-eating lions of Tsavo" as now exhibited in Carl E. Akeley Memorial Hall at Field Museum. For many months they were a terrific problem to the builders of the Uganda railroad. After they had carried off scores of laborers, they were finally shot by Lieutenant-Colonel J. H. Patterson from whom the specimens were obtained for the Museum by President Stanley Field. Although they are without mane, both of these animals are males.

rarely develop the man-eating habit where these are abundant, as in East Africa. When they do, however, their cunning and ferocity are almost beyond belief.

Although both these lions are males, they have no manes. In many parts of Africa, especially the more arid ones, this is the

nel Patterson, The Man-Eating Lions of Tsavo, published by Field Museum Press, is available at The Book Shop of the Museum. Colonel Patterson is author also of a larger book telling in detail the complete story of these famous lions, how they were hunted, and how they were finally killed.

## EXHIBIT SHOWS ARCHAEOLOGY OF SOUTHERN ILLINOIS

A collection of artifacts representing the archaeology of southern Illinois and Arkansas is on exhibition in Hall B of the Department of Anthropology. The archaeology of the middle Mississippi River area, of which these regions are parts, is characterized chiefly by mounds and excellent pottery. Many of the smaller mounds are conical and were used for mortuary purposes. Large rectangular platformmounds served mainly as substructures for public buildings, although burials were often placed beneath the floors of these structures. There is good evidence for believing that the prehistoric Indians of this

area were influenced in building these mounds by cultural influences from the Mexican area.

The pottery of this area, which ranks among the best of all the mound region, and which is well represented in the Museum exhibit, is generally shell-tempered, and is made in diverse forms, such as bottles, bowls, vases, dishes and effigy-shapes. Uncolored ware predominates, although red-and-white vessels are common. Most of this material was made about the tenth century of the Christian era. The material in the Museum collection is chiefly from Union County, Illinois, and from Cross and St. Francis Counties, Arkansas. Many pieces portray human and animal forms in varying degrees of conventionalization.

## FREE PROGRAMS FOR CHILDREN IN JULY AND AUGUST

The James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures will present a summer series of six programs for children on Thursday mornings from July 11 to August 15 inclusive. Both talking and silent motion pictures will be shown in the James Simpson Theatre, and on the first program, July 11, a troupe of Mexican dancers will appear in person. Animated cartoons, as well as the more serious films, will be presented on some of the programs. Several especially notable feature films, such as Elephant Boy, featuring Sabu, a boy from India, and Nanook of the North, the story of an Eskimo boy, will be shown. All six 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 details of each

July 11—An Hour in Mexico. In addition to the motion pictures, Señor Filiberto Gomez and his Mexican dancers will appear in person on this program.

July 18—Vacationing in the Open. Films of America's national parks will be featured on this program.

July 25-Elephant Boy.

August 1—Nanook of the North, and animated cartoon.

August 8—In The South Seas With Gifford Pinehot.

August 15—Animals of the Polar Regions, and animated cartoon.

No tickets are necessary for admission. Children may come alone, accompanied by adults, or in groups.

#### GIFTS TO THE MUSEUM

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

#### Department of Anthropology:

From Estate of Louis L. Valentine, Chicago—220 ivories, China, Japan, Europe, and Alaska.

#### Department of Botany:

From Rev. Brother Apolinar-Maria, Bogotá, Colombia—73 herbarium specimens, Colombia; from Bill Bauer, Webster Groves, Mo.-335 herbarium specimens, Illinois, Missouri, and Wisconsin; from Rev. Brother Elias, Caracas, Venezuela-37 herbarium specimens, Venezuela; from Rev. Padre C. Vogl, Caracas, Venezuela-60 herbarium specimens, Venezuela; from Mrs. B. B. Lewis, Guatemala City, Guatemala—70 herbarium specimens and 22 hand specimens of Guatemalan woods; from Dr. G. W. Prescott, Albion, Mich.—32 herbarium specimens, Canal Zone; from Professor José Badini, Minas Geraes, Brazil—60 herbarium specimens, Brazil; from Professor Bernardo Rosengurtt, Montevideo, Uruguay-17 herbarium specimens, Uruguay; from Professor

José M. Ponce, Mexico City—60 herbarium specimens, Mexico; from Glenn F. Bates, Fort Lauderdale, Fla.—3 fruits of casimiroa and 3 herbarium specimens, Florida; from Donald Richards, Chicago—32 herbarium specimens, Illinois and Indiana; from Dr. Henry Field, Chicago—21 cryptogamic specimens, Georgia and Florida; from Howard Scott Gentry, Tucson, Ariz.—54 herbarium specimens, Mexico.

#### Department of Geology:

From Frank Von Drasek, Cicero, Ill.—8 specimens of minerals and 6 specimens of veins from diamond mines, Arkansas; from Miss Ann Trevett, Casper, Wyo.—a specimen of ferritungstite, Wyoming; from Edward K. Ziegler, Chicago—a specimen of fossil spruce, Iowa; from M. J. Eunson, Murfreesboro, Ark.—5 specimens of cinnabar, Arkansas.

#### Department of Zoology:

From John A. Holabird, Chicago-204 fish specimens, Louisiana; from E. Wyllys Andrews, Cambridge, Mass.-82 bats in alcohol, 7 rodent skins with skulls, and 5 small skulls, Mexico; from Dr. Thomas Poulter, Chicago-2 penguins (body skeletons only), Little America; from Princess Sigismund of Prussia, San Miguel, Barranca, Costa Rica-3 tree frogs and a lizard, Costa Rica; from Carlos S. Reed, Santiago, Chile -5 flycatchers, Chile; from Robert A. Burton, Evanston, Ill.—124 specimens of frogs, toads, snakes, turtles, and salamanders, Iowa; from Armour and Company, Chicago-anatomical specimens; from Chicago Zoological Society, Brookfield, Ill. -9 mammals, 18 birds, and 12 specimens of snakes, turtles, and lizards.

#### The Library

Valuable books from A. Cabrera and J. Yepes, Editors of Compania Argentina, Buenos Aires; and from Kenneth Knickerbocker, Karl P. Schmidt, Colin C. Sanborn, Dr. Julian A. Steyermark, Dr. Earl E. Sherff, and Paul O. McGrew, all of Chicago.

#### NEW MEMBERS

The following persons became Members of Field Museum during the period from May 16 to June 15:

#### Associate Members

Harold E. Cuttle, Abraham J. Freiler, Mrs. Albert A. Newman.

#### Sustaining Members

W. O. Kurtz, Walter A. Wade

#### Annual Membera

Richard H. Aishton, Miss Sadie Maud Anderson, Mrs. Joseph B. Creevy, Q. P. Dorschel, William C. Douglas, F. B. Evans, George F. Fisher, William E. Fisher, Mrs. Adolph R. Floreen, Dr. M. R. Freeland, Dr. Theodore P. Grauer, Mrs. Dwight H. Green, Benjamin H. Groves, Philip Horwich, August G. Kampmeier, A. M. Langert, Mrs. O. F. Seidenbecker, Mrs. Harold L. Sippy, Mrs. Edward Sonnenschein, Harry D. Stops, Harry C. Webster, William T. Woodson, Mrs. William Wurth.

Field Museum's collection of Chinese jade objects, in Hall 30, is one of the most comprehensive in the world.

#### **GUIDE-LECTURE TOURS**

July, 1946

During July and August conducted tours of the exhibits, under the guidance of staflecturers, will be given on a special schedule as follows:

Mondays: 11 A.M., Halls of Primitive and Civilized Peoples; 3 P.M., General Tour of Exhibition Halls.

Tuesdays: 11 A.M., Animal Groups; & P.M., General Tour of Exhibition Halls.

Wednesdays: 11 A.M., Minerals and Prehistoric Life; 3 P.M., General Tour of Exhibition Halls.

Thursdays: 11 A.M. and 3 P.M., Genera Tours of Exhibition Halls.

Fridays: 11 A.M., Plant Life Exhibits 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 tourshould apply at North Entrance. Tours are free. Guide-lecturer's services for special tours by parties of ten or more may be arranged for with the Director a week in advance.

In the William J. Chalmers Crysta Collection in Hall 34 is a series of tourma lines remarkable for the variety of colors and forms displayed.

#### 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 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 \$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.

#### BEOUESTS AND ENDOWMENTS

Bequests to Field Museum of Natural Iliatory 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 given

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. 11 AUGUST, 1940 No. 8

#### NEW HALL OF BABYLONIA REPRESENTS 18 YEARS OF COLLECTING AND RESEARCH

BY RICHARD A. MARTIN CURATOR OF NEAR EASTERN ARCHAEOLOGY

The Hall of Babylonian Archaeology (Hall K on the ground floor of Field Museum) is at last completed and open to the public. It is one of the most ambitious projects in the reconstruction of the life and history of a long past epoch ever undertaken by this institution.

The material on display includes the most interesting and most important of the thousands of objects excavated from the site of the ancient city of Kish during the course of the ten years' intensive operations of the Field Museum-Oxford University Joint Expedition to Mesopotamia, begun in 1923. This expedition was conducted under the direction of the late Professor Stephen Langdon, of Oxford. On his staff, both in the field and in research laboratories where the material collected was thoroughly studied, were noted archaeologists of Great Britain, France, and the United States. So immense was the excavation project that the employment of hundreds of native helpers was required for the work of actual digging. They recov-

ered pottery, sherds, statuary, tablets, bronze work, building material and other artifacts which were buried under the mounds which covered Kish, and which tell the story of that ancient city's civilization. The intervening years, since the field work was concluded, have been required for continued research on this material, and for reconstruction and other preparation of the objects selected for exhibition.

The result is a comprehensive exhibit in Field Museum's new hall which represents the cultures of Babylonia from the fourth millenium B.C. down to the fourth century A.D. The most striking point of this display is reached in the full-size reconstruction of a gateway of the Sasanid period (shown in

the illustration on this page). Among other

Reconstruction of Sasanid Portal from Ancient Kish

One of the exhibits in the new Hall of Babylonian Archaeology (Hall K). This gateway was rebuilt at the Museum, using as far as possible original stucco recovered from the great mounds which were excavated over a period of ten years by the Field Museum-Oxford University Joint Expedition to Mesopotamia. Gaps were filled in with restorations made by Museum artists. The stucco is from royal buildings constructed in the 4th century.

> outstanding features of the exhibit are a frieze around the walls of the hall illustrating the high attainments of the glyptic artists of the Near East, and some of the earliest chariot wheels ever found, together with a miniature restoration of a complete chariot with its horses and riders.

> The ruins of Kish lie in the modern kingdom of Iraq, about ten miles east of Babylon. Kish was an important city in Babylonia

for more than four thousand years. The urban area comprised some 780 acres, though not all of this land was continuously occupied throughout the life of the city.

The earliest culture represented is from the Jemdet Nasr period (circa 3200 B.C.). Jemdet Nasr, the modern local name of a Sumerian town near Kish, is also the name

adopted for this period in Babylonian chronology. It is the latest of three protohistoric periods before early dynastic times, and is characterized by its beautiful painted pottery. Jemdet Nasr pottery was found in the lower levels at Kish below the present water table, necessitating the use of pumps. Jemdet Nasr itself, as well as Kish, was excavated by the expedition.

In the centuries preceding 2500 B.C. the kings of Kish often ruled over many other city-states. The title "King of Kish" came to mean "King of universal dominion" and was adopted by other rulers when their power became dominant in Babylonia.

Magnificent objects from the Early Dynastic period (3000-2530 B.C.) are on display. Many of them, such as chariot wheels and rein rings, are

from the "chariot tombs." Two- and fourwheeled wooden chariots were found in vaulted brick tombs forty feet below the surface of the mound. In these tombs lay the nobles of Kish surrounded by mortuary gifts: weapons, personal ornaments, toilet articles, and vessels of pottery, stone, and bronze. During the funeral service the servants and draft animals of a noble were slaughtered in his tomb to accompany him

in Arallu, "the land of no return . . . . where dust is their nourishment, and their bread is clay, light they see not, but sit in darkness." Four draft animals were the usual number for each chariot, and study of the animal bones



Minlature Replica of Charlot from Kish

On exhibition in the Haff of Babylonia are examples of some of the earliest chariot wheels ever found by archaeologiats. Data from these, and other material excavated, supplied the information making possible this restoration. Study of animal bones found with chariot remains indicates that the horse, ox, and donkey were used. This is the earliest known evidence of the domestication of the horse.

indicates that the horse, ox, and donkey were used. This is the earliest known evidence of the domestication of the horse.

RECORDS OF A GREAT FLOOD

Sumerian texts state: "When the kingship was lowered from heaven . . . . 5 cities were they; 8 kings reigned their 241,200 years. The Flood swept thereover. After the Flood had swept thereover, when the kingship was lowered from heaven the kingship was in Kish." A flood deposit was found at Kish in dwellings of the middle Early Dynastic period (circa 2700 B.C.) thirty-six feet below the surface of the mound. A small section of this deposit is on display. On the surface of the clay are the remains of fresh-water fish which were left behind when the water receded. Kish was then on the main course of the Euphrates, and such an overflow was probably due to a breakdown in the flood control system necessary for the highly developed perennial irrigation methods then in practice. It is from such an historic flood of still earlier times that the Biblical story of the Deluge and of Noah and the Ark developed.

Under the leadership of Sargon, a dategrower and cupbearer in the service of Ur-Zababa, king of Kish, the Agade dynasty was founded. During the rule of the Agade kings Kish was of small importance.

GREATNESS—CONQUEST—DARKNESS

With the formation of the Babylonian Empire (2049–1740 B.C.) through the infiltration and gradual rise to power of the Amorites, a western Semitic people, Kish again became a great city. The essential elements of Sumerian culture were preserved, although the racial and linguistic dominance was Semite. This cultural fusion

greatly influenced subsequent development in western Asia. Under great kings, such as the law-giver Hammurabi, the temples of Kish were rebuilt and some of its former glory attained. The Kassite rule of Baby-

> lonia (1740 B.C.) began a thousand-year period of darkness for Kish.

During the short-lived Neo-Babylonian Empire (625–539 B.C.), Kish was rebuilt by Nebuchadnezzar II and became of some importance. Kish and Babylonia fell to Cyrus, the Persian, in 539 B.C.

At the west end of the hall is the reconstructed Sasanid portal, with stucco decoration. The alcoves on either side are devoted to pottery and stucco of this period. The stucco is from the royal buildings constructed at Kish by Shapur II (A.D. 224-637). Sasa-

nid art was essentially Oriental, following the older Achaemenid (Persian Empire, 550–331 B.C.) tradition, with some admixture of Graeco-Syrian elements. This period had a pronounced effect on Moslem artistic development, and even influenced western style. The Sasanid Empire fell with the rise of Islam.

The walls of the Babylonian Hall are decorated with cylinder and stamp seal impressions representing the major periods in Near Eastern glyptic art. The reproductions in this frieze are enlarged approximately twenty-five times. They depict nearly all phases of the life of the times, with emphasis on the mythological.

Cylinder seals originated during the Uruk period in the fourth millenium B.C., and were used for more than 3,000 years by peoples of the Near East. They are engraved in intaglio on the curved surface. Both before and after the invention of writing, they were utilized for many types of sealing purposes. Moist clay plastered about the cover of a

jar and rolled over by a seal would prevent any tampering with the contents without destruction of the owner's seal impression. An impression on a lump of clay placed over the knot of a cord would protect merchandise tied in a bundle. A dab of impressed clay on an object would label its ownership. The earliest written documents bear seal impressions. Business transactions written on clay tablets were legalized by the seal impressions of witnesses, and state letters of various kinds were authenticated by the seals of officials.

Stone of all kinds, usually of the harder varieties, was the most generally used material for the cylinders. Copper and bronze gravers and the bow-drill were the tools of the early seal-cutter. Although in later Assyrian and Neo-Babylonian times stamp seals began to replace cylinders, it was not until after the fall of the Persian empire in 331 B.C. that the cylinder seal died out. Stamp seals were engraved only on the base. They were made of the same materials that were used for cylinders, and the engraving technique was similar. The stamp was better suited than the cylinder for use on the newer writing materials that gradually displaced the clay tablet.

#### KISH HAD MUCH THAT'S "MODERN"

Within the limits imposed in this publication it is impossible to cover adequately the full scope of such an exhibit as this hall contains, or even merely to list all of its features. Mention should be made, however, of at least a few. Of special interest, for example, is the display of building materials such as bricks, sewer pipes, and door hinges, together with model walls showing methods of construction employed by the inhabitants of Kish. Some of these are



Richard A. Martin

Field Museum's Curator of Near Eastern Archaeology, who conducted the necessary atudies, and supervised the installation of the exhibits in the new Hall of Babylonian Archaeology. In this picture Mr. Martin is showing a young visitor toys (now displayed in the hall) of children who lived 4,500 years ago.

marked by an amazing similarity to the building materials and methods employed today in our own communities, for some of the bricks are almost indistinguishable from those now turned out by Chicago

brickyards, and the masonry methods were basically the same as those of American bricklayers. Notable also is the selection of examples of cuneiform writing, the bone stylus with which this writing was done, and the tablets illustrating the various types of things that were recorded—historical events, and the more prosaic documents of law and business, such as a real



Kish Citizen of 4,500 Years Ago

Front and profile views of a tiny Sumerian portrait sculpture found by the Field Museum-Oxford Expedition. The actual object is only about one-seventh the size of the illustrations. The head possesses characteristics typical of the art associated with this period.

estate contract, a land survey, records of the sale of various commodities, receipts, loan records, and school exercises.

#### GAMBLING DEVICES SHOWN

Even as now, illegitimate business also had its sway, as is revealed by a large number of gambling devices of various sorts. The visitor's attention will be arrested likewise by the exhibits of glass vessels of the Sasanid period; the variety of lamps ranging from 3000 B.C. down to Arab times; the weights and measures used in petty transactions by the small merchants equivalent to the corner grocers and butchers of today; the great variety of figurines ranging from the beautiful to the grotesque; the important cylinder and stamp seals from the enlargement of which construction of the hall's great frieze was made possible; artistic inlay work, and amulets and charms to cause good fortune to one's self or ill fortune to one's enemies; the tools of industry and the weapons of warfare; the personal ornaments and the toilet articles and cosmetics which indicate that then, as now, women were anxious to embellish their natural charms; and finally, of interest to the sportsman, a collection of bronze fish-hooks and net-sinkers of pottery and stone.

#### Earliest Fossils Shown

The life of the Cambrian, earliest period from which fossils have been abundantly preserved, is represented in Ernest R. Graham Hall (Hall 38) by an extensive series of trilobites, brachiopods, seaweeds, and other primitive forms.

Models of the famous palace of Mitla in the state of Oaxaca, Mexico, and of the earliest known Maya building-a stuccocovered pyramid at Uaxactun, Guatemala —are exhibited in Hall 8.

#### SEMINOLE GREEN CORN DANCE

BY ALEXANDER SPOEHR ASSISTANT CURATOR OF AMERICAN ETHNOLOGY AND ARCHAEOLOGY

To a small handful of Indians in the interior of Florida, June is probably the most important month of the year. A few days before the new moon makes its appearance, these Indians-the Cow Creek band of the Florida Seminole—start for a secluded spot far from the highways and towns of the whites. In the appointed place, the Indians gather for the annual spring rites they have celebrated since time immemorial and which go by the name of the Green Corn Dance. The spot selected for the dance is so inaccessible that few whites attend and the Indians are left to themselves.

The dance ground of the Cow Creek band is simply a fresh green meadow set in the midst of a pine forest. A place is cleared of leaves and grass for the dancers, a fire is built in the center, an open-sided arbor for the men is constructed at one side, and the dance ground is ready. Around it the five or six clans set up their individual camps and the celebration commences. Usually it lasts for a week or ten days with the last four or five nights devoted to dancing. Ostensibly the Green Corn Dance has both a social and religious purpose. It is partly a big get-together with plenty of hard liquor for everybody. However, the last day is primarily religious. It is then that men rid themselves of the year's accumulation of sins through the purifying effects of fasting and taking the "black drink," an emetic to which the Indians ascribe magical powers, while by common participation in the dance the whole group achieves a feeling of social solidarity and oneness. The dancing continues through the entire last night, with short spells of rest. Around and around the fire the Indians pound, singing the ancient songs that combine the strength and melancholy so characteristic of much Indian music. The light from the fire flickers on the faces of the dancers and spectators. Finally the dawn breaks. The exhausted dancers stop, and the men strip to the waist and with sharp needles scratch each other's backs, arms, and legs until the blood flows. The scratching lets out the "bad blood" and like the black drink has a purifying effect. Finally there is a ceremonial eating of the green corn, in ancient days a principal food supply, and the ceremony is over for another year.

#### FOUGHT U. S. IN 1835-42

The Florida Seminole are the remnants of a tribe that fought bitterly to stop the invasion of the whites. The Seminole War of 1835-42 cost the United States the lives of 1,500 American troops and \$20,000,000, even though the Indians numbered only a few thousand in all, including women and children. Eventually the tribe was defeated and most of them moved to Oklahoma. A few refused to surrender and retired into

the fastness of the southern interior. Today. the Florida Seminole number approximately 600, with about 175 belonging to the Cow Creek band. Although the development of Florida has once again engulfed them in the white civilization which many of the Indians consider to be one of the less attractive weeds in the garden of history, they cling to much of the old life and the ceremonies are not forgotten.

The costumes, ornaments and utensils of these people are shown in Case 1 of James Nelson and Anna Louise Raymond Hall (Hall 4), which is devoted to the Ethnology of the Woodland Tribes.

#### THE FOUR-TUSKED MASTODON

A skull of a four-tusked Mastodon from Pliocene deposits of Nebraska is among the new exhibits in Ernest R. Graham Hall (Hall 38). These animals, like other members of the elephant order, were immigrants from Asia, and reached North America by way of a land bridge across Bering Strait. They appeared suddenly and in considerable numbers on the plains of Nebraska and Kansas, and were doubtless distributed over a large part of this continent.

The four-tusker, a species of Serridentinus, was a large-headed animal which stood about eight and one-half feet in height. The upper tusks were only three feet in length; the lower jaws were long and narrow and from them projected a pair of slender tusks barely a foot long. The animal was a browser, and apparently lived upon the shrubs and trees which grew along the valleys of larger streams. Its appearance is well illustrated in a mural painting, by Mr. Charles R. Knight, in Hall 38. The larger species, Mastodon americanus, abundant in the woodlands of the central and eastern states, was a later member of the elephant order which had grown larger and had lost all hut the merest vestige of the lower tusks.-E. S. R.

#### THE KEY TO THE GREAT FRIEZE IN THE HALL OF **BABYLONIA**

is provided by Ancient Seals of the Near East, a leaflet by Mr. Richard A. Martin, Curator of Near Eastern Archaeology, just published by Field Museum Press. The leaflet contains collotype plates of 22 of the mythological scenes represented in the frieze which, like all the exhibits in this new and remarkable hall (see page 1 of this FIELD MUSEUM NEWS) was prepared and installed under Mr. Martin's

On sale at THE BOOK SHOP of FIELD MUSEUM-25 cents.

## FROM ARKANSAS TO MADAGASCAR Tracing a Turtle's Genealogy—a Dip Into the Science of Animal Geography

BY KARL P. SCHMIDT
CURATOR OF AMPHIBIANS AND REPTILES

Anyone who has seen the gigantic skeleton of some long-extinct dinosaur in a museum, or has seen the tusks and molar teeth of a mammoth uncovered in an Illinois gravel pit, might conjecture that the search for such spectacular remains of the past life of the earth must be one of the most romantic of human occupations. This casual impression needs additional insights. search for fossils immediately involves the vast panorama of the science of geology. Even fossil remains less apparently distinguished may have a special interest and importance, as they afford glimpses of great problems of evolution and of ancient geography, and contribute to their solution.

#### SOME AMATEURS TURN PROFESSIONAL

The search for fossils is for the most part pursued by trained paleontologists. An amateur fossil hunter may destroy the very bones he desires to collect, or may erase beyond recovery the important information conveyed by their situation in place in the ground. It is nevertheless noteworthy that no small number of professional fossil hunters have come from the ranks of amateurs, gaining their training either in the hard school of trial and error, or by working for some seasons with an experienced man.

Mr. C. M. Barber, of Hot Springs, Arkansas, is such an amateur fossil collector. Intrigued by finding the remains of gigantic marine lizards and the vertebrae of longnecked plesiosaurs in the gullied fields of western Arkansas, finding little written about the vertebrate fossils of his state, and perhaps spurred by recollections of his years of service as a zoological collector for Field Museum, he has used such time as he could spare from his farming for the progressively more and more thorough exploration of the Cretaceous deposits in Arkansas. These deposits were made in the shallow seas of that age along the coasts of a great northward extension of the Gulf of Mexico known to geologists as the Mississippi Embayment. While plesiosaurs and mosasaurs were the most conspicuous of his finds, scattered remains of marine turtles called his attention to the fact that little was known about these creatures from the Cretaceous beds of the "Gulf Series," though gigantic and remarkable ones had been described from the Kansas chalk beds deposited in interior seas of equivalent age.

#### FOSSIL SIDE-NECKED TURTLES

Successive finds of fragmentary turtle remains were disappointing, but persistent search led Mr. Barber to a remarkable success on a field trip to the vicinity of Delight, Arkansas, in 1938. A large number of fragments of a turtle shell lay scattered for thirty feet or more along the bottom of a

gully, and though separated and much broken, the bones were little worn and obviously belonged to a single good-sized specimen. Some of these fragments were easily fitted together, and from characteristic scars on the inner surface of the posterior plates of the lower shell, it was immediately evident that the new specimen belonged to the group of side-necked turtles. These are strange primitive forms, which, instead of pulling the head back with a vertical flexure of the neck like our familiar modern turtles, bend the neck sidewise and conceal the head quite inefficiently under the edge of the shell. The side-necked turtles form one of the principal divisions (the Pleurodira) of the turtle group. Their living representatives are confined to the southern continents-Australia, South America, and Africa and to the island of Madagascar.

Since only a few fossil side-necked turtles are known from North America, and none from either the Mississippi Embayment or from the seas whose record is preserved by the chalk beds of Kansas, Mr. Barber soon reached the conclusion that his specimen must represent an undescribed form. He had discussed the fossil turtles of Arkansas with the writer during the latter's visit to the Quachita Mountains in April, 1938, on the occasion of a collecting trip for salamanders in which Mr. Barber joined. My interest in his more fragmentary fossils had led him to present them to Field Museum for study; and it was his desire that the description of the new find be placed in my hands. In view of the obvious scientific importance of the specimen, it was purchased by Field Museum.

#### 100-MILLION-YEAR OLD JIGSAW PUZZLE

On its arrival in our paleontological laboratory, Mr. James H. Quinn, staff preparator, and I set to work in earnest on this most exciting kind of all possible jigsaw puzzles. Putting these fragments together meant that we would envisage the appearance of a turtle that lived in our coastal seas about a hundred million years ago. We were fortunate in having so large a proportion of our turtle to work with. Mr. Quinn's fund of experience on similar problems, combined with the inexhaustible patience which is a necessary qualification for the work of his laboratory, enabled us to assemble first the eleven bones of the lower shell, the plastron, and then the more difficult upper shell, the carapace, with its forty-seven separate bones. Many of these bony elements were broken into a great number of pieces. The exactness with which opposing surfaces of such fragments fit when they are correctly matched is extremely convincing. Every piece of bone so fitted added to the ease with which the remaining ones could be placed. Meanwhile, Mr. Barber continued to visit the original gully after every heavy rain, and continued to send us additional fragments of his turtle. It was a peculiar triumph to

fill gap after gap in our growing turtle shell with segments of bone found a year after the original discovery. We were aided in the final stages of the work of assembly by Mr. Stanley Kuzeck, who patiently matched the fragments of the much crushed bones that join the upper and lower shells. The resulting shell with the outlines of even the missing bones decipherable, is an unusually perfect fossil, considering its Cretaceous age—a credit alike to Mr. Barber's persistent search in the field and Mr. Quinn's skill and patience in the laboratory.

In assembling the shell we had been struck by the presence of a pair of bones, one on each side, in the bridge which connects the plastron to the carapace. These bones, the "mesoplastra," simplify the search for the relatives of our turtle. Among living members of the turtle group, the giant river turtles of South America have these extra bones in almost the same situation in the shell. Comparison of our fossil shell with a skeletonized specimen of Podocnemis expansa from the Amazon disclosed only relatively trivial differences, such as the presence of a notch at the front of the upper shell in the fossil form. We were forced to the conclusion that we had before us a North American representative of the genus *Podocnemis*; and our turtle was accordingly described in a technical paper in the Museum's Geological Series, under the name Podocnemis barberi.

#### A PREDICTION FULFILLED

It is no small gratification that the discovery of *Podocnemis barberi* in Arkansas fulfills a prediction. In describing a fossil turtle of this genus from the Eocene of Peru in 1931, I stated that we might expect to find members of this group in North America in deposits of earlier geologic age. To explain this prediction it is necessary to set forth its relation to one of the great problems of animal distribution.

The distribution of the side-necked turtles in the land masses of the southern hemisphere was mentioned above. genus Podocnemis itself, with seven living species in the rivers of northern South America, turns out to have an eighth species Various other in far-off Madagascar. Madagascan reptiles, and other animals as well, have South American relatives. How shall we attempt to explain such remarkable discontinuities of distribution? It is not only the fauna of Madagascar that requires an explanation. Many of the groups of animals in Australia have their nearest relatives in South America or in Africa, and still others are confined to Africa and South America. One thinks at once of the marsupials, which are mainly Australian and South American, or of the curious amphisbaenian lizards, which have their headquarters in South America and Africa.

It was long the fashion to devise complex hypotheses of land connection directly from Australia to South America or from South America to Africa to account for such facts. Such hypothetical "land bridges," perhaps imagined, for a single group of animals, introduce many more problems than they explain. Darwin writes of landbridge theorizers as "constructing continents as easily as a cook makes pancakes." If we are critical of the "land-bridge" explanation for great discontinuities of distribution we must seek other explanations.

It is obvious that the most important evidence in this whole field of inquiry is presented by fossil remains. As evidence accumulates from extinct forms of the groups of animals or plants concerned, we may find that many present day discontinuities are only apparent. We now know that marsupials lived in both North America and Eurasia in early geological periods, and interpret their occurrence in Australia and South America as remnants of their formerly continuous range. The river-turtles of the genus Podocnemis, with their solid shells, have left a goodly number of fossil remains. It was at first surprising to find these turtles in the Eocene of England and Egypt. Now that we have such fossils from South America and Africa as well, we find a nearly worldwide range in the Eocene as the explanation of the modern relicts in Madagascar and South America.

The expectation of an earlier age for the more northerly fossil forms is based on the greatest generalization about dispersal we are able to make-that the great landmasses of the north have been the principal theaters of animal evolution and progress, and that the southern continents, projecting as great peninsulae from the northern continents, have for ages received the earlier and more primitive forms displaced from the north by their more efficient descendants or successors.

BIOLOGICAL REVOLUTION STILL UNEXPLAINED

Our new Podocnemis from Arkansas casts still further light on the dispersal of the group as a whole. While all the living species are strictly confined to fresh waters, and this seems to be the case also with the fossil forms hitherto known, the beds in which Podocnemis barberi was found are plainly marine, with marine shells and remains of marine fishes. We may thus suppose that Podocnemis gained its wide distribution along the coasts of the Cretaceous seas. Its modern habitat may then be interpreted as a retreat from the sea to a refuge in freshwaters, and this may perhaps also be correlated with the still unexplained revolution which affected the life of both sea and land at the end of the Age of Reptiles.

Thus Podocnemis barberi of Arkansas takes its place with Podocnemis madagascariensis as part of the growing accumulation of evidence about the past and present distribution of animal life on our earth, which, as the science of animal geography, constitutes one of the principal fields of inquiry in a research museum.

#### **GUAIACUM**

By B. E. DAHLGREN

#### CHIEF CURATOR, DEPARTMENT OF BOTANY HAILS NEW LARD PROCESS

CHICAGO, June 17 (AP)-John Holmes, president of Swift & Co., announced today the discovery of what he described as a "revolutionary development" in the processing of lard, terming it the most important improvement in the oldest of shortenings in the past fifty years.

The development, he said, involves the addition of

reference that the said, involves the authorion of small quantities of a vegetable substance obtained from tropical trees, making it possible to protect lard's natural advantages and at the same time keeping it fresh when exposed to sir without refrigeration.

The vegetable substance, known as gum guaiac, comes from the sap of the gualacum tree, which grows

comes from the sap of the gualacum tree, which grows in the West Indies and Central America.

He described the discovery as of "vital importance" to the nation's 4,000,000 hog producers, as well as to all honsewives, grocers, meat deslers, chefs and bakers. The latest development is the result of research which began a decade ago. Dr. R. C. Newton, Swift's chief chemist, and Dr. D. P. Grettie of his staff jointly share the discovery.—New York Times.

The discovery of America, in addition to the many other world-changing effects it engendered, added several varieties of drug plants to the European pharmacopoeia. Chief of these were jalap, Peru- and Tolubalsams, ipecac, sarsaparilla, guaiacum and



Branch of Gualacum

Exhibit in Martin A. and Carrie Ryerson Hall representing a tree found in Carribbean lands from some of the Florida keys, and the West Indies and Mexico, to northern South America. For many years For many years important because of its wood, lignum vitae, once highly reputed as the source of a remedy, the tree recently gained new prominence as the source of an extract used for preserving lard without refrigeration.

quinine. The last named was, of course, the most important of all. In the sixteenth and seventeenth centuries, before the discovery of quinine, the outstanding American remedy was guaiacum, the dark greenishbrown, sometimes almost black and ebonylike heartwood of a small or medium size tree. The guaiac tree is native on most of the West Indian islands, and on some of the Florida Keys, and is represented by closely related species on the Mexican and Central American mainland and in many parts of northern South America.

Guaiac trees first came to the attention of the Spaniards in 1508, in Santo Domingo. where they noticed the Indians making use of the wood for skin affections. When,

towards the end of the sixteenth century, syphilis with its accompanying skin lesions became a scourge in southern Europe, guaiacum acquired a great reputation as a remedy and came rapidly into extraordinary demand. The wood was called lignumvitae, or wood of life, because of its supposed medicinal properties. On the strength of the medico-religious dictum cited by Monardes, that "such is the wisdom of God, that where a disease appears there a remedy is provided," the existence of guaiac trees in the New World was accepted as certain evidence of the American origin of the disease which it was supposed to cure. It has also been used as a remedy for scrofula and rheumatism.

The wood was exported in large quantity to Europe so that in the West Indies the guaiac trees almost suffered extermination. Fortunes are said to have been made in the trade in this wood. It sold for as much as seven gold crowns a pound. A Spaniard who first occupied himself with its export is said to have gained in a short time 300,000 gulden. The bark and the resin obtainable from the tree were also used, and the sapwood was declared by some authorities to be even more powerful than the heartwood. Now widely known as lignum vitae, the wood is famous for its hardness and weight. It is always in some demand but is not very abundant. Because of its tenacity and selflubricating properties it is used for wooden bushings or bearings for propeller shafts on steam and motor ships.

As a drug, both the wood and its extract are now obsolete. As a tincture it is still listed as official in the United States Dispensatory, but it is approaching the oblivion which has overtaken so many formerly highly reputed items of the apothecaries. It is therefore interesting to see it figure in the limelight of the daily news as a discovery "of vital importance," though this time not as a certain remedy for disease, but in the packing industry as a preservative for lard.

#### Model of New Guinea' "Lum"

A model of a "lum" is on exhibition in Joseph N. Field Hall (Hall A),

A lum is an odd type of structure found in native villages in New Guinea. Lums are used as houses for unmarried men of the tribe, and for shelter of guests. Each village has one or more of them. They are supported on carved posts, and the walls are made of large planks carefully carved and ornamented. The designs represent the family "crest" or "coat-of-arms" of the chief man or men of the village. The open space under the sleeping room is used as a working and lounging place. Under the floor of the lum are placed charms to cause injury to anyone who enters without the right to do so.

An extensive exhibit of cave products is a feature of Clarence Buckingham Hall.

#### Field Museum of Natural History

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

#### VANISHING CREAM TO PROTECT AGAINST POISON IVY

Because of the many inquiries regarding poison ivy received by Field Museum, an article on this plant, and on the preventives and remedies for its toxic effects, was published in the June FIELD MUSEUM NEWS. Since that publication, there has come to the attention of the Museum's Department of Botany another preventive which may be of interest to persons especially susceptible to the poison. This is a vanishing cream which is reported to afford protection. It was developed by members of the United States Public Health Service and the National Institute of Health, and is described as follows, in *Science*:

"The cream must be rubbed all over the face, hands, arms, or any other part of the body likely to come in contact with poison ivy. After four hours, when the worker stops for lunch, it should be washed off with soap and water. Then after lunch, before going out into the fields or woods again, the cream should again be thoroughly applied all over the exposed skin, and again washed off at the end of the afternoon. The reason for washing it off and reapplying it at the end of four hours is to make sure the skin is well covered and so protected against the poison ivy. Some of the cream is likely to rub off by the end of four hours and especially during the lunch hour.

"In making the cream, and any druggist can do so, 10 per cent sodium perborate is used, or 2 per cent potassium periodate. These two substances come in crystals which should be ground into powder first because the crystals will not mix well with the cream. The vanishing cream should be made first and then the chemical added, otherwise the chemical will react with other ingredients of

the vanishing cream and the result will not be satisfactory. The cream should be freshly prepared at least once in two weeks to avoid deterioration. It acts by filling the pores of the skin and forming a protective covering."

Further information is promised in a forthcoming issue of *Public Health Reports*.

#### MUSEUM CO-OPERATION IN WAR TIME

Field Museum is storing and serving as distribution center for Central American collections of mammals, reptiles, and various invertebrate animals gathered by Mr. Ivan T. Sanderson for the British Museum. Mr. Sanderson is well known for his popular accounts of previous collecting trips in Africa and the West Indies, Animal Treasure and Caribbean Treasure. Messrs. Rudyerd Boulton, Curator of Birds, and D. Dwight Davis, Assistant Curator of Anatomy and Osteology, met him at Belize, British Honduras, in the course of the recent Leon Mandel Caribbean Expedition, and finding that the war had made it undesirable, if not impossible, for Mr. Sanderson to ship his collections to London, suggested that Field Museum store them at least for the duration of the war in Europe.

This suggestion has been approved by the Museum, and the first large installment of Mr. Sanderson's collections has been received at Field Museum. At Mr. Sanderson's request, identification of some of his material will be undertaken by the Museum's specialists, and some division of the collections will ultimately be made between Field Museum and the British Museum. It is hoped that Field Museum may be of service both to the British Museum, with whose staff it has had constant cordial relations. and to Mr. Sanderson's studies in the field, which are intended to be primarily ecological and observational, and thus require identification of specimens.—K.P.S.

#### Distinguished Visitors

Among distinguished visitors recently received at Field Museum were Professor M. E. Peck, of Willamette University, Salem, Oregon, who is preparing a flora of Oregon; Dr. C. A. O'Donell, of the University of Tucumán, Argentina, monographer of South American Convolvulaceae; Dr. Carl J. Drake, Professor of Zoology and Entomology, Iowa State College, Ames, Iowa; Count Jerzy Potocki, Ambassador of Poland to the United States; Mr. Michael Huxley, of the British Embassy staff in Washington, and editor of the Geographical Magazine, and Mrs. William Bankhead, wife of the United States Senator from Alabama.

#### Sorority Hears Layman Lecturer

By special arrangement, members of the Delta Delta Delta sorority, who recently held their national convention at Mackinac Island and afterwards visited Chicago, were conducted on a lecture-tour by Mr. Paul G. Dallwig, the Layman Lecturer of Field Museum. Mr. Dallwig's subject was "The Parade of the Races," illustrated with the famous sculptures by Malvina Hoffman in Chauncey Keep Memorial Hall.

#### Former Museum Employee Dies

John Buettner, former employee of Field Museum, died July 21. He had been retired on pension since May 1, 1937, after serving the Museum as a carpenter and as a preparator since 1894. During the years Mr. Buettner spent at the Museum he worked both in the Department of Botany, and the N. W. Harris Public School Extension.

### Showy Token of Success in the Philippines

A large carved festival bench from the Ifugao tribe of northern Luzon, Philippine Islands, is on exhibition in Hall H. The bench is cut from a single log of hard wood. Such benches are found under one or more houses in each village. When a man has amassed sufficient wealth to enable him to hold a great festival, he summons his friends and bids them carve one of these great seats. During the time they are engaged in this task he furnishes them with food and liquor, and when the bench is complete he holds a great celebration to which all the people of friendly towns are invited. Native liquor and rice are served in abundance, while many animals are slaughtered for food. For several days the people feast, dance, and sing of the virtues of their host.

#### 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 upou 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 achools, 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.

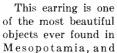
#### THINGS YOU MAY HAVE MISSED

#### A Gold Earring from Kish

An elaborate gold earring found in a grave belonging to the period of Nebuchadnezzar II, who ruled over the great Neo-Babylonian Empire about 2,500 years ago, is on exhibition in the new Hall of Babylonian Archaeology (Hall K-see page 1).

Until recently, pending completion of Hall K, it was exhibited in Stanley Field Hall.

The earring was unearthed in 1931 by the Field Museum-Oxford University Joint Expedition to Mesopotamia, and observations by the expedition personnel make plausible the suggestion that it may have been worn by a lady at the court of King Nebuchadnezzar.





Anclent Earring

bears eloquent witness to the artistic ability of the Babylonian craftsmen. The upper part is composed of a wire gold loop for attachment to the ear lobe. The remaining portions of the earring are hollow and were fashioned separately from thin gold sheet and then delicately fused together. One end of the loop is attached to a lunate ornament decorated with three rows of tiny repoussé beads. Below this is a fluted ball fastened to a plain collar, decorated around the base with the small bead motif; and beneath that is a larger fluted ball, from which hang two rows of six globes. At the base of each small globe is a pyramidal ornament of six round beads in the shape of a grape cluster. The central lower portion of the earring consists of two larger beads placed one above the other and terminated by a cluster of ten small beads.

Many other earrings of gold, silver, and bronze are also on exhibition, representing various periods from 3000 B.C. to A.D. 400.

#### SOME WIND CUT PEBBLES OF THE GLACIAL EPOCH

BY BRYANT MATHER ASSISTANT CURATOR OF MINERALOGY

The erosional action of water is well known. Not so well known is the action of wind-blown sand and dust. The Department of Geology of Field Museum has received, as a gift, a series of six pebbles which show that there was intense wind erosion taking place in western Cape Cod and contiguous areas of eastern Massachusetts at the time when the last of the ice of the glacial epoch was melting. The pebbles represent several types of rock, and show several sorts of wind abraded forms. They were obtained from Dr. Lincoln R. Thiesmeyer, Assistant Professor of Geology at Lawrence College, Appleton, Wisconsin.

These pebbles are of especial interest not only because they show modification in shape by wind cutting, but also because they were found in undisturbed deposits of till and outwash, two forms of glacial debris. From this fact, it can be shown that their cutting took place during the later substages of Wisconsin glaciation during recession and local readvance of the ice, and was completed before the entire disappearance of ice blocks.

They show a less high polish than most recent wind-cut pebbles or ventifacts, as they are called. It is not determined whether this is due to the removal of original polish during the thousands of years throughout which they have lain in the ground, or to their never having had a high polish developed on them.

The pebbles were collected by Dr. Thiesmeyer and his colleagues, Dr. Richard P. Goldthwait and Dr. Kirtley F. Mather, on an expedition under the auspices of the United States Geological Survey in the summer of 1939. A paper written by these three geologists, describing the forms and occurrence of the pebbles, was read at the December, 1939, meeting of the Geological Society of America in Minneapolis.

This group of six pebbles not only shows the effects of the wind as an erosional agency, but also serves to illustrate one of the ways in which we may reconstruct conditions as they existed thousands of years ago. Our understanding of past conditions is based on the effects which these conditions had upon the objects which survive today from those distant times. Since this understanding depends, in this case, upon our having correctly understood the evidences of wind abrasion on modern pebbles, these glacial ventifacts have been placed on display in Clarence Buckingham Hall (Hall 35, "Weathering" Case) in association with the collection of recent ventifacts brought together from many parts of the world.

#### Up-to-date Egyptology

Two little boys were in the Egyptian section of Field Museum gazing at a mummy. Over it hung a card bearing the inscription, "1187 B. C." "Gee, Jimmie," said one, "what do you suppose that sign means?" "Aw," said Jimmie, "that's the license number of the car that killed him."-Mrs. J. Semrau, 3652 Christiana Avenue, Chicago.—Chicago Sunday Times.

Of special significance in demonstrating the theory of evolution is a "family tree" of amphibian and reptile skeletons on exhibition in Hall 19.

#### SOUTH DAKOTA FOSSIL DEPOSITS YIELD NOTABLE SPECIMENS

A collection that gives promise of being one of the best representations of the fossil mammals of the Rosebud Beds in South Dakota has been obtained by Field Museum's current paleontological expedition, according to reports received from Mr. Paul O. McGrew, of the Department of Geology staff, who is the leader.

The specimens collected are of early Miocene age (about 18,000,000 years ago), and among them are a number of skeletons and skulls of the extinct ungulates known as oreodonts, extinct peccaries, camels, and horses. Also included is an especially fine representation of extinct species of rodents. some of which are helieved to be of kinds hitherto unknown to science. Nearly all of the material obtained represents mammals not previously represented in Field Museum's collections.

The excavations have been principally in the vicinity of Wounded Knee, famous as a battlefield during the later Indian wars of the nineteenth century. The expedition has now shifted its operations to northwestern Nebraska where the skeletons of small prehistoric camels are being excavated. Mr. McGrew is accompanied by Messrs. John Schmidt and Ellsworth Shaw, and by local collectors.

#### Gift to Museum Library

From Dr. Embrik Strand, of the Sistematiskas Zoologijas Institut, Riga, Latvia, the Library has received a much appreciated gift-the five volumes of the Festschrift dedicated to Dr. Strand's sixtieth birthday.

#### A HANDY MANUAL FOR IDENTIFYING TREES

"For the would-be arborealist who knows little or nothing about common trees and shrubs, and yet wishes to be able to name them easily, the simplest and most readily usable pamphlet is Learn the Trees from Leaf Prints," says Dr. Julian A. Steyermark, Assistant Curator of the Herbarium at Field Museum. "Large illustrations of 194 common trees and shrubs are included, enabling the beginner to match easily a majority of the leaves he may encounter in a single season in any of the central or eastern states. All that he needs to do is to pick a leaf and then match it with one of the prints shown in the booklet. This manual should be especially useful for boy scouts and high school students who regularly make collections of leaves."

On sale at THE BOOK SHOP of FIELD MUSEUM—\$1.

#### 3 MORE CHILDREN'S PROGRAMS TO BE GIVEN IN AUGUST

On the first three Thursday mornings during August, the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures will present the final programs in its summer series for children. Both talking and silent motion pictures will be shown. The programs are given in the James Simpson Theatre of the Museum, and all begin at 10 A.M. Admission is free, and children from all parts of Chicago and suburbs are invited. Following are the details of each program:

August 1-Nanook of the North, and animated cartoon.

August 8-In The South Seas With Gifford Pinchot.

August 15-Animals of the Polar Regions, and animated cartoon.

No tickets are necessary for admission. Children may come alone, accompanied by adults, or in groups.

#### PAWNEE SACRIFICIAL CEREMONY

The periodical sacrifice of a maiden to the Morning Star by the Skidi band of the Pawnee Indians, who inhabited part of the great American plains, is graphically illustrated by a miniature group in Mary D. Sturges Hall (Hall 5, Case 52). The exhibit shows a girl bound to the scaffold, her captors hovering near-by to torture her with firebrands, shoot her through the heart with an arrow, and then burn her body.

This horrible ritual was considered a religious duty, and studies by ethnologists indicate that these Indians were not intentionally cruel. Intense religious fervor, rather than sadistic motive, is believed to have actuated the torturers, blinding them completely to the cruelty of their acts. In fact, for several months prior to the ceremony, the girl to be sacrificed, although always a prisoner kidnaped from an enemy tribe, was treated with the utmost kindness and the respect due a goddess.

An interesting conception of the creation of human life was the background for this sacrifice. According to the Pawnee legend, the god Tirawa made the stars and gave them great power. The strongest was the Morning Star, who helped his brother, the Sun, to make light. Tirawa made the stars like human beings, placing those like men in the east with the Morning Star and Sun as rulers, and those like women in the west, with the Evening Star and Moon as

Many of the eastern stars one by one invaded the west to seek the female stars in marriage. The Moon would meet them and lure them to destruction. Finally the Morning Star and the Sun came. The Moon sought to destroy them, too, but they, possessing greater magical powers, circumvented her trickery. Conquered, the Moon married the Sun, and the Evening Star married the Morning Star. A child was born to each couple, these children were placed on the earth where they married, and from them and their progeny sprang the entire human race.

The sacrifices to the Morning Star were made due to this legend, the Indians believing that the star demanded a human maiden from time to time in return for his boons to mankind. In the death of the girl, they believed, the life of the earth was renewed, and universal fertility and increase were assured.

#### GIFTS TO THE MUSEUM

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

Department of Botany:

From Dr. Jules Brunel, Montreal, Canada -51 specimens of Myxophyceae, Province of Quebec; from Donald Richards, Chicago-19 specimens of cryptogams, Indiana and Illinois; from J. R. Hurt, Columbia, Mo. -44 specimens of algae, Missouri; from Dr. George D. Fuller, Chicago-30 herbarium specimens, Illinois.

Department of Geology:

From William B. Pitts, Sunnyvale, Calif. -2 plaques of chiastolite, Massachusetts and Australia; from George T. Myers, Jamestown, Tenn.-12 specimens of barite, Tennessee.

Department of Zoology:

From Princess Sigismund of Prussia, Finca San Miguel, Barranca, Costa Rica-23 specimens of spiders, wasps, beetles, roaches, and other insects, Costa Rica; from Harry Hoogstraal, Champaign, Ill.-49 mammals, including 5 odd skulls, Mexico; from Dr. Alfonso Dampf, Mexico City-7 bats, Mexico and Guatemala; from George L. Artamanoff, Chicago—31 beetles, bugs, grasshoppers, and other insects, Venezuela and Colombia.

The Library:

Valuable books from H. A. Gleason, New York City; Carnegie Institution, Washington, D.C.; Kojiro Aoe, Mikage, Japan; Ivan T. Sanderson, London, England; Mrs. Georg Vetlesen, New York City; Holst Publishing Company, Boone, Iowa; and from Clifford C. Gregg, Dr. Henry Field, Bert E. Grove, and Karl P. Schmidt, all of Chicago.

#### **NEW MEMBERS**

The following persons became Members of Field Museum during the period from June 17 to July 15:

#### Associate Members

Frederick M. Kasch, Dr. Eleanor I. Leslie, Dr. Harry C. Rolnick, Dr. Milton Steinberg.

#### Annual Membera

Darrell S. Boyd, William S. Cochran, Sigmund W. David, Elmer W. Donahue, John C. Goodall, Rev. William J. Gorman, A. I. Helland, E. J. Kamin, Frank Kaplan, Harry L. Kirshbaum, John A. Prosser, A. W. Weissbrenner.

#### **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., Halls of Primitive and Civilized Peoples; 2 P.M., General Tour of Exhibition Halls.

Tuesdays: 11 A.M., Animal Groups; 2 P.M., General Tour of Exhibition Halls.

Wednesdays: 11 A.M., Minerals and Prehistoric Life; 2 P.M., General Tour of Exhibition Halls.

Thursdays: 11 A.M. and 2 P.M., General Tours of Exhibition Halls.

Fridays: 11 A.M., Plant Life Exhibits; 2 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 North Entrance. Tours are free. Guide-lecturer's services for special tours by parties of ten or more may be arranged for with the Director a week in advance.

A collection of rare material representing the Naskapi Indians of Labrador is exhibited in James Nelson and Anna Louise Raymond Hall (Hall 4).

#### MEMBERSHIP IN FIELD MUSEUM

Field Museum has several classes of Mem-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 Associate Members \$50; both of these classes are also exempt from dues. classea are also exempt from dues. The Non-Resident memberships are available only to persona 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 Cor-porate, additions under these classifications being made by special action of the Board of Trusteea.

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 Mem-bers. 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 informa-tion about memberships will be sent on request.

#### BEOUESTS 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

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.

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#### A SERIES OF MURAL PAINTINGS TELLS STORY OF THE WORLD'S FOOD PLANTS

BY B. E. DAHLGREN CHIEF CURATOR, DEPARTMENT OF BOTANY

After more than two years of work, a colorful series of mural paintings has recently been completed to embellish the Hall of Food Plants (Hall 25) in the Department of Botany. Installation of these paintings on the walls was finished last

month. They are the work of Mr. Julius Moessel, Chicago artist. They supplement the exhibits of plants and their products, illustrating methods of cultivation, and emphasizing the economic and social aspects of plant husbandry and of the distribution of the products of agriculture. Viewing them, one cannot fail to be impressed with the truth that man's destiny the world over is wedded to

the soil.

The south side of this hall has long been occupied by a display of the principal cultivated plants and their products, especially those that almost everywhere constitute man's most important staple foods, such as wheat, rice, corn, and sugar cane. Also exhibited are less generally known food plants of more regional importance, such as taro of the Pacific area, millets and sorghums of Africa, and manioc or cassava of tropical America (Central and South).

In the General Guide to the collections of the Museum this exhibit is briefly described as follows: "The principal grains such as wheat, rice, and rye, are exhibited, and, in more detail, heads of the chief wheats and barleys of the United States with the United States government grain standards. The exhibit includes the primi-

tive cultivated grains, einkorn, emmer, and spelt; also samples of ancient barley and wheat from Mesopotamia reputed to be 5,000 years old, and of wheat from the pyramids of Egypt. A miniature mill illustrates the modern process of flourmaking, and various samples show the steps in manufacture and the characteristics of

various countries give an idea of the many kinds that are used for food. Exhibits of spices and nuts furnish an interesting study in plant geography. Most common beverages are seen to be of vegetable origin, and fall into two main groups. One group includes coffee, tea, cacao, mate, cola, guaraná, etc., with mildly stimulating properties

Mexican Market Scene

One of the seventeen large new mural paintings by Mr. Julius Moessel, installed on the walls of the Hall of Food Plants (Hall 25). This illustration reproduces a color photograph taken by Mr. Clarence B. Mitchell, the Museum's Research Associate in Photography, and is printed from a plate which he has presented to the institution. The Moessel murals depict the production, gathering, and distribution of vegetable food in many parts of the world, and represent scenes typifying conditions of both past and present times.

the chief commercial grades of flour. The five main types of corn are shown; also ancient corn from the Mound Builders, Cliff Dwellers, and Peruvian burials. Products manufactured from various small grains, and a detailed exhibit of those from corn kernels, are displayed, the latter with material illustrating the principal steps in their manufacture.

"Cane and beet sugar, in an exhibit illustrating various steps in manufacture, are shown together with various forms of sugar from native markets of many countries. Edible vegetable oils, domestic and foreign, are displayed with the seeds or fruits from which they are obtained. The chief commercial starches of the world are shown in conjunction with their respective plant sources. Leguminous seeds from due to caffeine, theine, or similar alkaloid. The other group comprises fermented beverages in use in all parts of the world. such as palm wine, piwarri, awa, and pulque, as well as the more familiar cider, grape wines, etc., with their distilled derivatives. A large variety of tea and coffee is shown together with an exhibit of the New York Coffee Exchange standard of grading. Enlarged photographs portray the

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principal steps in the production of these commodities. In proximity to the collections of coffee and tea samples are dioramas showing on a small scale a modern coffee plantation and a tea plantation. In a separate floor case there is a natural size reproduction of a tea bush in flower and fruit. In a case at the east end of the hall are shown the principal vegetable foods of New World origin. It is planned to add a case showing Old World food plants. The chief edible fruits are omitted, being represented throughout the botanical exhibits in Martin A. and Carrie Ryerson Hall (Hall 29)."

A few years ago a series of colored transparencies were placed in the windows adjoining this display to help give some idea of the conditions under which many of these food plants are grown and harvested.

Now, the series of seventeen murals by Mr. Moessel, of which the last ones were completed in recent weeks, serves not only to further this purpose but to brighten and add color to the hall. The principal service of the murals is to emphasize what the less striking material in the exhibit can only suggest, viz., the fundamental importance of the cultivated food plants, and their vital significance to our human economy. With the addition of this series of paintings, the whole exhibit has acquired added meaning. Man's quest for vegetable food stands revealed as one of his major concerns, closely bound up with his most essential activities. In these paintings the prosaic occupations of planting, harvesting, processing, and distribution are seen to have a most intimate relation to the numerous items of plants and plant products displayed.

#### MANY PROCESSES ILLUSTRATED

The sequence of the paintings is logical and progressive. Primitive man is first shown as a gatherer or collector of the natural foodstuff offered by his environment, then as a primitive planter using a pointed stick as his only implement, and later as an agriculturist more or less advanced according to his methods, his implements, and his source of power. Methods of preparing the soil—by burning, a practice which is still employed in many parts of the world, by hoeing which is entirely by human labor, and by plowing which at first was a mere superficial scratching of the surface, but required the aid of domesticated animals-are shown, as are the processes of sowing, harvesting, and threshing. Milling and baking, sugar making, and oil pressing are seen to be typical activities concerned with the production and preparation of vegetable foodstuffs. Nine of the murals are given to these varied and important processes.

Five murals, including the one reproduced in this issue of FIELD MUSEUM NEWS, depict scenes concerned with distribution, transportation, and trade in vegetable foodstuffs. One of the five is a map of the ancient trade routes over which all commerce was carried on for thousands of years before the era of geographical discoveries suddenly enlarged the boundaries of man's activity by revealing new continents and sea routes to all parts of the world.

The painting reproduced here shows an open-air market in a town of southern Mexico. Similar outdoor market scenes, differing in local particulars, may be observed almost anywhere in the American tropics. Most of the products displayed, such as squashes, papayas, and tomatoes, are typically American; others, such as citrus fruit and watermelon, belong to that large group of cultivated plants of Old World origin that are now grown almost everywhere on the earth.

The entire series of paintings ends with a map showing the principal centers of origin of cultivated plants, according to the most modern conception.

#### MOESSEL AN OUTSTANDING MURALIST

The artist who has executed this extensive series of murals, a commission requiring almost two and a half years, is no stranger to the Chicago public. Once renowned in Germany, famous for the power of his painting and his versatility, Mr. Moessel has made his home here since the first world war. He has been responsible for many projects of interior decoration in this country. When, on rare occasions, he exhibits his work, it is usually not as an exhibitor of a single picture, but of a gallery full of decorative canvases. Birds, four-footed animals, and exotic plants appear to be his special interest. These are often combined by him into vivid and strange decorative scenes. The brilliant tropical birds are his favorites-parrots, macaws, toucans, ibises, flamingoes, and penguins. Some of his often grim humor finds expression in his portraits of the orang-utans and monkeys. These occasionally decorate the cover of the Saturday Evening Post.

Mr. Moessel understands, as few decorative painters do, the qualities that are required in a successful mural. Such a painting cannot be simply a picture to fill a gilt frame according to the artist's ability and fancy, like lesser subjects, but must be designed as a treatment of a wall space which remains a part of the wall in a given architectural setting. Critics of Mr. Moessel's work have repeatedly testified that he is neither a primitive nor a modernist. His murals are thoroughly realistic, but are simple and pictorial, as well as decorative. He likes to paint in a high key but his brilliant colors are not unduly vivid.

After the many months of sketching and painting, sometimes with furious energy following a troublesome search for facts and elements which had to enter into each particular scene, Mr. Moessel has produced in these seventeen murals what is probably his most significant single piece of work, The Story of Food Plants, which may be read on the walls of this Museum hall.

As an example of the practical application of the art of the painter toward the fulfillment of the educational function of the Museum, the successful completion of this notable series of murals should be of particular interest to all Museum Members, as well as to other visitors.

## SPECIAL LECTURE TOUR OF BOTANY MURALS

A special lecture tour in the Hall of Food Plants (Hall 25), with particular attention to the new series of mural paintings of agricultural subjects, will be given on Thursday, September 5, at 2:30 P.M. Miss Marie Pabst, of the Museum staff, will be the lecturer.

#### A TROJAN HORSE PARALLEL IN ANCIENT EGYPT

A perusal of history reveals countless "Trojan horses," in many countries, and from earliest times right down to certain events of the last few months. Egypt used the Trojan horse strategy some three hundred years earlier than the classical example which enabled the Greeks to take Troy and reclaim the fair Helen. The fall of Troy occurred about 1200 B.C. About 1500 B.C. there was a war between the Egyptians, and the Prince of Jappa (Jaffa). Egyptian general Thutiy's campaign had been unsuccessful, and the prince was apparently close to victory. During a discussion of peace prospects, Thutiy managed to get the prince asleep with powerful potations, and then clubbed him senseless. To the prince's wife Thutiy sent 500 soldiers carrying sacks. They brought a message that the Egyptians had surrendered, and that the sacks contained booty. Admitted within the city gates, they opened the sacks, and out came 200 more soldiers, providing a force strong enough to capture the city.

#### EARLIEST PAPER AND BOOKS

There is ample evidence to support the theory that the Chinese invented paper and printing. A piece of paper bearing the Chinese equivalent of the date A.D. 264 was found at Loulan in Chinese Turkestan. It is, so far as is known, the earliest dated piece. The earliest printed book which has been found bears the date A.D. 868 (two centuries before the Norman conquest of England). It was discovered, in 1907, in the forgotten, walled up library of a Buddhist cave-temple carved from solid rock near Tun-huang, in the far western Kansu province of China.

Paper was first brought to official notice in China some time before A.D. 105. In the central Asiatic desert, along the old silk route, archaeologists have discovered paper at least 1,000 years older than any known in Europe. Some scraps of this still bear legible dates and other writing. Much of that found was in the ruins of watch towers and fortresses which were abandoned by about A.D. 150. Significantly, the earliest samples were found on the Chinese side of the desert, while later ones were successively farther west. Other evidence indicates that the art of paper-making reached Samarkand (Russian Turkestan, in Central Asia) about A.D. 751. In Baghdad it became known about A.D. 793; in Egypt about A.D. 900; in Morocco about 1,000; in Spain, 1150; in France, 1189; in Italy, 1276; in Nuremberg, Germany, in 1391; and in England in 1494 (two years after Columbus's discovery of America).

Field Museum's collection of Coptic textiles from ancient Egypt, on display in Hall J, is one of the two largest collections of the kind in this country.

#### AN EXPEDITION TO COLLECT FOR GEOLOGY EXHIBITS

An expedition to various localities in Wyoming, Colorado, and South Dakota, and also in various eastern states, to collect specimens relating to structural and dynamic geology, was dispatched by Field Museum on August 16. Mr. Sharat K. Roy, Curator of Geology, is conducting the expedition, and will probably remain in the field for about ten weeks.

The expedition is to continue field work which Mr. Roy performed in 1937 and 1938. It is expected that this season's work will furnish the specimens required to fill gaps now existing in the exhibits in Clarence Buckingham Hall (Hall 35-Physical Geology and Lithology). The collecting of specimens to demonstrate scientific facts in physical geology is a difficult task in the sense that the subject includes so many varying phases that the collector must go to a great many places to obtain suitable specimens for a comprehensive exhibit. A great deal of time is required in the collecting because the specimens almost always have to be chiseled out from solid rocks, and sometimes must be blasted out.

During part of his work in the east, Mr. Roy will be joined by Mr. Henry Herpers, Assistant Curator of Geology.

#### THINGS YOU MAY HAVE MISSED

#### Whistling Arrows That Functioned Like Today's Screaming Bombs

Analogies between ancient and modern ways of doing things, often merely fortuitous, are somehow interesting beyond the point of sober fact. An antecedent of the modern "screaming bomb" is a case in point. Today in Europe the deadly aerial bomb is "perfected" by adding an air-resisting device which makes the bomb scream like a police siren as it hurtles to earth. Yesterday in China the heads of arrows were fitted with air chambers to make them roar in flight. Terror is the motive in both cases: a whistle added to a commonplace (!) projectile makes it seem more dangerous. There the analogy stops. The Chinese whistling arrows exhibited in Hall 32, Case 25, were used by Manchu bodyguards to frighten people off the streets when the emperor rode by. They were not dangerous because the head was large and blunt and because their speed was reduced by the air resistance which made them whistle. The modern screaming bomb on the contrary, is no less deadly because it whistles, and it is supposed to be more efficient than an ordinary bomb in that it may destroy the morale even of people lucky enough to escape its explosion.

Whistling arrows have a long history and wide diffusion in Asia, and were known also in Europe at a time when most people who shot did so in sport. There are two principal types. One has a sharp metal point—

shaped so that it will buzz, or with a small whistle attached. This kind was made to kill, and the whistle is only an adjunct. In the other type, with its big whistling point, everything is sacrificed to noise, so the arrow is harmless. These were often used to scare up game for hunting parties.

The earliest reference to whistling arrows is probably in a Chinese history written about 100 B.C., which credits them to the Hsiung-nu of Mongolia. The historian relates that about a century before, Maotun, a young Hsiung-nu prince, used a whistling



Ancient Terror Weapon

Just as screaming bombs released from airplanes are used in the war of today to destroy enemy morale, the ancient Chinese used whistling arrows. One, from the Museum collections, is shown here by Mr. C. Martin Wilbur, Curator of Chinese Archaeology and Ethnology. The blunt head of the arrow is peierced by holes through which the rushing air produces a shricking sound when the arrow is projected into flight by the bow.

arrow to train his followers in absolute loyalty. He instructed that whenever he shot his whistling arrow at something his attendants were to shoot to kill. First he tested them by shooting at his favorite horse. Those who hesitated were executed. Then he sent the sounding arrow at his concubine, and again killed those who feared to shoot her. Next he shot at the horse of his father, the Hsiung-nu ruler. His whole troop instantly shot and killed the horse. Knowing then that he could rely on his followers to obey unhesitatingly, Maotun finally shot the whistling arrow at his father, who was thereupon instantly killed by the archers. Then Maotun seized control and welded the Hsiung-nu into a powerful confederacy that challenged China's power for several centuries.—C. M. W.

An enormous single crystal of beryl, weighing about 1,000 pounds, forms a unique exhibit in Stanley Field Hall of the Museum.

#### OLD WORLD FLORAL IMMIGRANTS ARE FOUND IN CHICAGO

BY JULIAN A. STEYERMARK
ASSISTANT CURATOR OF THE HERBARIUM

It is interesting now and then to take stock of those wild flowers which grow in our large cities on vacant lots, lawns, and railroad right-of-ways. Many of them are found to be immigrants from Europe, Asia, or sometimes, even Africa.

One of such European plants is the curly-leaved muckweed (*Potamogeton crispus*), which forms dense masses under water in the lake at Stony Island in Chicago. This pondweed is rare and has been found at only a few localities in this country.

Another worth watching for is the resupinate or reversed clover (Trifolium resupinatum). This is a relative of our common white clover (which, by the way, is also an introduced plant from the Old World), and has been brought into the United States accidentally from Europe with grass seed. It is a pretty little clover with pink flowers. Instead of the arrangement, usual in clovers, of the largest petal (called the standard) being in the upper half of the flower, the reversed clover has its largest petal in the lower half of the flower, and this characteristic is responsible for its name. Although it has been found growing on several lawns in Chicago, it thus far is quite rare in the United States.

The last immigrant to be mentioned is one recently discovered by Dr. George M. Fuller, distinguished botanist of the University of Chicago. It is Mazus japonicus, a pretty little lilac- and yellow-flowered member of the figwort family. A native of Japan, China, and the Indo-Malayan region, only recently has it become introduced in the United States where it has been found in a few cities-Philadelphia, Washington, Baton Rouge, St. Louis, and Portland, Oregon. Dr. Fuller's plant (sent to the Department of Botany for identification) was found on a lawn in Chicago, and represents the first station known from this area and from Illinois.

## MURAL PAINTINGS REPRODUCED IN LEAFLET

Sixteen of the seventeen mural paintings by Julius Moessel, recently installed in the Hall of Food Plants (Hall 25), are reproduced in collotype plates in a leaflet, *The Story of Food Plants*, just issued by Field Museum Press. The other plate is in full colors. The accompanying text, describing the action represented by each painting, is by Dr. B. E. Dahlgren, Chief Curator of Botany. The leaflet is now on sale at THE BOOK SHOP of FIELD MUSEUM. Price 25 cents. Prepaid mail orders accepted.

#### HUMAN SKULLS AS TROPHIES AND SCIENTIFIC SPECIMENS

BY WILFRID D. HAMBLY CURATOR OF AFRICAN ETHNOLOGY

In the Department of Anthropology at Field Museum are large collections of human skulls from many different races—North American Indians, Europeans, Negroes, Polynesians, and Melanesians. Among these, none are of greater interest than a collection of about three hundred skulls from islands of the Pacific Ocean, chiefly New Guinea and the New Hebrides. Most of this valuable material was acquired by Dr. Albert B. Lewis, Curator of Melanesian Ethnology, during his leadership of the Joseph N. Field Anthropological Expedition to the South Sea Islands in the years 1909–13.

Many of the skulls are the trophies of head-hunters. The taking of human heads has in many parts of the world been con-

Physical Anthropology Requires Meticulous Measurements
Dr. Willrid D. Hambly, Field Museum's Curator of African Ethnology,
measuring the length of a skull from a primitive tribesman of Malekula, an
island in the New Hebrides group in the Pacific Ocean. These people, head
hunters and cannibals, were once a terror to shipwrecked mariners. In craniometry specialized finely gauged instruments, such as that in Dr. Hambly's
hand, must be used. On the right is apparatus for measuring the profile angle.

sidered a commendable act, and a young man who had not acquired such a trophy was in some places regarded as lacking in skill and courage. In certain parts of western Africa, Borneo, and the Philippine Islands a youth had to play a successful part in a head-hunting expedition in order to prove his eligibility for matrimony.

Some skulls, however, are not the trophies of head-hunters, but are ancestral relics kept in reverence for dead relatives. Such skulls from New Guinea are often decorated with colored earth. Frequently they are embellished with an artificial nose and eyes, or the clean white skull may be decorated

with lines deeply cut into the bone in the form of elaborate geometrical designs. In the Andaman Islands respect for a relative was formerly shown by wearing the skull of the deceased as a neck ornament.

#### USED IN CRANIOMETRY

In Field Museum's physical anthropology laboratories these skulls are used for craniometric studies. "Craniometry" means "skull measurement," and as applied by the anthropologist consists of making forty-four measurements on each skull. From New Guinea 195 skulls have been thus studied recently at Field Museum. The object of this research is to obtain a general type or pattern by calculating the average dimensions. The measurements are now usually made according to metric standards, by delicate instruments graduated in centi-

meters and millimeters. By such methods one may find the average cranial capacity, length, breadth, height, and other dimensions of the skull. Other important measurements are those for facial angles, the nose, and the eyesockets.

When the measurements are recorded, those for males are segregated from those relating to females. The male skull can be distinguished by greater size, weight, and thickness of bone. It usually has thick bony brow-ridges, and at the back of the male skull heavy ridges for strong muscular attachments. The average size of the brain-box for males is appreciably larger than that for females, but notwithstanding, men must not flatter themselves that they have a resulting superiority of intellect. Size and weight of the brain bear a definite relation merely to the size and

weight of the body, and the smaller brain of woman is in proportion to her smaller muscular system.

In order to determine the ages of the skulls, the teeth are examined, and attention is given to the sutures—junctions with saw-like edges that fasten together the many bones of which a skull is composed. Students base their study of racial types on the skulls of adults only. Therefore the skulls of juveniles, which have open sutures and incomplete sets of teeth, are omitted when the measurements are recorded. The age of a skull may be estimated from the degree of closure of the various sutures. Each

suture has a usual age of closure, but after fifty years of age all sutures are likely to be closed, and the skull presents a smooth surface. The interior of the skull is studied by introducing a small electric light bulb through the hole in the base where the spinal column joins the skull.

According to the Museum's sample of 195 New Guinea skulls, one-third of the population died between the ages of twenty and twenty-five years, and about half the population failed to survive the age of thirty years. Such judgments, based on small samples, are liable to some error; but we may be sure that under primitive conditions of warfare and head-hunting for men, and of hard work and maternity for women, the death rate in early years was very high.

INTENTIONAL DEFORMATION

A visitor who glances over the collection of skulls from Melanesia will be likely to remark at once on the peculiar shape of skulls from the island of Malekula. These are intentionally deformed during infancy by fixing a tight cap on the head of the child. Such deformation has been practised by peoples in several parts of the world, including the Indians of the northwest coast of North America. Examples of cranial deformation may be seen in Chauncey Keep Memorial Hall (Hall 3), where the races of mankind are represented in bronze. All evidence indicates that no mental defect is caused through deformation of the head by binding.

A comparative study of the average measurements made on skulls from different races presents difficulties. Collections are often small, whereas, to guarantee reliable averages, a large number of skulls of each race should be measured. Craniometry is a somewhat recent science, and some of the old rough-and-ready methods of measuring and computing now meet with severe criticism. This means that some of the data published in the early experimental stages of the science are now regarded as unreliable for comparative purposes, and the only satisfactory procedure would be to remeasure many collections by the most recent technique.

Certain Melanesians have some features of the African Negro, and again, somewhat resemble aboriginals of Australia. By considering fairly long series of measurements, the writer has made detailed comparisons of these three human types, and has arrived at precise mathematical expression of resemblances and differences.

Every year witnesses some improvement in instruments of measurement and in methods of computation. These operations are done largely with the aid of mechanical devices. An international committee is at work for the establishment of a uniform craniometrical procedure, and Field Museum is fortunate in possessing a large quantity of well-preserved cranial material for future study by modern methods.

#### CONVERGENCE IN ANIMALS PAST AND PRESENT—UNRELATED SPECIES WITH SIMILAR TRENDS

BY ELMER S. RIGGS CURATOR OF PALEONTOLOGY

An interesting study in natural history is that of convergent development among animals of widely different stock. Many cases of this are brought to light during research upon extinct animals. Such convergence may result from similarity of habits in animals living in widely separated districts, or from a similar trend in physical development. It may appear in animals of widely different periods.

A well known instance is the giraffe-camel of late Miocene time in North America and the African giraffe of recent times. These two animals, belonging to different families and living millions of years apart, offer a striking parallel in the extraordinary length of legs and neck. The habit of feeding upon the leaves of trees probably accounts for the unusual stature of both.

#### DEVELOPMENT OF HOOF

The development of the horse and its allies as hoofed, or single-toed animals, provides another example of convergence. In the case of the horse, originally a five-toed animal, the feet lost toes by gradual reduction, first on one side, and then on the other, until the middle toe, extended and grown strong, supports the animal's weight on a single hoof. Two splints, one on either side, remain as vestiges of the side-toes. While the horse of North America was going through this special development, in South America the strange and remotely-related little Litoptern, Thoatherium, was going through a similar process. In fact, the South American beast may be said to have anticipated the horse in this toe-reduction and to have progressed a little farther in reducing the last pair of side-toes.

Another and more recently discovered case of this sort is found between a South

American marsupial flesh-eater and the sabertooth tigers of the northern bemisphere. The latter, a well known line of tiger-cats, inhabited North America, Europe, and Asia during twenty million years, as has been shown from remains buried in the rocks of Miocene, Pliocene, and Pleistocene epochs. When South America ended its isolation as an island-continent and became joined with North America at the isthmus, thus offering a new route of travel, some species of the sabertooth tiger migrated into this new hunting-ground to the south.

It is now known that the sabertooth tiger had long been anticipated there by a local species of animal which was not only there earlier, but had in certain ways excelled it in its own specialized characteristics. This animal, discovered ten years ago by the writer while conducting researches for Field Museum in the Pliocene of northern Argentina, was a strange marsupial flesh-eater to which has been given the name *Thylacosmilus atrox*, which means "the fierce marsupial sabertooth."

#### SABER-LIKE FANG

The sabertooth tiger came into distinction not only as being a large and strong cat, but in having developed an upper fang of unusual length, deep-rooted and trenchant like a saber, a most effective weapon for killing its prey. The sabertooth marsupial had not only followed the same lines of specialization in developing the trenchant upper tusk, but had carried its development much farther. Its great pair of fangs caused the development of a pair of lobe-like projections of the maxillary bone which overlapped the nasal bones and extended backward so that the great tusks were rooted at the front of the brain case. These tusks extended forward above the eyes and curved downward to fit against a pair of shield-like processes in the lower jaw. The front teeth, the incisors, had been crowded out entirely in the evolution of the larger pair.

This development, in its essential features, was similar to that of the sabertooth tiger, but went farther. The marsupial did not grow so large or so strong as its cat-like rivals, and did not possess such great intelligence as may be seen from the size of the The marsupial sabertooths brain-case. disappeared about the time the sabertooth tigers appeared in South America, and it may well be inferred that they were driven out in competition with the keener intelligence, greater alertness and greater activity possessed by the tiger-cats. The sabertooth tigers in turn attained their greatest size and strength on the pampas of Argentina where prey was abundant and where they encountered no successful rivals.

A collection illustrating, in synoptic form, the mineral substances used as structural cements from remote antiquity to the present time may be seen in Hall 36. Included are such diverse materials as the clay used for cement by primitive peoples, and the special alumina cements only recently adopted in modern practice.

#### 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.



Sabertooth Tigers at Rancho La Brea Asphaltum Pits (Los Angeles)

The three powerful animals shown in right foreground represent a species of prehistoric North American tiger-cat cited in the accompanying article by Curator Riggs. The illustration is a reproduction of one of the mural paintings by Charles R. Knight in Ernest R. Graham Hall. Other animals shown are extinct wolves, vultures, and horses.

#### Field Museum of Natural History

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#### BIRD BANDING

The practice of placing metal identification bands on the legs of captured birds, and then releasing them to trace their movements and learn other facts about them, was originated at the turn of the eighteenth century, and was adopted by John James Audubon, who used rings of silver for the purpose. Today many thousands of persons-professional ornithologists, government officials, amateur bird lovers, and others-engage in this practice on a highly organized basis. Bands of aluminum, bearing numbers and the notice: "Notify Biological Survey, Washington, D.C.," are supplied for the purpose by the United States Department of Agriculture.

Bird banders trap birds in cages built in such a way as to attract them in but prevent them from finding their way out. This is accomplished by means which will not injure the captured bird. The traps most commonly used are rectangular wire mesh boxes with a funnel arrangement of wire on top, and bait inside. The bird easily enters through the wide end of the funnel, but the narrow end baffles it when it wishes to make its departure.

As a result of this widespread activity, ornithologists have been able to collect data answering such questions as "How long do birds live?" "When does their plumage change?" "How does their plumage change?" "Do birds return to the same spot for nesting year after year?" and countless other questions which arise in the study of the habits of birds. The percentage of "returns"—that is, individual birds which have been banded and which return and are identified at experimental stations at the proper time (spring or fall) to establish facts about migration—is approximately

2% for most of the smaller birds. It runs as high as 25% on ducks. Birds have been sent by airplane from the east coast to California, and after being released there have found their way home over the Rocky mountains. Sometimes they have even made faster time coming home than a letter mailed simultaneously between the same points.

One oddity revealed by the studies of banded birds is the "scandalous" conduct of some house wrens. The male wrens are not always perfect husbands—it has been discovered in several instances that one male sets up two establishments.

#### A PROSPECTOR'S TALE

Prospectors from remote mining districts often visit the ore collections in Frederick J. V. Skiff Hall (Hall 37), and show much interest in what they find there. Many years ago a veteran prospector from Alaska told the Chief Curator of Geology of an experience which emphasizes how close a prospector may come to making a strike and yet miss. Whether or not his tale was exact truth, it nevertheless illustrates the point that prospectors often come ever so near to and yet remain far from fortune.

While he was prospecting for gold and silver in the Seward Peninsula, this man built a camp fire and cooked a meal. Later he found in the ashes pellets of a soft white metal which he thought were silver. Believing he had found a mine he submitted the pellets to his assayer in Nome who pronounced them to be tin. The prospector concluded that they were tin melted from some cans he was using, but two years later other prospectors made the first discovery of Alaskan tin ore in that vicinity. It will never be known whether the heat and charcoal of his camp fire smelted the tin from an outcrop of ore, or whether the tin was actually melted from his cans. It is conceivable, although improbable to the nth degree, that the tin was melted from the cans, and in the chance in a million that this did occur it forms a most unbelievable coincidence that it should happen over a hitherto unknown outcrop of the ore. It may be well to add that, considering the "tall narrative" proclivities of many prospectors, it would not be surprising if the whole story were apocryphal. -H.W.N.

#### Distinguished Visitors

Among distinguished visitors recently received at Field Museum were Mr. Jason R. Swallen, specialist on grasses in the U. S. Department of Agriculture, Washington; Dr. Fred A. Barkley, of the University of Montana, Missoula, monographer of American Anacardiaceae; Dr. Edgar T. Wherry, of the University of Pennsylvania, Philadelphia, who is engaged in studies of the genus Phlox; Dr. Joseph C. Bequaert, of Harvard Medical School, Boston, and Museum of Comparative Zoology, Cam-

bridge, Massachusetts; Mr. Charles W. Leng, Secretary and Director, Staten Island Institute of Arts and Sciences, Staten Island, New York; Mr. William H. Phelps, ornithologist from Caracas, Venezuela, and Professor Daniel S. Dye, of West China Union University, Chengtu, Szechwan.

September, 1940

#### Staff Notes

Mr. Clifford C. Gregg, Director of the Museum, spoke over radio station WJJD on August 13. The subject was "Field Museum and Its Activities," and the program was sponsored by the Adult Education Council.

Mr. John Janecek, an artist who at various times in the past has done considerable work for Field Museum under special arrangements, last month accepted an appointment to the staff as Assistant Illustrator. He will work with Mr. Carl F. Gronemann, for many years the Museum's Illustrator. Expansion of the Museum's activities has increased the demands for drawings, sketches, maps, etc. to be used in publications, on exhibition labels, and elsewhere.

#### Privacy for Goldfish

In China the goldfish has a more private life than here, it may be judged from a seventeenth century blue and white porcelain goldfish jar from that country, on exhibition in George T. and Frances Gaylord Smith Hall (Hall 24). The jar is opaque, instead of transparent like those traditionally associated with the keeping of these pets in America.

#### 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.

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.

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 achools, 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.

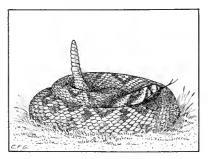
A Cafeteria serves visitors. Rooms are available also for those bringing their lunches.

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.

### MUSEUM LEAFLET REVEALS TRUTH ABOUT SNAKE STORIES

Many of the erroneous tales about snakes, in at least some of which belief seems to be almost universal, are scientifically "taken apart" and "debunked" in an interesting leaflet, *The Truth About Snake Stories*,\* published by Field Museum Press. Although published several years ago, this booklet is still timely, and has proved continuously popular.

Mr. Karl P. Schmidt, Curator of Amphibians and Reptiles, is the author. His opening statement is: "The truth about snake stories is that they are all too likely to be untrue." He goes on to say that while "fish stories" as a class are mere innocent exaggerations, snake stories are more fanciful or mythical elaborations with a much



Coiled Rattlesnake

smaller foundation of fact. He then takes up in detail the popular beliefs about snakes and explodes their fallacies.

The theory that whisky is a cure for snakebite Mr. Schmidt promptly discards, with proof that alcohol actually becomes an active aid to the venom a snake injects into its victim. Most snakes are not really poisonous, he states, thus explaining that people who take whisky as a remedy and recover are often recovering only from imagined poisoning; even the untreated bite of a moccasin or rattlesnake is not necessarily fatal. "It is no exaggeration to say that deaths from this 'remedy,' when administered for the bite of really poisonous sakes, exceed the total deaths from snake poisoning in America," he writes.

Mr. Schmidt next punctures the belief that the age of rattlesnakes can be told from the number of rattles. Only rarely is this true, he says. Other stories about rattlesnakes—namely, that when confined they will strike themselves and commit suicide, that they will not cross a horse-hair rope or chalkline, that they live in peace with prairie dogs and burrowing owls, and that it is possible to be poisoned by contact with an old broken detached fang from a rattler, are all treated with skepticism.

One of the snake stories most persistently recurring—that of the "hoop snake"—receives particular attention in the leaflet,

\*This leaflet (20 pages) is still available at The Book Shop of Field Museum—price 15 cents. Prepaid mail orders will be accepted. which shows it has no foundation in fact. Among other subjects disposed of are the "joint snake" or "glass snake" which is supposed to break into pieces when struck with a stick, the belief that snakes often can charm their prey, the trade of the snake-charmer of circus side shows and county fairs, the "blow snake" which is supposed to poison its victims by blowing venomous breath from a distance, the milk snake which many farmers believe sucks milk from their cows, and the stories about mother snakes swallowing their young to protect them from danger. On the widespread fear of snakes, Mr. Schmidt writes:

"It is a widely held belief that the common aversion to snakes, which amounts to a violent fear in many persons, is instinctive in the human race. The evidence at my disposal leads me to the conclusion that this aversion and fear, when they exist, are wholly due to the example of an older person. I have never found any child who exhibited the slightest fear of snakes if he had not previously been frightened about them. On the average, in support of this observation, I find the fear of snakes much more frequent in older than in younger children."

Experiments with anthropoid apes and most monkeys, which exhibit the same fear of snakes as man, seem to prove that their fear also is not instinctive, says Mr. Schmidt.

#### TROPHY HEADS EXHIBITED

The custom of head-hunting is found throughout a considerable part of southern New Guinea, from the Purari River on the east, far west into the Dutch territory.

Examples of trophy heads, together with a knife of the special type used to decapitate a victim, and a head carrier consisting of a rope with a pointed stick for insertion in the gruesome prize, are exhibited in Joseph N. Field Hall (Hall A).

The taking of heads is regarded by natives of the Fly River Valley as essential to their social standing and religious wellbeing. The heads are carefully preserved and hung up in a special place. They are highly valued, and few natives could be induced to part with them for any consideration. Those removed from the country have been obtained by punitive expeditions, or taken without the natives' consent.

After preservation, the trophy skull is ornamented in different ways, varying with the locality. In some cases the skin of the neck and head is also preserved. After the skull has been cleaned, and covered with a fiber-and-clay composition to represent the flesh, the skin is replaced.

Before the Egyptians developed their elaborate mummification processes, bodies were preserved by allowing them to be dried by nature in sandy pits. An example of one of these pre-dynastic burials is on exhibition in Hall J.

## CHINESE IVORY COLLECTION BEQUEATHED TO MUSEUM

The beautiful texture and color of old ivory, the amazing skill of the Chinese carver, and the subtle compositions he often achieves, combine to make Chinese carved ivories widely popular with Occidentals. Too often, however, westerners never progress beyond a fascination with intricate models, or the labyrinthine balls carved within balls, which are prepared only to amaze and beguile tourists. Connoisseurs always prefer the simple and usually old pieces, carved with restraint to reveal the luster and natural beauty of the elephant tusk. Old ivory, stained a lovely brown, should be caressed to feel its velvety surface, and is best viewed by candle-light.

Field Museum has long exhibited a small, well-chosen collection of Chinese ivory objects, both decorative and utilitarian. A few are of the sixteenth and seventeenth centuries, while those of later date represent various styles of workmanship and the uses that the Chinese have made of ivory. Three ancient bone carvings show the decorative style of the early Chou period, nearly a thousand years before the Christian era. This collection, gathered over many years but not regularly augmented, was the basis for a popular Field Museum leaflet, *Ivory in China*, by the late Dr. Berthold Laufer, which is widely quoted.

Only recently the collection was enriched by the bequest of the late Mr. Louis L. Valentine, who gave his entire collection of ivories to the Museum. This generous bequest more than doubles the number of Chinese ivories in the Museum, and adds a few old and fine specimens. Mr. Valentine became interested in ivory quite naturally. Coming from a family of skilled woodworkers, he started his career as a cabinet maker, and developed a successful Chicago furniture business. His interest in the textures and qualities of wood, and his personal skill in handling it, naturally led to a love of fine wood carving, and this interest finally developed into a passion for examples of the related craft of ivory carving. For many years he collected ivories from Europe and Japan, but later specialized in Chinese pieces. He often visited the Museum to study its collection of ivories and Indian totem poles, which fascinated him.

His bequest includes a number of fine late Ming ivories of the sixteenth and early seventeenth centuries. Of these, several sedate old Chinese patriarchs carved in a compact, sculpturesque style, and two small serene Buddhist figures, are especially noteworthy.—C. M. W.

Did you know that the vanilla plant was a member of the orchid family? An exhibit of various typical orchids, including a reproduction of this plant, is included in Martin A. and Carrie Ryerson Hall (Hall 29).

#### SEPTEMBER 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 September:

Week beginning September 2: Monday—Labor Day, holiday, no tour; Tuesday—General Tour; Wednesday—Men of the Stone Age; Thursday—General Tour; Friday—The Earth's Crust As a Source of Wealth.

Week beginning September 9: Monday—Grasses of the Field; Tuesday—General Tour; Wednesday—Animals as Specialists; Thursday—General Tour; Friday—The Near East, Cradle of Civilization.

Week beginning September 16: Monday—500,000,000 B.C.; Tuesday—General Tour; Wednesday—The Use and Protection of Plants in Conservation; Thursday—General Tour; Friday—Animal Neighbors of the Cave Men.

Week beginning September 23: Monday—South American Products; Tuesday—General Tour; Wednesday—Changing the Face of the Earth; Thursday—General Tour; Friday—Migration: Birds and Mammals.

Monday, September 30—The Story of the Indians.

Persons wishing to participate should apply at North Entrance. Tours are free. Guide-lecturer's services for special tours by parties of ten or more persons may be arranged for with the Director a week or longer in advance.

## SWAT THAT FLY!—BUT REMEMBER, SOME INSECTS ARE USEFUL

Without insects, human society and civilization as we know it might perish, or at least be greatly changed, scientists say. Many kinds of fruits and vegetables would disappear from the world's dietary, because they grow on trees and other plants the reproduction of which depends upon the cross-fertilization accomplished by bees and other insects.

Although most insects are pestiferousand some injurious ones become so numerous and widespread, and so well fitted to live in different environments that a constant warfare must be conducted against them lest they destroy entirely certain crops and other products of Nature and of man's labor—nevertheless a surprisingly large number of insects are highly useful and practically indispensable. Immediately there come to mind such directly beneficial creatures as the honeybee and the silkworm. In the United States, in one year, honeybees produce 400,000,000 pounds of honey and 12,000,000 pounds of beeswax. An essential part of the whole economy of Japan has been based upon the product of the silkworm. This fact has been emphasized in recent times by the production of synthetic silks or silk substitutes, bringing immediate danger to one of Japan's largest industries, and potential damage to that industry far exceeding what has already occurred.

In India a scale insect called the "lac" produces annually 40,000,000 pounds of material collected for making the shellac used in varnishes and allied products. Cochineal, an important dyestuff, is made of the dried and crushed bodies of a certain female scale insect in Mexico. The Chinese credit some insects with medicinal properties, and in parts of Europe certain beetles are still used in making blister plasters. In modern medicine fly maggots are used in persistent wounds or bone sores to hasten healing. Primitive races to some extent even use certain insects as foods, and seem to find them thoroughly palatable. And, of course, many animals useful to man feed on insects.

The maggots of certain flies and carrion beetles aid as cleaners in removing objectionable or decomposing matter. Thus, right in Field Museum, the larvae of certain beetles known as dermestids are used in cleaning many of the bones of mammals and birds brought in for the exhibits and study collections of the Division of Anatomy and Osteology.

Paradoxically, the usefulness of certain insects derives from their destructive habits—that is, they eat other insects which are injurious to crops, and thus aid in control of the insect-pest situation. Thus is maintained the balance of Nature under the old basic rule of the survival of the fittest.

#### NEW MEMBERS

The following persons became Members of Field Museum during the period from July 16 to August 10:

#### Associate Members

Frank Katzin, Hathaway G. Kemper, Allen Sinsheimer.

#### Annual Members

Cyrus H. Adams, John F. Alexander, W. B. Allen, Mrs. Ross M. Babbitt, Wilbur C. Bacon, Dr. Edward W. Beasley, Robert F. Bensinger, Gustave A. Brand, Jim G. Ferguson, James Flett, Mrs. Harley T. Foote, Miss Olive L. Hagley, Raymond G. Haskins, Mrs. W. A. Jackson, Frederick Julian, Miss Jessie Katz, Kenneth R. King, Mrs. George Rasmussen, L. R. Solomon, William G. Sturm, Aubrey L. Sykes, W. M. Wilson.

#### Change in Visiting Hours Begins September 3

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 3, 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.

#### GIFTS TO THE MUSEUM

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

#### Department of Botany:

From B. A. Krukoff, New York—138 herbarium specimens, Puerto Rico and British Honduras; from Dr. Earl E. Sherff, Chicago—23 herbarium specimens, Hawaii.

Department of Geology:

From Worthen Bradley, San Francisco, Calif.—6 specimens of cinnabar, California, Idaho, and Oregon; from Dr. L. F. Brady, Flagstaff, Ariz.—18 geological specimens, Arizona.

#### Department of Zoology:

From Chicago Zoological Society, Brookfield, Ill.—a monkey and 23 birds; from Frank De Clements, Chicago—a spider, Illinois; from Joseph M. Welles, Chicago—149 sets of North American birds' eggs, containing 657 specimens; from Señor Pastora Segovia, Rio Anzu, Ecuador—28 beetles, Ecuador; from Dr. H. A. Pilsbry, Philadelphia, Pa.—5 paratypes of new species of land shells, Cuba; from Mrs. Robb White, Jr., Thomasville, Ga.—4 snakes, Georgia; from Princess Sigismund of Prussia, Barranca, Costa Rica—a bat, Costa Rica.

#### The Library:

Valuable books from Dr. Henry Field, Chicago; Rupert Wenzel, Chicago; and Naturaliste Canadien, Quebec, Canada.

#### MEMBERSHIP IN FIELD MUSEUM

Field Museum has aeveral 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 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.

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# THE KIWI, ONE OF WORLD'S STRANGEST BIRDS, SHOWN IN NEW HABITAT GROUP

BY RUDYERD BOULTON CURATOR OF BIRDS

A kiwi is a strange looking bird. Roughly speaking, it resembles a brown long-necked chicken without tail or wings and with a long curlew-like bill. It is almost uniformly covered with long filamentous feathers very similar to those of a cassowary or emu except

that there is no aftershaft present.

Two living species of kiwis are known, both of them with three geographic forms. Mantell's kiwi is the most common. They are found only on the islands of New Zealand -North Island, South Island, and Stewart Island. Several additional species are known from fossils, two of them from the late Tertiary of New Zealand and Queensland in Australia, showing that in earlier times they had a much wider range. Others have been found in Pleistocene deposits where their bones are contemporary with those of the extinct giant moas.

For many years following the discovery of the kiwi in 1813, zoologists were inclined to wonder if such a strange bird

really did exist. It was not until the only specimen available at that time was exhibited to the London Zoological Society in 1833 that doubters were convinced that there indeed was a relict, a survival of an ancient and primitive type of bird.

That there should be many who were incredulous was not surprising in those early days when the sifting of zoological fact from legend was so important. Uncertainty remained whether rocs, unicorns, dragons, and mermaids might not have existed in reality, and the kiwi was no less strange than any of these. It still merits the distinction of being one of the most extraordinary birds living anywhere in the world today.

In the Hall of Birds (Hall 20), installation was completed last month of a habitat group showing Mantell's kiwi in its natural environment. The snow-capped volcano of Mount Egmont in the southwestern part of North Island, New Zealand, dominates the background which is seen through the filigree tracery of tree ferns, epiphytic plants,

Eggs Weigh One-fourth as Much as the Bird

No other bird, or animal of any kind, produces an egg or offspring so large in proportion to the size of the mother as does the kiwi, subject of the above new habitat group in the Hall of Birds (Hall 20). In the illustration, due to the exigencies of photography, it is not possible to include the mountain background of the exhibit.

and mosses that give character to the humid temperate forest at the base of the mountain. An eroded bank in the forest exposes arching roots of a gigantic tree and provides a secluded recess that a kiwi has chosen for her nest. Here on a bed of dried fern fronds lie the white eggs, which are notable in comparison with all other birds' eggs for their truly unusual size.

A kiwi is only about the size of a chicken, but its egg is more than ten times as large as a hen's egg. It weighs approximately one-fourth as much as the bird that lays it. This is unique among all vertebrates, there being no bird, or other animal for that matter, that produces an offspring or egg so

large in proportion to its own size. Here the danger of over-specialization becomes apparent. The size of the egg results in the kiwi chick's being hatched in a relatively advanced state of development compared to other young birds, a factor that is undoubtedly favorable to the maintenance of the species as a whole. The difficulty of

producing such a large egg is another matter, however, and sometimes has fatal results. Not infrequently female kiwis containing fully developed eggs have been found dead in their nesting burrows.

As in the case of the ocean-loving phalaropes of northern hemisphere shores, and of the tinamous of South America, the relationship of the sexes is largely reversed from the normal. A female kiwi is about onefourth larger than her mate and is the dominant member of the pair. To the male falls the duty of incubation and he devotes about six weeks to the job. After her egg is laid, the female only enters the burrow to sleep. She is however, much more aggressive than her mate in defense of the

nest, and with her long, straight, sharp claws she can inflict a serious wound by kicking forward as an ostrich or cassowary does. After the young birds are hatched, it is the male that is the more solicitous in attending, feeding, and brooding them.

Kiwis are primarily nocturnal. Contrary to the general rule that the eyes of birds that are active by night are enlarged, the kiwis' are small and beady, and their sight is poor. The senses of touch and smell are highly developed, however, and the olfactory lobes of the brain are larger than in other birds. The nostrils are situated at the tip of the bill, whereas in other birds they are near its base. In fact, so much do kiwis

rely on touch and smell for registering impressions of the world about them that they sometimes walk along tapping the ground with their long bills, touching obstructions in a manner that is reminiscent of a blind man tapping along with his cane.

Kiwis feed largely on earthworms which they procure by probing in the debris of the forest floor like a woodcock. Here their sense of touch and smell stand them in good stead and while feeding they audibly sniff and snuffle. They are very expert in coaxing an earthworm out of his burrow with a gentle steady pull just as a robin does on our lawns. Kiwis are also very fond of the tender shoots of one of the terrestrial orchids, and of various berries, seeds and fruits.

#### NAME "KIWI" SIMULATES CALL

The sounds that kiwis make are hardly melodious, that of the male being high and shrill, while the female emits various low, hoarse, hissing moans. The word "kiwi," which is the name that the native Maoris use for the bird, is derived from the sound of the male's call.

Kiwis are related to ostriches, rheas, emus, and cassowaries. With the tinamous of South America they form a group distinct from all other living birds. In common with their ostrich-like allies they have no central keel on the sternum, and thus belong to the group known as Ratitae from the Latin word ratis meaning raft or flat-bottomed boat. The keel is, of course, that part of the skeleton to which the muscles of flight are attached. Since all these birds are flightless, their pectoral muscles are small and have no need for a large area of attachment.

Degeneration, or rather retrogressive specialization, has been carried to an extreme in the kiwi. In New Zealand for ages it has had no predatory enemies and this may partly account for its entirely nonfunctional wing. Only a humerus and one digit remain. All the other parts of the forearm and hand have been lost in conformity with the principle that, in the course of evolution, conservation of material often accompanies the disuse of a structure. There are no recognizable wing quills and likewise no tail feathers.

#### EFFECTS OF ISLAND HABITAT

Kiwis well illustrate the principle that animals living on islands tend to become degenerate in some respects and overspecialized in others, due to the lack of pressure of the environment, both physical and biotic. The dodo, discussed in FIELD MUSEUM NEWS (January, 1939), is a similar example. Others that might be mentioned are the great auk of the North Atlantic, the extinct elephant-birds of Madagascar, and the moas of New Zealand.

Although kiwis were much persecuted during the late nineteenth century, the government of New Zealand has now established rigid protection, and there is some chance that they may long exist in the

forests and preserves such as surround beautiful Mount Egmont.

The Canterbury Museum at Christchurch, South Island, through the good offices of Mrs. Oscar Straus, of New York (a Field Museum Contributor), collected numerous plant accessories and made studies that were of very great assistance in building the habitat group. Mr. Michael Lerner, of New York, gave full color photographs of Mount Egmont that aided in making the background, painted by Staff Artist Arthur G. Rueckert, more accurate and realistic. The foreground plants and other features were constructed by and under the supervision of Mr. Frank H. Letl, Preparator of Accessories. Staff Taxidermist John W. Moyer mounted the specimens and prepared casts of eggs that were lent for that purpose by the American Museum of Natural History, New York.

#### MARRIAGE CUSTOMS

BY ALEXANDER SPOEHR
ASSISTANT CURATOR OF AMERICAN ETHNOLOGY
AND ARCHAEOLOGY

Men all over the world come in all shapes, sizes, and shades of white, brown, and black. Their hair may be straight, wavy, or kinky. They speak a bewildering variety of languages. They build different kinds of houses, eat varying kinds of food, wear all sorts of odd clothing, live by different standards, and worship different gods. But one thing men have in common: sooner or later most of them get married. In itself marriage seems a simple enough matter; yet it brings all sorts of troublesome problems in its wake.

There is the mother-in-law business for one thing. How to act toward one's mother-in-law is a problem in any society. In some, it is solved in what seems a sensible manner: a man has nothing at all to do with his mother-in-law. A Crow Indian avoids his mother-in-law, and she shuns him with equal thoroughness. He does not speak to her and in conversation does not mention her name. This is not because they dislike each other—on the contrary, they respect and may like each other very much. Their avoidance is simply one way of preventing conflict.

#### UNCLES AS FAMILY DISCIPLINARIANS

Among the peoples of the world, one finds a great variety, as well as a similarity, in customs relating to marriage and kinship. Some societies count descent through women instead of men. In such groups it is common for the disciplining of children to be in the hands of the mother's brother rather than the children's father. Among the Creek Indians it was unthinkable for a father to punish his child; this was always left to the mother's brother, who maintained a strong interest in his sister's children and saw to it that they behaved properly and obeyed their parents.

Every society sets up rules as to whom one cannot marry. With us these rules

apply only to close kin. Other peoples extend such regulations to more remote relatives and in addition specify the person one must marry. A common practice is called the sororate, whereby a widower is expected to marry the sister of his deceased wife. But the people who are most explicit in restricting the choice of a man's spouse are probably the Aranda tribe of Australia, whose kinship practices have intrigued anthropologists for years. Among the Aranda a man normally marries his mother's mother's brother's daughter's daughter (his second cousin). This seems a complicated arrangement, though the Aranda finds it natural enough.

#### ODD CHILDBIRTH PRACTICE

However, a stranger custom associated with the family is the *convade*. Under this plan, when a woman has given birth to a child she gets up shortly after and goes about her daily work as well as she can, while her husband is confined to bed to lie in comfort and receive visiting friends. This curious practice is found in widely separated parts of the globe. It was followed by the Basques of the Pyrenees until a century or so ago, and is found among the Brazilian Indians, who believe that any deviation from this tradition would bring sickness to the new-born babe.

In every community the family is a universal element. The problems it must face in maintaining itself and in caring for and educating children are much the same over the world, although the ways these problems are solved and the customs associated with family life may vary greatly.

# RATTLESNAKES BORN IN MUSEUM

On June 26 Mr. E. C. Tobiasz collected three massasaugas (Sistrurus cotenatus catenatus) at Wooddale, Du Page County, Illinois, for the Division of Reptiles. The unusual girth of two of these soon aroused suspicion that they would reproduce this season. Sure enough, on the morning of August 20, seven living and four dead baby snakes were found in the cage. The seven active young rattlesnakes were fully ready to defend themselves and even attempt to rattle with their minute "buttons." On the morning of August 30 the other female produced eleven living young. This mother obligingly chose a time which permitted the taking of scientific notes on the birth process. Although held under suspicion for a time, the third adult proved to be a male. On the average, male rattlers are bigger than females, whereas in other snakes the reverse condition prevails, according to Mr. Clifford H. Pope, Assistant Curator of Amphibians and Reptiles.

Eighty-four leaflets, presenting scientific subjects in popular style, have been published by Field Museum Press.

# LECTURES FOR ADULTS, AND RAYMOND PROGRAMS FOR CHILDREN, TO OPEN OCTOBER 5

# Dr. Thomas Poulter, of Byrd Expedition, Heads List of Saturday Speakers

A lecture by Dr. Thomas C. Poulter, designer and commander of the famous snow cruiser used on Admiral Byrd's current United States Antarctic Service Expedition, will open the Autumn Course of Free Lectures at Field Museum of Natural History on October 5. Other noted explorerers and scientists will appear on each Saturday afternoon throughout October and November.

The lectures, all illustrated with motion pictures or lantern slides, are to be given in the James Simpson Theatre of the Museum, and will begin at 2:30 P.M. Because of the demand for accommodations, only adults are admitted to the lectures.

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

October 5—With the Snow Cruiser IN ANTARCTICA.

Dr. Thomas C. Poulter.

In this lecture the designer of the snow cruiser will explain its use on the expedition now in Antarctica. Dr. Poulter is a leading authority on the south polar regions, whence he recently returned. He was second in command of the Second Byrd Antarctic Expedition. The snow cruiser, built to accommodate a crew of five, carries many thousands of dollars worth of instruments and equipment, and a five-passenger pickaback airplane. It constitutes a gigantic motorized laboratory, enabling scientists to explore, survey and map huge areas of Antarctica's 4,000,000 square miles of practically unknown territory. The huge vehicle is 55 feet long, 20 feet wide, 15 feet high, and weighs 75,000 pounds. It incorporates a

remarkable number of mechanical and scientific marvels in construction and equipment. Costing nearly \$150,000, it was built in Chicago as a project of the Armour Research Foundation of the Illinois Institute of Technology. Dr. Poulter is Scientific Director of the Foundation.

October 12--PACIFIC NORTHWEST.

Karl Robinson.

Mr. Robinson, who has explored widely over Asia and remote regions of Russia, has found equally fascinating adventure in our own Pacific Northwest, and with this lecture shows color films of the mountains, forests, gold fields, and people of that vast region. Starting at the most northerly point of the Great North Road in British Columbia, Mr. Robinson's

films show spectacular country which some day may be traversed by an Alaskan-United States highway. Part of the lecture is devoted to the life of the descendants of the first known Indian inhabitants. The pictures follow the early Cariboo trail to Canada's gold fields.

October 19—At Home in the Union of South Africa.

Dr. Michail M. Dorizas.

Dr. Dorizas, a noted geographer, and member of the faculty of the University of Pennsylvania, presents in motion picture films, and colored slides, typical scenes of the life in South Africa. His pictures show native tribes and their ways of living, as well as the luxuriant vegetation and the prolific wild animal life of Africa. Among the regions covered are Basutoland, Swaziland, and Zululand.

October 26—Undersea Life of the Caribbean.

René Dussaq.

At this time the West Indies are of unprecedented importance and interest to Americans from the standpoint of national defense. Mr. Dussaq presents in motion pictures another phase of their interest—the strange life beneath the tropical seas that surround them. The territory covered includes Santo Domingo, Puerto Rico, Mona Island, and the waters around Silver Shoals. In addition to pictures made far under water, his films include also notable views taken from the air. The pictures, which are partly in color, were made by Mr. Dussaq as chief diver on one of the notable expeditions conducted by Captain John D. Craig.

(Continued on page 8, column 1)

# Nine Motion Picture Features Offered for Boys and Girls

The James Nelson and Anna Louise Raymond Foundation will present its annual autumn series of free motion picture programs for children at Field Museum on Saturday mornings during October and November. Talking motion pictures on natural history, Indians, and travel will be shown, and more than half of the programs will include animated cartoons also. There will be two performances of each program, one at 10 A.M., and one at 11, in the James Simpson Theatre of the Museum. Admission is free, and no tickets are necessary. Children from all parts of Chicago and suburbs are invited, and they may come alone, accompanied by adults, or in groups. Following is the schedule:

October 5 — Our North American Indians.

October 12 -- Lands Around the Caribbean.

October 19—Along the Amazon in South America (color film by Henrietta Mertz).

October 26—FROM JUNGLE TO DESERT IN AFRICA; and a cartoon.

November 2—Asia's Southeast Corner; and a cartoon.

November 9—CHINA AND HER PEOPLE; and a cartoon.

November 16—THROUGH THE ISLANDS OF THE SOUTH SEAS; and a cartoon.

November 23 – Why a Thanksgiving? and a cartoon.

November 30 - Our National and State Parks.

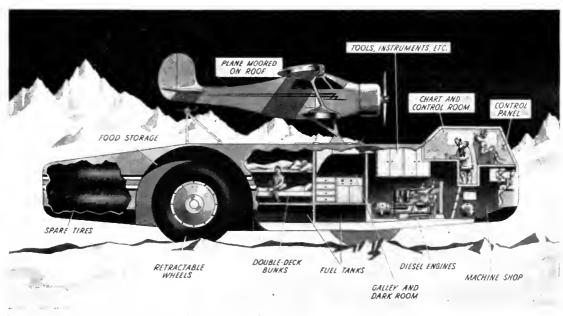


Illustration by courtesy of Armour Research Foundation, Illinois Institute of Technology.

The Snow Cruiser of Admiral Byrd's Current U. S. Antarctic Expedition

The story of this unique giant vehicle, and what it accomplished in the ice and snow near the South Pole, will be told by Dr. Thomas C. Poulter, its designer, in the first of Field Museum's autumn lectures for adults. Dr. Poulter returned from Antarctica very recently.

# THINGS YOU MAY HAVE MISSED

### A Model of the First Oil Refinery Ever Built by the Late John D. Rockefeller

The importance of oil—vital equally to the commerce of peace and the strategy of war—has been impressed to an unprecedented degree upon the general consciousness during the times in which we are now living, and the immediate past. Reflection upon this is stimulated by a model of the original Rockefeller Oil Refinery which may be seen in Hall 36. This was built by John D. Rockefeller in Cleveland, Ohio, in 1863, when oil was important chiefly for lighting the lamps of the world. The primitive design and small capacity of this then important refinery contrasts sharply with

The refinery, built on a hillside, consisted of three small stills of the "cheese-box" type, each a simple tank with a fire under it. Pipes from the tops of the stills ran through a long water-filled condensing tank, and the condensed vapors were collected in receiving tanks where the gasoline, which was distilled off first, the kerosene which came next, and the heavier oils which came last, were stored separately. The kerosene was sent to two agitating tanks for bleaching and purifiying, and then to the final storage tanks. The object of the refinery was to produce the illuminating oil, kerosene,



Getting Rid of Gasoline Was a Problem

In 1863, when John D. Rockefeller built at Cleveland, Ohio, the plant of which the above Museum exhibit is a model, gasoline was regarded as merely waste—a nuisance that had to be contended with in the production of kerosene.

the modern enormous and complicated refineries such as may be seen at Whiting, Indiana. Such comparison calls attention in a striking manner to the almost incredible increase in the petroleum industry during the past seventy-seven years, and especially the most recent decades which have seen the development of the automobile, airplane, motorship, tractor, and other machines operated by internal combustion.

This model was made by the original Standard Oil Company for exhibition at the World's Columbian Exposition in 1893. It came to Field Museum in a somewhat dilapidated condition. The Standard Oil Company of Indiana, after prolonged search, was able to locate a few men who had worked in the refinery and thus were able to remember something of its appearance. From their recollections it was possible for Field Museum to replace the few small missing parts and correctly restore the faded colors.

which was the only product for which there was then much demand.

As the gasoline engine either had not been invented, or was but little used, there was no demand for the gasoline, of which the refinery necessarily produced large quantities. Elimination of dangers in the disposal of this waste product was one of the most difficult problems encountered by the refinery. The residue left after distillation of the kerosene, which is now refined into a number of valuable products, was then sold only for lubricating oil.

This refinery was not the first in the United States. The first of which there is record, even more primitive, was built about eight years earlier and produced a kerosene which sold for \$1.25 per gallon. There were a number of other refineries in operation before the one modeled was built, and a number of coal oil refineries had been converted to use petroleum. Coal oil, distilled from the more

bituminous coals and oil shales had been in use for a number of years, so these early refineries found a ready market for their illuminating oil even if their gasoline was mostly a waste product. The word kerosene was originally a trade-marked name for coal oil, and in some country districts kerosene is still called coal oil.—H.W.N.

# COLUMBUS NEVER REALLY KNEW WHAT HE HAD DISCOVERED

Christopher Columbus, whose discovery of America in 1492 will be marked this month by various celebrations on Columbus Day (October 12), died unaware that he had found a new continent, and firmly believing instead that he had reached Asia by a new route in accordance with the original purpose of his voyages, it was contended by the late Dr. Berthold Laufer, former Curator of Anthropology, who made a study of this question.

Moreover, due to the influence of Marco Polo's memoirs, Columbus's mind was so imbued with Oriental lore that he projected Asiatic tales into the life of the aborigines of the New World, and was thoroughly convinced that the American Indians were an Asiatic people, Dr. Laufer stated. In support of this theory, Dr. Laufer cited from Columbus's diary passages about these people which contain ideas directly traceable to tales originating in India, and transmitted through the ancient Greeks to China and later to Europe.

Among these are stories about wondrous peoples, kingdoms populated solely by women, cannibalistic men with one eye and dogs' noses, and people with tails. These stories, appearing in documents associated with Columbus, are the result, Dr. Laufer believed, of Euro-Asiatic lore working on the imagination of Columbus when he came in contact with the strange inhabitants of the western hemisphere.

"Columbus was a man without profound education or learning, and was endowed with a vivid and poetic imagination, which equaled his knowledge of navigation," Dr. Laufer said. "He was somewhat credulous, with a trend toward mysticism, yet a man of extraordinary abilities, keen intelligence, indomitable courage and energy, foresight and capacity."

However, as most students of North American archaeology are agreed that the Indians of this continent were descendants of emigrés from Asia, Columbus was perhaps not so far off the track, in one sense.

Largest of all South American deer is the marsh deer. A habitat group of these animals is on exhibition in Hall 16.

The largest clusters of fruits known are those of the sago palm. A specimen about eight feet long, which weighed more than 600 pounds when green, is on exhibition in Martin A. and Carrie Ryerson Hall (Hall 29).

# EXPEDITION BACK FROM WEST WITH FOSSIL COLLECTION

The Field Museum Paleontological Expedition of 1940, which has been working for the past several months collecting specimens of the fossil fauna of South Dakota and Nebraska, returned to Chicago last month with an extensive collection of skulls, skeletons, and partial skeletons of a wide variety of prehistoric animals. The creatures represented lived in the early Miocene age, about 18,000,000 years ago.

The expedition was led by Mr. Paul O. McGrew, Assistant in the Museum's Division of Paleontology. He was assisted by Messrs. John Schmidt, Ellsworth Shaw, and Henry Horback, all of Chicago, and by various local collectors in the vicinities where digging was carried on.

Especially productive of specimens were the deposits known as the Rosebud Beds, which are lower Miocene formations cut through by miles of canyons in South Dakota. Among the specimens obtained were skeletal remains of a number of rodents which further studies are expected to reveal as forms hitherto unknown to scientists.

Skeletons were obtained of animals no longer native to this continent, such as extinct horses, rhinoceroses, and camels. Specimens were collected also of deer, peccaries, and various carnivores. The jaws of a rare dog, Cynodesmus, and partial specimens of some fossil reptiles were also found. At the Museum, Mr. McGrew will devote the next several months to removing the skeletal material from the slabs of rock in which it was collected, and assembling the skeletons for mounting and addition to the Museum exhibits. Concurrently with this work, scientific studies will be made of the new species.

# MUSEUM USES IMPROVED PROCESS TO TREAT METEORITE

A slab and an end piece of the Mapleton (Iowa) meteorite have been recently placed on exhibition in Hall 34.

This meteorite was purchased in July, 1939, from Mr. Harvey Meevers, of Mapleton, Iowa, who discovered it on June 17 of that year while cultivating his cornfield. The meteorite is of particular interest because it represents the first iron meteorite ever reported from the state of Iowa. The original mass weighed forty-nine kilograms (108 pounds), and the end piece on exhibition represents approximately one-half of that weight.

Mr. Sharat K. Roy, Curator of Geology, has made a preliminary study of the meteorite and has found from an examination of the Widmanstätten figures developed by etching a polished face of the iron that it belongs to that class of iron meteorites known as medium octahedrites. Sectioning and etching of the meteorite was done in the laboratories of the Department of Geology.

It is of interest to note that the Mapleton meteorite was etched by a new process which not only brings out the Widmanstätten figures more clearly, but also renders the etched surface less liable to tarnish. The procedure was developed in the United States National Museum, and was introduced in Field Museum's laboratories by Curator Roy.—H. H.

# GIFTS TO THE MUSEUM

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

Department of Botany:

From Arturo E. Ragonese, Santa Fe, Argentina-45 herbarium specimens, Argentina; from Dr. J. R. Johnston, Chimaltenango, Guatemala-55 herbarium specimens, Guatemala; from Ignacio Aguilar, Guatemala City-123 herbarium specimens, Guatemala; from Paul H. Allen, Balboa, Canal Zone-30 herbarium specimens, Panama; from Donald Richards, Chicago-31 cryptogams and 58 herbarium specimens, Indiana and Minnesota; from University of California, Berkeley-2,200 herbarium specimens, Peru and Bolivia; from Museo Nacional, San José, Costa Rica-55 herbarium specimens, Costa Rica; from Ernest G. Marsh, Victoria, Tex.—900 herbarium specimens, Mexico; from Dr. L. P. Khanna, University College, Rangoon, Burma-210 specimens of algae, Burma; from Dr. M. J. Groesbeck, Porterville, Calif.-62 specimens of algae, California and Nevada; from Miss Barbara Willis, Bennington, Vt.-42 specimens of mosses, Canal Zone; from W. A. Daily, Cincinnati, Ohio-102 specimens of algae.

Department of Geology:

From John R. Winterbotham, Chicago—2 fossil plants, Colorado; from John C. Pape, Mullan, Ida.—6 specimens lead-zinc-silver ore, Idaho; from Dr. M. J. Groesbeck, Porterville, Calif.—7 geological specimens, Nevada and California; from Henry Herpers, Chicago—6 geological specimens, Massa-chusetts; from Professor L. F. Brady, Flagstaff, Ariz.—3 specimens xenolite cores of bombs, Arizona; from A. A. Balesteria, Chicago—a chert with shrinkage cracks, Illinois.

From Michael Lerner, New York—2 fish specimens, New Zealand; from Chicago Zoological Society—an infant giraffe, 21 jumping vipers, 10 birds, 7 snakes, a porcupine, a kangaroo, and an antelope; from David W. Owens, Flossmoor, Ill.—17 frogs, 6 snakes, and a turtle.

The Llbrary:

Valuable books from Dr. W. H. Bernstopp, Rupert Wenzel, Dr. Albert B. Lewis, and Clifford C. Gregg, all of Chicago.

# Back to 2000 B.C. in China

The development of Chinese material culture in various phases from its beginning in the Neolithic period, about 2000 B.C., down to the latter part of the eighteenth century, is illustrated by archaeological exhibits in George T. and Frances Gaylord Smith Hall (Hall 24).

#### GEOLOGICAL WORK IN MARYLAND YIELDS 1,000 SPECIMENS

Mr. Bryant Mather, Assistant Curator of Mineralogy, has returned to Field Museum from a geological expedition in Maryland. Work was carried on for a period of three months in the region of the Catoctin Mountain-South Mountain Uplift, the geological unit bounding the Cumberland or Shenandoah Valley on the east. Collections brought to the Museum from this area comprise nearly 1,000 specimens illustrating a wide variety of geological processes and materials. Data derived from field observations and structural readings of several thousand outcrops have added greatly to the understanding of the structure and age relations of this highly complex and important region. A geological map of the western third of the area (about 140 square miles) was prepared in the field and will be published in co-operation with the Maryland Geological Survey.

At present the only commercial mineral resources of the region are the limestones which are quarried for cement and lime, and the igneous greenstone which provides raw material for the manufacture of roofing granules. Specimens were collected of these rocks, as well as of the formerly exploited ores of iron and copper which occur sparsely. In addition to the limestones, other sedimentary rocks of many types occur widely. These vary from coarse conglomerates to fine shales. Igneous rocks are well exposed in two valleys, and range in types from basaltic and rhyolitic lavas and tuffs to intrusive granites and diabase. Since this entire series has been metamorphosed, the specimens obtained illustrate a broad range of geological processes. Addition of this material to the geological collections of Field Museum makes possible the exhibition of a number of geological phenomena hitherto not illustrated.

The largest seed in the Plant Kingdom is that of the so-called double coconut of the Seychelles Islands. A specimen is exhibited in Hall 25.

### I MARRIED ADVENTURE by Osa Johnson

"In this handsome volume, illustrated with notable photographs, Mrs. Johnson presents a fascinating account of her adventurous life with her husband, the late Martin Johnson," says Mr. Karl P. Schmidt, Curator of Amphibians and Reptiles at Field Museum. "The book forms an excellent popular introduction to the larger animals of Africa, and provides a history of the Johnsons' extraordinary expeditions in search of animal photo-

On sale at THE BOOK SHOP of FIELD MUSEUM—\$3.50.

graphs."

# Field Museum of Natural History

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

# EUGENE MURRAY-AARON August 4, 1852—September 19, 1940

After a long and notable career as an explorer, collector, entomologist, geographer, and lecturer, Eugene Murray-Aaron, M.D. and Sc.D., a special assistant in the Division of Insects at Field Museum for several years past, died on September 20, at the age of eighty-seven years.

Dr. Murray-Aaron was the son of prominent Quakers in Philadelphia. His father, a teacher, provided him with opportunities to develop the varied interests of his youth which were to dominate the greater part of his eventful life.

Having displayed an early fondness for natural history, especially the butterflies, he specialized on this group of insects, and published at least thirty-five papers on Lepidoptera. He served as Custodian of the Insect Division of the Academy of Natural Sciences, Philadelphia, as Curator of the American Entomological Society in the same city, and as editor of the entomological journals Papilio and The Entomological News.

Later he made numerous and extended explorations in various parts of the world. On a trip to the western part of Tanganyika Territory he had an encounter with a lioness which resulted in severe and lasting injuries. He served as a consul in Jamaica, explored the West Indies, and subsequently wrote his book, Butterfly Hunters in the Caribbean.

Few men have had the opportunity to meet so many prominent scientists, writers, explorers and statesmen as Dr. Murray-Aaron had in his long life. As a student under the great Huxley he first became acquainted with many scientists, and continued such contacts through later years. He furnished information which aided former

President Theodore Roosevelt when the latter planned his explorations in Brazil.

In his last years, while at Field Museum, he was engaged in preparing an extensive bibliographic list of North American butterflies. His great host of friends, in and outside the Museum, will indeed deeply mourn his death, for he was always willing to help others, even though it taxed his strength and consumed much of his time.—W.J.G.

# Members of Museum Staff Aid National Defense

Mr. Clifford C. Gregg, Director, was ordered into active service September 1, for a period of one year as Major of Infantry in the United States Army. He has been assigned to staff duty at the Headquarters of the Sixth Corps Area, in Chicago.

Mr. Alexander Spoehr, Assistant Curator of American Ethnology and Archaeology, has enlisted in the United States Marine Corps Reserve.

# Drafted Museum Employees Assured of Jobs, Pensions, Insurance

Employees of Field Museum who may be called into the national defense forces under the Selective Service Act are assured of reinstatement in their Museum positions upon their return to civilian life, under the policy adopted by the Board of Trustees at a meeting held September 23. In cases where their immediate replacement is necessary to efficient operation of this institution, substitutes will be employed for a term of only one year.

The Trustees took action also to provide that the Museum insurance of drafted employees will be continued during their year of absence; and further, that pension payments of such employees will be continued, the Museum itself paying the employees' contributory share toward such payments as well as the institution's own normal contributions for this purpose.

#### Staff Notes

Mr. Emil Sella, Chief Preparator of Exhibits in the Department of Botany, recently made a trip to the northeast coast of Maine to collect materials and conduct investigations necessary for the construction of a proposed habitat group of marine algae.

Dr. Otto Haas, a well-known invertebrate paleontologist from Vienna, is co-operating, as a volunteer worker, with members of the staff of the Departments of Geology and Zoology, in a research project based upon the Museum's collections of invertebrate fossils.

Mr. Rudyerd Boulton, Curator of Birds, presented a paper, "Sea Birds of the West Indies," recounting observations made on the recent Leon Mandel Caribbean Expedition, before the meeting of the American

Ornithologists' Union held at Boston last month. Mr. Emmet R. Blake, Assistant Curator of Birds, presented a paper, "The Brazilian Frontier of Guiana," outlining the work of the Sewell Avery Expedition to British Guiana.

#### Distinguished Visitors

Among distinguished visitors recently received at Field Museum are Mr. Alfred M. Bailey, Director of the Colorado Museum of Natural History, and members of his staff, who made a tour of the Museum laboratories devoted to preparation of exhibits; Mr. Martin L. Grant, Department of Botany, Iowa State Teachers College, Cedar Falls, Iowa; Professor Irving Bailey, of Harvard University; Mr. Frederic Douglass, Acting Director, Denver Art Museum; Mr. René d'Hamoncourt, head of the Indian Arts and Crafts Board, Department of Interior, Washington, D. C.; Dr. James G. Needham, Emeritus Professor of Entomology, Cornell University; Dr. Myron Gordon, Fellow of the John Guggenheim Memorial Foundation, now studying inheritance of sex and wild type patterns in Mexican fishes at the New York Aquarium, and Dr. Michael G. Guyer, Professor of Zoology at the University of Wisconsin.

#### Museum Aids Safety Drive

The Western Electric Company recently borrowed from the Department of Anthropology of Field Museum a pair of Eskimo snow goggles, for use in an industrial safety campaign to promote the use of safety goggles by workmen employed in certain operations hazardous to the eyes.

#### 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.

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'a 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.

# BOTANICAL EXPEDITION LEAVES FOR GUATEMALA

A botanical expedition, led by Mr. Paul C. Standley, Curator of the Herbarium, left Chicago September 30, to continue the explorations in Guatemala conducted by Curator Standley and Assistant Curator Julian A. Steyermark on two similar expeditions (1938–40). The ultimate purpose is preparation of a descriptive and illustrated account of the plants of Guatemala, whose flora is more varied than that of any other country of Central America, and quite possibly richer in number of species.

Mr. Standley will sail from New Orleans for Puerto Barrios aboard the steamship Zacapa.

During the winter of 1938-39 Mr. Standley spent seven months in Guatemala, visiting all except two of the departments. Dr. Steyermark collected inten-



Paul C. Standley

sively in many departments also. However, because of the exceedingly varied topographic features, there still remain important areas whose flora has not yet been investigated. Some of these, such as the great Department of Petén whence comes much of the chicle used in a Chicago industry, are so difficult of access that their flora is not likely to be well explored for many years. However, the government at present is extending a long road into Petén, so that during the coming winter it may be possible to reach even that region by automobile.

Exploration of any sort in Guatemala is greatly facilitated by the splendid system of roads built and well maintained by the present government, says Mr. Standley. The effectiveness of botanical exploration is greatly enhanced also by the cordial attitude of the people, whether public officials or private citizens, he states.

The present expedition is leaving early in the season in order to reach Guatemala before the summer rains and their effects have ended. The country has approximately six wet and six dry months, the latter coinciding with the autumn and winter of the north. In many parts of the country there always is sufficient moisture to support a continuous abundance of growing plants, but in other parts the vegetation during winter months is almost as greatly reduced as in the United States. It is necessary to visit these areas before too many of the plants have been killed by cold and drouth.

Mr. Standley expects to spend about seven months in the field. Work will be conducted primarily in the numerous regions from which collections still are needed, and these will be covered systematically. The first work, however, is planned for the high, non-volcanic mountains of Huehuetenango, along the Mexican frontier, whose flora is decidedly Mexican, and conspicuously unlike that of other parts of Guatemala. Intensive collecting is planne also for extreme eastern Guatemala, where the climate is relatively dry. Dr. Steyermark's collections from this region, known as the Oriente, have proved surprisingly rich in new or rare plants.

The expedition will also visit the plains of the Pacific coast, in which so far no collecting has been done. Much of this plains region has abundant moisture during the winter, quite unlike the corresponding areas from Salvador to Costa Rica which are intensely dry at the same season. Extensive collecting is planned near Alta Verapaz, in the region of Cobán, noted for its rain forests, its great variety of orchids, and as a center of coffee production.

It is expected that the present expedition will obtain numerous species new to science, and many others that have never been recorded before from Guatemala. Thus data will be provided for completing the descriptive account of the plant life of this relatively small but highly varied and exceptionally interesting country.

#### OCTOBER 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 October:

Tuesday, October 1—General Tour; Wednesday—The People of Our World; Thursday—General Tour; Friday—Impressions of the Past.

Week beginning October 7: Monday—Wild Life Conservation; Tuesday—General Tour; Wednesday—Plants the Indians Used; Thursday—General Tour; Friday—Stories of Famous Gems.

Week beginning October 14: Monday—China and Its Past; Tuesday—General Tour; Wednesday—Animal Life of the Seacoast; Thursday—General Tour; Friday—Plants in Our Modern Life.

Week beginning October 21: Monday—Ambassadors from Space; Tuesday—General Tour; Wednesday—America's Early Civilizations; Thursday—General Tour; Friday—The Evidence of Evolution.

Week beginning October 28: Monday— Trees of the Chicago Region; Tuesday— General Tour; Wednesday—Primitive Man as an Artist; Thursday—General Tour.

Persons wishing to participate should apply at North Entrance. Tours are free. Guide-lecturer's services for special tours by parties of ten or more persons may be arranged for with the Director a week or longer in advance.

The armor and peculiar tooth-edged weapons of the Gilbert Islanders are features of special interest among the Micronesian collections in Hall F.

# LAYMAN LECTURE RESERVATIONS MAY BE MADE THIS MONTH

Mr. Paul G. Dallwig, who in recent years has won a notable reputation in Chicago as The Layman Lecturer of Field Museum, is returning in November to present his fourth annual season of Sunday afternoon lectures in the exhibition halls.

The heavy demand by the public for Mr. Dallwig's lectures, and the necessity of limiting each audience to 100 adults (children cannot be accommodated), make it necessary to require advance reservations. Persons desiring to attend are advised to apply several weeks in advance. Mr. Dallwig's first appearance will be on November 3, and reservations for that date and succeeding Sundays will be accepted by mail or telephone (Wabash 9410) throughout the month of October. A new lecture subject, "Mysterious 'Night-Riders' of the Sky," has been added to Mr. Dallwig's program. This lecture, to be presented in December, will tell the story of meteors, meteorites, and the moon, and will be illustrated by exhibits in Hall 34 of the Department of Geology, where there is displayed the world's most comprehensive exhibit of meteorites.

Other subjects which have proved extremely popular in the past several years will be repeated by Mr. Dallwig in other months. The opening lecture, to be given each Sunday afternoon in November, will be "The Parade of the Races," illustrated by Malvina Hoffman's Races of Mankind sculptures in Chauncey Keep Memorial Hall. On Sundays in January the subject will be "Digging Up the Caveman's Past," illustrated by the life-size dioramas in the Hall of the Stone Age of the Old World; in February, "Nature's 'March of Time,'" illustrated by the prehistoric animal exhibits in Ernest R. Graham Hall; in March, "Gems, Jewels, and 'Junk,' " illustrated by the gem collection in H. N. Higinbotham Hall which by that time will be completely reinstalled with improved methods of display and lighting; in April, "The Romance of Diamonds from Mine to Man." and in May, a repetition of "The Parade of the Races."

The Sunday afternoon lectures begin promptly at 2 P.M., and end at 4:30. During a half-hour intermission midway in the lectures, members of the audiences wishing to do so may obtain refreshments in the Cafeteria, where they may also smoke. Special tables are reserved for the groups.

Mr. Dallwig, a member of the Museum, presents his lectures purely as a public service, without compensation, direct or indirect, from either the Museum or his audiences. He dramatizes his subjects in a unique manner, at the same time interpreting science with a thorough accuracy assured by the great amount of time and research which he invariably devotes to the preparation of every one of his lectures.

# AUTUMN LECTURES FOR ADULTS (Continued from page 3)

November 2—Birds That Haunt the Waterways.

Dr. Olin Pettingill, Jr.

Dr. Pettingill, ornithologist on the faculty of Carleton College, presents a lecture for the lover of the out-of-doors. His narrative, and the colored motion pictures which he will show, appeal to the person who finds recreation on inland lakes, who chooses to explore out-of-the-way bayous and marshes, who likes to canoe down quiet rivers and streams, who yearns for the pounding surf and brisk sea air. Dr. Pettingill is well-known for his photographic skill, and was official camera man on the J. B. Semple-Carnegie Museum Hudson Bay Expedition.

# November 9—The Hawaiian Islands.

Hal Corey.

"Our very important territory of Hawaii is not all hula dancers, palms, and glamor," says Mr. Corey, who has lived for the past two years in that mid-Pacific outpost of the United States. In his lecture, and in his colored motion pictures and stereopticon slides, Mr. Corey will present the story of Hawaii as it is rather than as it is frequently thought to be. The lecture and pictures cover the native life, the natural history, the commerce and transportation, and the surf sports of the islands, among other features. There are many scenes of unusual beauty.

# November 16—OLD GHOST FALLS.

Harold D. Fish.

In colored pictures and story Mr. Fish will take his audience on a trip by canvas canoe far into the so-called "lost world" country deep in the interior of British Guiana. Far back in these tangled jungles is Old Ghost Falls, the highest waterfall in the world for so large a river as the Essequibo. Mr. Fish is one of the very few white men who have penetrated to the base of these falls, called, by native Indians, "Kaieteur." No such frail craft as that used by Mr. Fish ever had navigated these waters, which are treacherous with rocks and sunken trees, and inhabited by alligators and dangerous kinds of fish. The approach to the falls is made by a fifty-mile river gorge six times deeper than that below Niagara. The falls have a drop of 741 feet.

November 23—Springtime in the South.

Dr. John B. May.

Dr. May, former Massachusetts Director of Ornithology, and author of the Hawks of North America and of other outstanding works on birds, calls his lecture "A Travelogue For Garden Enthusiasts and Bird Lovers." In motion picture reels blazing with color, the journey starts at Key West with its bougainvilleas and jacaranda trees of striking beauty. Thence Dr. May carries his hearers across the Keys and the Everglades, to the Cypress Gardens and the Bok

Singing Tower. From there he proceeds to the Gulf Coast at Clearwater and St. Petersburg, where views are shown of many of the most strikingly beautiful gardens of the south. Dr. May then takes his hearers to the vicinity of Mobile in camellia time, to Natchez with its famous pre-Civil War estates, to Audubon's old haunts in St. Francisville, Louisiana, to Atlanta and Augusta in tulip and dogwood time, and to the famous azalea gardens at Charleston.

November 30—If MARCO POLO HAD A CAMERA.

Harrison Forman.

Mr. Forman, whose many years of adventuring and exploring in remote parts of Asia have gained for him the description "a modern Marco Polo," presents in his lecture and the accompanying motion picture films the cream of his unusual experiences in the great continent of the yellow race. The life of the strangest and most fascinating peoples is presented in vivid films and brilliant narrative. A member of the Explorers' Club, and author of Through Forbidden Tibet, Mr. Forman is noted for his daring and enterprise. As a war photographer he "scooped" the world with thrilling close-ups of the fighting in China.

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 should 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 p.m. will be made available to the general public.

### Five Friends of Museum Honored by Trustees

In recognition of recent eminent services to Field Museum, Colonel Albert A. Sprague, Mr. Frederick C. Hack, and Mr. Charles J. Caldrini were elected Patrons by the Board of Trustees at a meeting held September 23. The names of Mr. Charles H. Schweppe, and of the late Charles K. Knickerbocker, were added to the list of Contributors to the Museum—a list, maintained in perpetuity, of all persons whose contributions to the institution in money or materials range from \$1,000 to \$100,000.

## Hall of Gems and Jewels To Be Reinstalled

A complete and elaborate reinstallation of H. N. Higinbotham Hall (Hall 31—the Gem Room) will be completed within the next few months. The hall was temporarily closed on September 24 to permit this work. New types of exhibition cases, and improved lighting, will make the display of precious stones much more attractive, and it will be

possible to study gem characteristics under better conditions than heretofore. Members of the staff of the Departments of Geology and Anthropology will rearrange the collection in a more systematic manner, and will prepare new labels bringing up to date the scientific and historical data on the specimens shown.

#### NEW MEMBERS

The following persons became Members of Field Museum during the period from August 12 to September 14:

Associate Members

Thomas C. Dennehy, Jr., Harry Rich, Arthur C. Trask.

Annual Members

Virgil E. Alford, Lawrence A. Barrett, William B. Basile, Mrs. Burnham M. Fisk, Sidney Frank, Maurice Ginsburg, John W. Guskay, Mrs. James J. Hackett, Harold Hall, Mrs. Rachel Harber Hart, Arni Helgason, William C. Hill, Mrs. Arthur Horton, Dr. Milo E. Jeffries, Dr. John W. Jordan, William Kapche, Wilson O. Koehnlein, Joseph Lipshutz, Mrs. John L. Manta, Mrs. Frank H. Marks, Daniel F. McKeown, Mrs. Foster L. McMillan, Miss Martha Merz, Dr. Balint Orban, Mrs. W. David Owen, Haven A ReQua, Mrs. W. W. Rice, Earl D. Speer, Siegfried Weiss, Milton M. Weist, Dr. George Otis Whitecotton.

#### 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 Noo-Resident Associate Members \$50; hoth 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 bimself, bis 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.

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# IDEAS AS WELL AS THINGS IN MUSEUM EXHIBITS TO TEACH "WHY AND HOW"

BY WILFRED H. OSGOOD CHIEF CURATOR, DEPARTMENT OF ZOOLOGY

Early natural history museums were little more than an expression of man's instinct for acquisition or hoarding. They were mere curiosity shops privately owned and filled with miscellaneous accumulations of objects. Gradually, however, they took a

more public character, the material in them began to be classified, and their value as a means of preserving knowledge from one generation to another was recognized. For many years, nevertheless, they were resorted to principally by students and specialists and were supported largely by learned societies. Thus, they came to have a reputation as musty, dryas-dust places, frequented only by spectacled and bearded wiseacres with whom the average man had little in common.

As time went on, the fundamental relation of natural history museums to various lines of human endeavor became apparent and their activities were greatly extended. They received support from private

foundations, governments, states and municipalities and they developed direct contacts with the public which have constantly widened. Although the old reputation lingered, it was no longer deserved except in isolated cases, for the museum of today, while continuing to fulfill its function as a storehouse of profound knowledge, also covers a broad field of public education and entertainment. Its relation to the general welfare is similar to that of the library and the art gallery. Just as these have a basic relation to the serious study of history and art, so the museum has to natural science. And just as these extend to all classes of people an elevat-

ing, educational and cultural influence, so in even more direct manner does the natural history museum.

As a relatively young institution, starting at the bottom not so many years ago, Field Museum has been under the necessity of passing through in its own history some of the phases of the history of museums in

DATA THE A DIED?

New Idea in Exhibits Appeals to New Generation

Children of the Lincoln School, Highland Park, Illinois, happened along just as installation of "What is a Bird?" exhibit was being completed. Nancy Sproul is seen here learning about a heart from Miss Nellie Starkson, Artist-Preparator who was chiefly responsible for the modeling and painting of items in the exhibit. Laurence Zahnle (center) and Dick Vanoni atudy the "cooling system" of a bird as illustrated by a akeleton prepared to ahow air sacs that permeate body and bones to accompliah aame result as a mammal's aweat glands, which birds lack. Curator Rudyerd Boulton, who directed preparation of the exhibit, explains the structure of a bird to the boys.

general. On the other hand, youth has afforded advantages and in the museum's recapitulation it has been able to avoid some of the mistakes of the past and in some cases to omit entirely tendencies elsewhere proved to be fruitless.

The first task of a young museum is to obtain material, that is, natural objects, be they minerals, plants, or animals. The next is to identify these objects, to prepare them suitably, and to display them to the public. Finally, most important, and all-reaching in its possibilities, is the task of interpreting these objects by methods which will carry wholesome knowledge to all who come. In

other words, and perhaps in the fewest possible words, the object of the museum is to show the world of nature to the people and to teach them not only what it is, but also what it means.

In early museums, exhibits were almost wholly objective—rows and rows of natural objects each with a name attached to it

> and nothing else. Such exhibits, usually called systematic, were not wholly without interest and educational value. In the average visitor they often inspired wonder and admiration, but they were neither thought-provoking nor definitely instructive. In modiified form, probably they will always be necessary, especially in large museums, but only in combination with exhibits that are dynamic and subjective. No museum is likely ever to get beyond the necessity for continuing to accumulate objects, since these are basic. The larger the collection the better it serves to illustrate ideas and facts about nature. Therefore, we must first get the objects, and since a small collection of objects is limited in

its possibilities we must continue getting more indefinitely.

The subjective element has been introduced in various ways in all modern museums, but so far its possibilities have only been scratched. In the zoological exhibits of Field Museum there has been a constant effort to make each one "tell a story," even if it be ever so small. Thus in the systematic exhibits animals are shown in characteristic attitudes rather than stiff formal ones. Something of the habits of each animal, therefore, is indicated and when there is added even a tiny bit of its natural environment the story grows. The habitat group



The Feather Tracts of a Crow

One of msny items in the "What is a Bird?" exhibit. Its purpose is to illustrate the following facts: A bird's feathers grow from definite areas in its skin and the spaces between are unfeathered. Since the body, in order to be strong yet light, is very irregularly shaped, this intermittent arrangement smooths off the surface, compensating for hollows and bumps so that the bird is efficiently streamlined for flight. At the same time dead sir pockets are crested next to the skin which protect the body from intense cold and conserve its heat. Many of these principles, so ingeniously worked out in Nature, have been discovered by man and applied to mechanical products of his invention.

tells a much longer and more interesting story and although its great success is usually attributed to its surpassing beauty and its attractive features of purely entertaining character, it is not unlikely that its essential virtue lies in its departure from objectivity.

Entertainment is doubtless one of a museum's functions, but the tendency is to combine it not only with instruction but also with service. This is seen not only in organized work with schools, colleges, and other cohesive groups but also in didactic exhibits and in close general public relations. To meet the demands of a public that enthusiastically receives "Information Please" and "The Quiz Kids," it is increasingly evident that ideas and facts, as well as objects, are necessary.

Plans for subjective exhibits at Field Museum have been maturing for a number of years and not a few such exhibits have been introduced here and there. One of these, perhaps the most important, so far, has just been completed under the direction of Mr. Rudyerd Boulton, Curator of Birds. In it, his effort has been not to show any particular bird or any group of birds but to furnish an introduction to the subject of ornithology under the title "What is a Bird?" How this has been accomplished

may best be stated in this ornithologist's own words, as follows:

"The exhibits of birds in Field Museum, as a result of collecting specimens in all corners of the earth and of painstaking preparation in the laboratories for the past twenty years present a complete and unusually attractive survey of the kinds of birds that exist. Naturally there are gaps of minor importance yet to fill, but the goal is well in sight.

"In this day, when the interpretation of natural phenomena, zoological as well as social, is of consuming interest, the demand has grown among the visitors to Field Museum for an analysis and discussion of 'what makes a bird tick.' As a result, the present exhibit at the entrance to the Bird Hall (Hall 21) has been installed, and it may serve as an introduction to the other exhibits based on the subjective point of view.

WHAT MAKES AN EXHIBIT "CLICK"

"To be successful such an exhibit must conform as nearly as possible to certain fundamental specifications. It must be of such size that it can be seen completely from one point of view. All non-essentials must be eliminated as well as abstruse scientific terminology in order that the thoughtful layman whose time is limited may grasp the point as quickly as possible. It must be

explicit, clear and brief, yet it should be comprehensive and the materials that are shown must be exact in detail.

"In competition with shop windows, magazine covers, and advertising layouts that vie with each other for the attention of the casual observer, the exhibit must be attractive in design, both of form and color. The materials and specimens should tell their own story as far as possible with labels only as guides to point out essential features. Lastly it should arouse curiosity, provoke the observer to think beyond the limitations of the exhibit, stimulate him to correlate observations that he has already made and enable him better to interpret his future contacts with related facts.

"It is only possible adequately to describe an object in terms of some other object. One thing is similar to some other thing or it is dissimilar in such and such a way. For this reason, approximately two-thirds of the exhibit is devoted to showing what a bird is in comparison with its four other vertebrate relatives-fish, reptile, amphibian, and mammal. Structural comparisons are shown or suggested among the five groups-modifications of the skin covering, limbs, heart, breathing apparatus, skull, and embryos. Contrasts in the function of major systems are drawn for blood circulation, conservation of heat, temperature control, body temperature, rate of heart beat, respiration and metabolism. Fundamental differences in behavior of the five groups are touched on with respect to selection of environment, activity, migration, social organization, and family life.

FUNCTIONAL ANALYSIS OF BIRD'S PARTS

"Many of the most important adaptations of birds have been towards their evolution as flying machines. The exhibit shows that a pelican's upper wing bone is the same size as a man's upper arm, yet only one-sixth as heavy, and that a pigeon's bones weigh less than its feathers. Since it is mainly as a result of the evolution of feathers from the scales of reptiles that a bird "has become a bird," the microscopic structure of a feather with its intricate interlocking parts is shown by a model enlarged five hundred diameters. It then becomes somewhat easier to comprehend how feathers serve three major purposes: (1) to insulate and to conserve heat, (2) to maintain a stream-lined form, (3) to produce efficient flight. The unique temperature control device of birds, the air sac "radiator" system, is correlated with insulation by feathers and with development of the four-chambered heart, similar to that of mammals though independently evolved. This combination of three separate functions permits the life processes of a bird-metabolism, temperature, pulse, and breathing to go on at a rate higher than that of another animal.

"The models in the exhibit were made by Miss Nellie Starkson, Artist-Preparator of the Department of Zoology."

# NOTABLE BOOKS AGAIN EXHIBITED BY THE MUSEUM LIBRARY

The second exhibit this year of important scientific books, both old and recent, from the Library of Field Museum, is now open in the east end of Albert W. Harris Hall (Hall 18) where it will remain on view until November 30.

This special exhibit, like its predecessor in July and August, is in commemoration of the five-hundredth anniversary of the European invention of printing with movable type. It is one of the many tributes being paid during 1940 by libraries, printers, and publishers all over the United States to Johann Gutenberg (1398–1468), the mechanician of Mainz (some authorities say Strasbourg) who, despite a veil of uncertainty due to lack of precise records, is credited with the invention which has had such a profound influence throughout the five centuries which followed.

#### MILESTONES OF SCIENCE

The first of the Museum's exhibits was devoted principally to examples of the world's most beautiful, and some of the world's oldest, books on natural history. The books in the present exhibit have been selected, by Mrs. Emily M. Wilcoxson, Librarian, primarily for their importance as milestones in the progress of the natural sciences to which the Museum is devoted, rather than as examples illustrating the development of printing art or technique.

"Just as literature and other forms of human endeavor were greatly advanced by the invention of printing, the revival of scientific investigation in the sixteenth century was accelerated by this new means of disseminating information," says Mrs. Wilcoxson. "The works of the early researchers, which existed previously only in hand-lettered books, were republished and made available to more people interested in science, thereby serving as a stimulus and giving direction to the continuance of observation and experimentation.

"Although the history of science is replete with the names of men who have contributed to the progress of science, there are among these only a few whose insight or placement in time enabled them to reach general conclusions of importance, and this fact had to be borne in mind in choosing the books for an exhibit of this kind. Even so, because biology is such a wide field, with so many divisions, only the broadest outline of its development to the end of the nineteenth century was practicable for illustration within the limitations of this exhibit."

# FIFTEENTH CENTURY EDITIONS SHOWN

The exhibit begins with fifteenth and sixteenth century editions of Graeco-Roman scientists who lived many centuries before the epochal invention of printing by Johann Gutenberg (1398–1468). Among these are the botanical observations of Theophrastus

(370-222 B.C.); the curious hodge-podge of interwoven facts and fancies compiled by Pliny the Elder (A.D. 23-79), and the studies of plants and herbs for medical purposes assembled as a *Materia Medica* by Dioscorides (A.D. 37-68), who was an army surgeon during Nero's reign at Rome. The next section of the exhibit comprises the works of mediaeval and renaissance scientists such as Gesner, who published his *Historia Animalium* in 1555, and Vesalius who modernized (for his time) ideas on human anatomy in a work published in 1543.

"Modern" scientific writers of the eighteenth and nineteenth centuries are represented in the exhibit by the works (many in the original editions) of such pioneers as Linnaeus (1707-78), the systematizer of nature who devised the binomial nomenclature for plants and animals which is the basis of present-day taxonomy; Leeuwenhoek, Swammerdam and Malpighi, seventeenth century microscopists who brought to light many new facts and concepts; Cuvier (1769-1832) who was the virtual founder of the study of fossil vertebrates; and, of course, Charles Darwin (1809-1882), whose works had a more profound influence upon the course of scientific thought and progress than any man before or since.

# SATURDAY LECTURES IN THEATRE CONTINUE THIS MONTH

The autumn course of free lectures by noted explorers and scientists, illustrated with motion pictures and stereopticon slides, will continue on Saturday afternoons through November. These lectures are given in the James Simpson Theatre of the Museum, and all begin promptly at 2:30 P.M. The heavy demand for seats makes it necessary to restrict admission to adults.

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

November 2—Birds That Haunt the Waterways.

Dr. Olin Pettingill, Jr.

November 9—The Hawaiian Islands. Hal Corey.

November 16—OLD GHOST FALLS. Harold D. Fish.

November 23—Springtime in the South. Dr. John B. May.

November 30—If MARCO POLO HAD A CAMERA.

Harrison Forman.

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 should 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 P.M. will be made available to the general public.

# LAYMAN LECTURES ON SUNDAYS TO BEGIN NOVEMBER 3

With "The Parade of the Races," to be given at 2 o'clock each Sunday afternoon during November, Mr. Paul G. Dallwig, the



Copyright Field Museum

Vedda of Ceylon by Malvina Hoffman

of Field Museum. will open his 1940-41 season. This subject, which has proved to be one of the most popular with Mr. Dallwig's audiences in the past, is illustrated with the 101 sculptures by Malvina Hoffman illustrating the living races of mankind all over the world. Under the spell of Mr. Dallwig's vivid descriptions of the human qualities of each of the races, the statues seem to take life like Pygmalion's Galatea. and the audience achieves a sense of having met these representatives of other peoples in their native homes in African jungles, the South Sea islands, north of the Arctic circle, and elsewhere.

Layman Lecturer

The necessity of in advance for the

making reservations well in advance for the Sunday lectures cannot be too heavily stressed, as audiences must be strictly limited in number so that the lecturer may successfully conduct them among the exhibits. Reservations may be made by mail or telephone (Wabash 9410). Children cannot be accommodated.

The lectures begin promptly at 2 P.M., and end at 4:30. A half-hour intermission is provided midway in the lectures, at which time those who desire to may obtain refreshments and smoke in the Cafeteria, where special tables are reserved for the group.

In December the subject of the Sunday lectures will be "Mysterious 'Night-Riders' of the Sky," in which Mr. Dallwig will tell the story of meteors, meteorites, and the moon. The lecture will be illustrated with the world's largest collection of meteorites.

#### Wood Distillation

Wood distillation, although an old industry, has recently made distinct improvements in methods and in the number and value of its products. These are shown in detail by an exhibit in Hall 28 of the Museum's Department of Botany.

# A MAGAZINE FOR BUSINESS MEN APPRAISES FIELD MUSEUM'S SERVICES TO INDUSTRY

By RICHARD LYON BROWN

(Editor's Note.—Members of the staff of Field Museum could write about the services of this institution to business and industry, but it is even more interesting to obtain the viewpoint of a writer from outside. The following article, which appeared in the August issue of COMMERCE, published by the Chicago Association of Commerce, is therefore reprinted here by permission of the editors of that periodical.)

On a government breakwater job, a Chicago contractor was able to bid \$75,000 less than Pacific Coast competitors a few years ago and land the contract. The required filling was rock of a specified toughness and durability. Local contractors had figured on going a hundred miles away for the fill and building a railroad to haul it to the job. But the Chicago man sent a prospector into the vicinity of the job, and sample rocks were returned to Chicago's Field Museum for analysis. One of the specimens possessed the desired qualities, and the work was completed successfully at the lower figure.

A wax company in the midwest, seeking to extend its information about one of the main raw materials used in its business, was directed to a Brazilian plant, botanically well known to the Museum specialists. Now the same company has acquired plantations and is installing processing works of its own in South America.

These are but samples of a little known phase of the work of Field Museum of Natural History. Commonly regarded as solely a cultural institution, its services to business are such as to establish it as a top ranking commercial asset to Chicago and the Middle West.

The Museum's job is to gather together materials and information under the heads of anthropology, botany, geology, and zoology. It is at the disposal of industrial emissaries as well as scholars, and the Museum authorities consider their part completed when they have supplied the desired information. What is done with it, they declare, is none of their business.

# A REGULAR VISITOR

For instance, there's a man who comes to the Museum every single Saturday—a Sears Roebuck and Company textile expert engaged in a fiber study. Occasionally he finds an interesting bit of wool or hair or flax or cotton, and arranges to take away a sample for microscopic or chemical analysis. He must find the search worthwhile because he continues to come back for more. Field Museum is a huge storehouse of fiber samples, ordinary and strange, and of textiles, too, and of every technique of weaving.

The anthropology collections represent the arts and crafts of all peoples in all times and all parts of the world, and both as an aid to research and as a never-failing source of ideas, the Museum is constantly utilized by the great and small in the business world. When the Republic Steel Company asked for the earliest examples of case-hardened steel, bits of Roman knives were given them for analysis. A bell from ancient China was recently lent to the General Electric Company as a primitive example of cast iron. It was to be examined by X-Ray and fluoroscope. The Revere Copper and Brass Corporation has been showing interest in coldbeaten copper spears and other chisel-like implements of earliest history. For a history of felt-making in ancient times, the Western Felt Works made free use of information furnished by the Museum. One company found there all the data it needed on the early development of the wheel.

#### MUMMY FOR A BUSINESS EXHIBIT

Old iron instruments from the Museum have been used by the United States Steel Corporation for exhibition purposes, and the General Electric Company borrowed an Egyptian mummy for display in its New York Fair exhibit. G. E. put the mummy behind the world's largest fluoroscopic screen and astounded the spectators by showing them the skeleton through the wrappings. General Motors Corporation has had sketches made of the Museum's transportation scenes. The U. S. Gypsum Company has studied the early uses of plaster represented in the Museum, and

has described many of them in its advertising. Crane Company has used pictures and descriptions from the Museum on ancient faucets and bathtubs. An example of cave-man art, a lifesize diorama of paint blowing, has been utilized by the Paasche Airbrush Company.

To authenticate art objects, antique dealers often come to the Museum authorities. Jewelry manufacturers constantly refer to the Museum collections for early types of ornaments, and one Michigan Avenue jeweler checks with the experts on every scarab placed with him for setting. Those who turn to the Museum for inspiration in design and color include makers of furniture, rugs, and textiles, workers in metal, decorators and stylists, pottery makers, bookmakers, paint manufacturers, advertising agencies and their artists, and countless business firms of every sort.

Architects frequently roam the Museum halls, referring to ancient regional applications of materials and design for modern uses. The terraced setback is an adaptation of Pueblo building construction. Incidentally, modern homes and other buildings in the Southwest are apt to have the thick walls, recessed windows, and be built of the brown cement of past centuries.

Publishers and authors often turn to Field Museum as the final authority on facts, specifications, and for illustrations. From obscure reference books to best-selling



Commercial artists copying colors of gems in Field Museum collection, for use on painted products

children's dime books on popular science, the modest but authentic stamp of approval of the Museum may have been placed, willingly and without charge, before publication.

The Museum's Department of Botany often has information not easily accessible to industry—the source of a rare plant, the exact identification of a chip of wood, the chemical nature of an unusual botanical specimen, or merely the name of a reliable plant authority in any particular part of the world. From fifty to a hundred thousand plants pass through the hands of Field Museum curators each year.

When a plant appears to be worth investigating, it may be turned over to a reliable drug manufacturer. One example is caapi, a Peruvian plant which the natives use as an intoxicant; the Museum botanists furnished material for an investigation of its toxic constituent, harmine, which may be useful to humanity. A South American vegetable oil investigated has the quickdrying properties of tung oil. While its cultivation seems to present difficulties, the paint industry has an eye on it.

#### MAY HELP SAVE MONEY

Sometimes desired qualities are found in new plants, but growing and harvesting conditions are impossible to adjust on a commercial basis, particularly if an attempt were made to use American soil and labor. If the Museum is consulted early, it may be able to sidetrack a profitless venture before it fairly begins. Recently a midwest paper mill was offered a new "Ecuadorean fiber" at a good price. A small sample sent to the Museum disclosed that the material came from a cactus found in southern Mexico. The Museum authorities advised that there was little possibility of cultivating the plant in this country, since growth to maturity takes from 100 to 150 years.

This spring a commission man telephoned the Museum that he had on his hands a carload of a strange tropical fruit supposed to make a refreshing drink. The Museum discovered it to be the "roselle," the fruit of a Mexican mallow, whose sparse pulp might be useful for jam, but probably is a little too tart for our tastes. The shipment was probably returned south of the border. One large Chicago building material manufacturer is on the lookout for a tough paper fiber, and this is only one of many companies continually sending samples in to the department for information on the source of the plant seeds and possible growing conditions.

A man with title to some land in Mexico brought in a nut from his properties and asked if it could be used commercially. It was suggested that the woody husks might be employed as charcoal. He was referred to a report published by the Brazilian government on this subject which had been thoroughly investigated there. When he was last heard from, the owner was after a

British contract to supply charcoal for gas masks. When Mr. Henry Ford was clearing forest land in Brazil for his rubber plantations, the Museum asked and received specimens of the trees cut on his tract. In return they furnished him determinations of the woods and other botanical specimens being cleared off. The information he received was undoubtedly used to good advantage, although the scientists have neither the time nor the curiosity to question the matter further.

In the determination of woods, the Botany Department has long been of considerable assistance to the lumber, woodworking, and furniture industries. To the relief of the Museum, some of this work was taken off its hands when the Federal Trade Commission specified that the term mahogany should be restricted to species of Sweeteniathe botanists' own definition. Previously, a perennial question sometimes bitterly contested was whether "mahogany-like wood" such as so-called "Philippine mahogany," with similar physical qualities, could not honestly be interpreted as true mahogany, in the interest of buyer or seller. The Museum contains a notably complete collection of timbers of the world. It also has comprehensive exhibits of paper sources, sugars and starches, oils, cotton, corn and other cereals, gums, rubber, and coffee.

(To be concluded next month)

#### 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.

# An Apology

An apology is herewith made to Mr. Charles J. Calderini whose name was misspelled in the October FIELD MUSEUM NEWS in the announcement of his election as a Patron of the Museum.

# AUDUBON'S AMERICA

# by Donald Culross Peattie

"Just published, this is perhaps the best of the popular Audubon books of recent years," says Dr. Wilfred H. Osgood, Chief Curator of Zoology at Field Museum. "It presents Audubon and his times through selected extracts from his writings, with extensive comment by a talented and sympathetic modern author. A sumptuous volume with seventeen colored plates faithfully reproduced from the originals by the famous painter. Eminently suitable as a gift book."

On sale at THE BOOK SHOP of FIELD MUSEUM—\$6.00. Prepaid mail orders accepted.

#### RAYMOND FOUNDATION OFFERS MORE AID TO SCHOOLS

Page 5

BY MIRIAM WOOD CHIEF, JAMES NELSON AND ANNA LOUISE RAYMOND FOUNDATION

The James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures is offering special programs on science to the schools of Chicago and suburbs. Because of heavier emphasis on science in courses of study, teachers and students have increased their demands upon Field Museum for help, and the Museum is meeting the needs with this augmentation of Raymond Foundation work.

During October, two types of programs were offered; one on Conservation, and one on Trees. In each case the program began with a talk, illustrated with natural color pictures, followed by studies in the exhibition halls. The work in the exhibition halls was done in a manner slightly different from the usual guided tours. A sheet of questions and suggestions was given to each student to help him in using the exhibits in an informal way. It is hoped such programs will develop in the children an attitude of interest in the exhibits, and an ability to use them without the constant help of a guide. Twelve programs were given to capacity crowds, with a waiting list for each program.

Because this type of service seems to meet a distinct need of the schools, two other programs are being planned for the months of November and December:

On Tuesdays a special talk on Animals of the World, illustrated with stills and motion pictures, will be given. The lecturer will tell and show how animals live in the mountains, deserts, woodlands, jungles, swamps, plains, and arctic regions. The talk will be followed by guided work in the exhibition halls.

On Thursdays a special program will be given in the Lecture Hall on *The Story and Identification of Rocks, Minerals, and Fossils,* with special emphasis on the Chicago region. The group will then go into the exhibition halls for actual experience in identification. Students who have specimens may bring selected numbers in to be identified.

Along with this work, the Raymond Foundation is carrying on its regular program of public tours, school tours and lectures on geography and social sciences, extension lectures in the Chicago Public Schools, Saturday motion pictures for children, and the follow-up programs of radio broadcasts for the schools. The services of the Raymond Foundation are all given entirely free to the schools or groups from them. Requests for service should be made to the Director of Field Museum at least one or two weeks in advance because of the great number of teachers and other school officials who are interested in this work.

The largest single meteoric stone ever seen to fall is the Paragould (Arkansas) meteorite, which is on exhibition in Hall 34.

# Field Museum of Natural History

FOUNDED BY MARSHALL FIELD, 1893 Roosevelt Road and Fleld Drive, Chicago TELEPHONE: WABASH 9410

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#### FIELD MUSEUM NEWS

CLIFFORD C. GREGG, Director of the Museum....Editor
CONTRIBUTING EDITORS

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

# IN MEMORIAM Albert Buell Lewis June 21, 1867 - October 10, 1940

For a long time the failing health of Dr. Albert B. Lewis had been a matter of deep concern to all who knew him. But, with characteristic fortitude, he had remained at

work until a few days before his death in October.

Anthropology, particularly in those of its branches involving museum technique, is a junior science; and with the passing of Dr. Lewis, who had held the position of Curator of Melanesian Ethnology at Field Museum since 1908, science



Dr. Albert B. Lewis

has lost a pioneer. His colleagues are mourning a sincere friend and kindly adviser.

Dr. Lewis was born at Clifton, Ohio, in 1867, and received his early education at Wooster College in the period 1890–1893. A year later he was enrolled as a student of biology in the University of Chicago where he was awarded the A.B. degree in 1894. This graduation was followed by a period as assistant in biology in the laboratory in which he had qualified. In 1897 Dr. Lewis accepted a position as instructor in zoology in the University of Nebraska where he was a stimulating teacher until 1902. He then registered as a graduate student at Columbia University, New York, and in 1907 received his Ph.D. degree.

During his preparatory years of biological work the systematic teaching of anthropology was just beginning, and the science of physical anthropology was not much more than a subsidiary of zoology. The Darwinian controversy was raging in fierce scientific and theological debate, and punches were not pulled either by scientists or theologians. Such was the formative period of Dr. Lewis's career prior to his appointment on the staff of Field Museum in 1907.

Dr. Lewis's leadership of the Joseph N. Field South Pacific Expedition (1909–1913), was a remarkable achievement of endurance in the malignant regions of New Guinea, New Britain, and New Caledonia. He also visited many other areas and was thus enabled to bring to Field Museum an ethnological collection which has few rivals anywhere in the world. Moreover, Dr. Lewis was instrumental in obtaining a collection of Melanesian crania that are of primary importance in the studies of comparative physical anthropology and craniometry.

Many publications issued by Field Museum Press attest the scrupulous accuracy and cautious judgments of Dr. Lewis. Decorative Art in New Guinea, New Guinea Masks, Block Prints from India, Melanesian Shell Money, and a charmingly written Guide to Ethnology of Melanesia, are a few of the works by which he is best known. To these may be added book reviews, a monograph on Tribes of the Columbia Valley, and many contributions to various noted encyclopedias and dictionaries.

Dr. Lewis held fellowships in the American Association for the Advancement of Science and the American Anthropological Association, and was a member of Sigma Xi.

To those who had the privilege of intimate acquaintance with Dr. Lewis, the word "bibliophile" acquired a richer meaning. And many colleagues who were entitled to the description of "well informed men" were astonished by the extent, versatility, and accuracy of Dr. Lewis's reading. His careful choice of literature has resulted in the addition of many valuable works to the Library of Field Museum.

Many who, with deepest regret, read this obituary will feel that no eulogy is required, for colleagues were well acquainted with the scientific earnestness, critical ability, and kindly helpfulness of Dr. Lewis. All members of Field Museum's staff, and particularly Dr. Lewis's associates in the Department of Anthropology, realize their bereavement, but cherish many kindly recollections of stimulating contacts.—W. D. H.

#### Library Receives Rare Books

A notable gift of rare and valuable books, including some very old ones, has been received by the Library of Field Museum from Dr. Henry Field. Among them is an edition of Plutarch published in 1599. Also outstanding are the complete works of Isaac

Newton in nine volumes (1779-85), Rapin's History of England (1732-33), The Natural History of Norway by Erich Pontoppidan (1755), and Ruines de Paestum ou de Posidonie dans la Grande Grèce, by T. Major.

#### **NEW MEMBERS**

The following persons became Members of Field Museum, in the classifications indicated, during the period from September 16 to October 15:

#### Patrons

Charles J. Calderini, Frederick C. Hack, Colonel Albert A. Sprague.

#### Contributors

Charles K. Knickerbocker,\* Charles H. Schweppe.

Associate Members

Dr. Henry Christiansen, Ellis H. Denney, Miss Agnes J. Olsen, Herbert J. Taylor.

#### **Annual Members**

H. D. Agnew, Dr. Julius M. Amberson, John Potts Barnes, Miss Harriet Benner, Edward D. Brown, Jr., Robert Neil Cowham, Mrs. Lucius A. Crowell, Al Martin Curtis, Mrs. William A. Elliott, George J. Farns-worth, Norman D. Fraser, John J. Gorman, John H. Grace, Jr., William F. Hochfeldt, Mrs. Robert M. Hoffman, Jr., S. S. Hollender, Mrs. Thomas J. Houston, Louis J. Janata, Norman V. Karstens, Samuel Kart, Mrs. Charles E. Linebarger, Charles L. Marsh, John B. McDonnell, William McEwen, Willis D. Nance, John G. Nardin, Alexander W. T. Ogilvie, Albert K. Orschel, Mrs. Ellard L. Pfaelzer, Stephen A. Poyer, Mrs. S. W. Ranson, Miss Irene K. Reiser, James G. Shakman, Mrs. Charles C. Shedd, John F. Smith, Jr., Mrs. Kenneth Gladstone Smith, Mrs. George A. Spicer, Mrs. June M. Starrett, Miss Cornelia C. Steckl, Mrs. Arthur J. Utter, H. C. VauPelt, Mrs. Louis Vierling, Robert W. Wadsworth, John Vierling, Robert\_ Aaron Weinraub, Miss Florence Watling, S. Winship.

#### 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 adulta 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 psrking apace for automobiles at the Museum.

#### FIVE MORE FREE PROGRAMS OFFERED FOR CHILDREN

During November the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures will continue its autumn series of free motion picture programs for children on Saturday mornings. There will be two performances of each program, one at 10 a.m., and one at 11, in the James Simpson Theatre of the Museum. No tickets are necessary. Children may come alone, accompanied by adults, or in groups.

Following is the schedule:

November 2—Asia's Southeast Corner; and a cartoon.

November 9—CHINA AND HER PEOPLE; and a cartoon.

November 16—Through the Islands of the South Seas; and a cartoon.

November 23—WHY A THANKSGIVING, and a cartoon.

November 30—OUR NATIONAL AND STATE PARKS.

### MATERIAL COLLECTED FOR GROUP OF INTER-TIDAL PLANTS

BY EMIL SELLA CHIEF PREPARATOR OF BOTANICAL EXHIBITS

Material and data on inter-tidal vegetation, tide pools, and other details necessary for the preparation of a north Atlantic coast habitat group of marine algae were collected recently by the writer on a field trip to the northeastern shore of Maine. The collections supplement those made by a previous expedition to Maine and the Bay of Fundy region. The group, upon which work is now under way in the plant reproduction laboratories of the Department of Botany, is to occupy a space at the north end of Martin A. and Carrie Ryerson Hall (Hall 29), adjacent to the Illinois woodland group.

A number of localities were visited, some as far south as Bar Harbor, but most of the collecting was done on the shore of Quoddy Head near Lubec in the Bay of Fundy. This is the easternmost point within the borders of the United States.

In the vicinity of Quoddy Head the continual recurrence of a thick fog called forth spasmodic blasts of the new fog horn at the lighthouse. This harsh sound usually can be heard over a radius of twenty miles, and at first it nearly floors an unsuspecting stranger, such as the writer was, who happens to approach from the seaside during one of its lulls.

Luckily, the low tide period was ideal for working during the best part of the day. Thus, since the tidal range on this coast is 23 to 25 feet, the approach, and means to study the growth and habits of the marine algae, were greatly facilitated.

Sketches and a number of rubber and plaster impressions were made of specimens and barnacle-covered rocks. A limited

number of seaweeds was gathered to supplement the large number of specimens previously obtained by Mr. John R. Millar, Curator of the N. W. Harris Public School Extension and formerly a member of the botanical staff, who in 1938 visited the same locality and as far north as Nova Scotia. Along with great quantities of required specimens, Mr. Millar secured valuable color notes and photographs.

#### NOVEMBER 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 a schedule for November showing the subjects on each date, and the names of the lecturers assigned to special subjects:

Friday, November 1—Animal Life of South America (Mr. Loren P. Woods).

Week beginning November 4: Monday—Stories of the Past as Told by Fossils (Mr. Bert E. Grove); Tuesday—General Tour; Wednesday—In the Land of the Eskimos (Miss Elizabeth Hambleton); Thursday—General Tour; Friday—Evergreens of North America (Miss Marie B. Pabst).

Week beginning November II: Monday—How the Life of a People is Affected by Their Environment (Mrs. Leota G. Thomas); Tuesday—General Tour; Wednesday—The Cedar and Salmon Indians (Miss Elizabeth Hambleton); Thursday—General Tour; Friday—The Distribution of Living Things (Mr. Loren P. Woods).

Week beginning November 18: Monday—Minerals of the United States (Mr. Bert E. Grove); Tuesday—General Tour; Wednesday—The Indians' Contribution to Thanksgiving Dinner (Miss Marie B. Pabst); Thursday—Thanksgiving holiday, no tour; Friday—Weavers and Potters of the Southwest (Miss Elizabeth Hambleton).

Week beginning November 25: Monday—The Changing Earth (Mr. Bert E. Grove); Tuesday—General Tour; Wednesday—The Contributions of Plants to the Welfare of Man (Mrs. Leota G. Thomas); Thursday—General Tour; Friday—The Home Life of Birds (Mr. Loren P. Woods).

Persons wishing to participate should apply at North Entrance. Tours are free. Guide-lecturers' services for special tours by parties of ten or more persons may be arranged for with the Director a week or longer in advance.

### World's Largest Snake

The largest extant species of snake is the reticulated python of the East Indies, of which a specimen twenty-six feet long is exhibited in Albert W. Harris Hall (Hall 18). The maximum size attained is said to be about thirty-five feet.

The culture of Australian aborigines, who live today in a Stone Age state of development, is illustrated by a collection in Hall A-I on the ground floor of the museum.

#### THINGS YOU MAY HAVE MISSED

#### Gallantry In Ancient Egypt

The artists of ancient Egypt displayed a marked gallantry toward women. In the portrait statues they made, it was an art convention that a woman subject must never be represented either as being obese or as showing traces of the burden of years.



Ancient Woman Named Ari

In depicting male subjects they occasionally permitted signs of portliness or age to appear, but even among their sculptures of men the ideal slenderness of youth or the vigor of the prime of life predominates.

A collection of such portrait statues is on exhibition in the Hall of Egypt (Hall J) at Field Museum. The figures were used as magic substitutes for or duplicates of the earthly bodies of the dead, and were placed in tomb chambers or temple courts. The Egyptians believed that the soul could occupy the figures at will, and thus participate in the offerings made at the tomb or in the holiday festivities of the gods.

These Egyptian statues show the influence of both idealism and reality. Domi-

nant was the idea that the soul must be able to recognize its "body." Hence there was a tendency to individualize the face, to represent the clothing, and to paint the whole in appropriate colors. As the water colors used have largely succumbed to time, present appearances commonly misrepresent the ancient craftsman's work. Various stones, and wood, were the materials most commonly used by the sculptors. The statue shown in the accompanying illustration is identified in the inscription simply as a house mistress named Ari. This statue dates to about 2000 B.C., and is made in chlorite schist. A prayer, together with the woman's name, occupies the plinth and space in front of the feet. The statue is one of many objects presented to the Museum years ago by the late Edward E. Ayer.

Figures of servants, or servant groups, also shown in Hall J, often accompanied their master's burial in tombs. The artists treated these subjects with much more freedom than they permitted themselves in portraiture of the more powerful classes.

# NEW TYPE-CASTING MACHINE IMPROVES EXHIBIT LABELS

The acquisition last month of a new typecasting machine by the Museum's Division of Printing, and the adoption of a new, clearer and more attractive type face for the labels used on exhibits, represent distinct advances in the efficiency and quality of the work done in the printshop. The printing of all labels for future exhibits in the new face, and the gradual replacement of the thousands of old labels, will improve both legibility and appearance. The new machine casts lines of type on slugs (i.e., a whole line is cast as one piece instead of in separate letters), and can produce a great variety of type sizes and type faces.

The sentence you are now reading is in the new type face adopted for labels, and was set on the new machine.

This type face, to be used in various sizes, is based upon the first important roman type to appear, designed by Nicholas Jenson, in Venice, about 1470. That was only about thirty years after the invention of moveable type, the five-hundredth anniversary of which has been commemorated in many ways this year, including two special exhibits of books by the Library of Field Museum, one of which is currently displayed in Albert W. Harris Hall (Hall 18).

Not generally realized by the public is the scope of Field Museum's Division of Printing. It does practically all of the printing required for the Museum's activitiesscientific publications, popular leaflets, Annual Reports of the Director, catalogs, guidebooks, handbooks, FIELD MUSEUM News, postcards, exhibition labels, Museum stationery, lecture posters, and other printed matter. Typical of its production was that of the year 1939, when the total number of impressions from its presses was 1,012,326. This included 43,082 copies of 35 books and pamphlets comprising in all 3,504 pages of type composition. Some books from Field Museum Press contain more than 600 pages, a large volume for any printshop. The Museum shop is equipped with modern machinery to aid its staff, including monotype machines, a large cylinder press, photogravure press, automatic press, several machine and hand operated job presses, folding machine, cutting machines, automatic bindery machines, etc.

# GIFTS TO THE MUSEUM

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

Department of Anthropology:

From Mrs. Frederick S. Fish, South Bend, Ind.—2 marble lions, China; from Dr. Anna Ross Lapham, Chicago—a wooden comb and a wooden ladle or stirrer, from Djukas, Dutch Guiana; from Dr. Henry Field, Chicago—pottery specimens, Trans-Jordan.

Department of Botany:

From L. C. Hinckley, Marfa, Texas—81 herbarium specimens, Texas; from Rev. Padre Cornelius Vogl, Caracas, Venezuela—337 herbarium specimens, Venezuela; from Rev. Bro. Elias, Caracas, Venezuela; from W. A. Daily, Cincinnati, Ohio—61 specimens of Myxophyceae, Ohio; from Dr. M. J. Groesbeck, Porterville, Cal.—80 specimens of algae, California and Nevada; from Donald Richards, Chicago—203 herbarium specimens, Minnesota.

Department of Geology:

From Sunshine Mining Company, Kellogg, Idaho—a silver ore specimen, Idaho; from Julius Cropas, St. Johns, Ariz.—a concretionary barite specimen, Arizona; from James M. Barker, Honolulu, Hawaii—24 specimens of volcanic sands, Hawaii and Oahu; from John H. Kester, Easton, Md.,—a manganese ore specimen, Oklahoma; from Robert Schmidt, Homewood, Ill.—a fossil dog skull, South Dakota; from James H. Quinn, Chicago—15 fossil vertebrate specimens, Nebraska.

Department of Zoology:

From Arizona Game and Fish Commission, Phoenix, Ariz.—a specimen of Colorado River salmon, Arizona; from Texas Wildlife Research Unit, College Station, Texas—a spotted skunk skeleton, Texas; from Melvin Traylor, Jr., Chicago—a bird skeleton, Mexico; from Rupert L. Wenzel, Chicago—19 beetles, Colombia, Canal Zone, and Mexico; from Mrs. John A. Holabird, Chicago—a hummingbird; from David Allen, Highland Park, Ill.-2 salamanders, Indiana; from Mrs. Robb White, Thomasville, Ga.—a lizard and 2 snakes, Georgia; from Boardman Conover, Chicago—8 birds eggs, Paraguay; from Dr. F. Lester Fogle, South Bend, Ind.—2 bats and a centipede, Africa; from Mr. and Mrs. William C. Pohrte, La Porte, Ind.—2 tree frogs, 8 salamanders, and a snake, Indiana; from N. H. Duckworth, Manila, P. I.—a flying lizard, Philippine Islands; from Dr. Charles H. Seevers, Chicago—15 insects, Florida; from The Sanibel School, Sanibel, Fla.-a coachwhip snake, Florida; from Lincoln Park Zoo, Chicago—2 lizards, 7 snakes, and an albino macaque; from Chicago Zoological Society, Brookfield, Ill.—16 reptiles and amphibians, 17 birds, and 2 tinamou eggs. The Library:

Valuable books from Emil Liljeblad, Villa Park, Ill., and Bert E. Grove, Chicago.

### Children Capture Snake for Museum

During the 1939 Florida expedition of Field Museum, Mr. J. G. Kesson, a resident of Sanibel Island, was most helpful to Staff Taxidermist Leon L. Walters in collecting material and making studies for a habitat group to show the loggerhead turtle laying its eggs on the sea beach.

During the visit to Sanibel, which lies off the west coast of Florida, Mr. Walters was much impressed by the large size the local coach-whip snakes attain. Now, a fine living representative of this species, measuring 7 feet 2 inches, has been received by the Museum from Mr. Kesson, who writes

that it is to be considered a gift from the Sanibel School, because the school children, acting as a group of "drivers," made possible the capture of the reptile.

#### Distinguished Visitors

Among distinguished visitors recently received at the Museum are Dr. Aleš Hrdlička, Curator in the Division of Physical Anthropology, United States National Museum, Washington, D. C., who conducted research work on jaws of Melanesian natives in Field Museum's collection; Mr. Gerrit S. Miller, Jr., Curator of Mammals, at the National Museum; Mr. Harry C. Raven, Curator of Anatomy, at the American Museum of Natural History, New York; Mr. David Finley, Director of the National Gallery of Art, Washington, D. C.; Mr. Martin L. Ehrmann, of New York, an authority on gems and minerals; Dr. Harvey H. Nininger, head of the American Meteorite Laboratory, Denver, Colorado; Dr. Hallowell Davis, Associate Professor of Physiology, Harvard University, and Mr. Richard Hamburger, of the Geology Department of the Johns Hopkins University, Baltimore.

A full-size reproduction of the grave of a prehistoric mound-builder of Illinois, with an actual skeleton and various artifacts, is on exhibition in Hall B.

#### 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 Life Members pay \$100, and Non-Resident Experience of the 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 Hisory 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.

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# CAMELS BORE THE FIRST CHRISTMAS GIFTS, TO THE CHILD BORN IN BETHLEHEM

The colored picture on this page is Field Museum's Christmas card to its several thousand Members, bearing to them the season's greetings from the administration of this institution, and grateful acknowledgment of the support they are giving to science and education by their memberships.

Camels traditionally are associated with

Christmas, due to the New Testament story of the Three Wise Men who, in response to a message they read in the most beautiful star they had ever seen, mounted their camels and came across a desert to Bethlehem in search of the Son of God. Likewise on their camels, they bore gifts for the Christchild, which may be the origin of the custom of Christmas giving. It may be noted too that, as the bearers of

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spices and silks and jewels, and other good things of the East during many centuries, camels may be considered Christmas animals as appropriately as the reindeer associated with the Santa Claus legend.

"Caravan North of the Persian Gulf" is the title of the picture reproduced here. The original is one of the seventeen large mural paintings by Mr. Julius Moessel, Chicago artist, recently installed on the walls of the Museum's Hall of Food Plants (Hall 25). Another of these, "Mexican Market Scene," was reproduced in the September issue of FIELD MUSEUM NEWS, and all are reproduced and described in Botany Leaflet No. 25, The Story of Food Plants, recently published by Field Museum Press. Dr. B. E. Dahlgren, Chief Curator of the Department of Botany, prepared the text.

Concerning the use and importance of camels in the distribution of food, Dr. Dahlgren writes the following brief summary:

"Because of early difficulties of communication and transportation, trade with distant countries developed very slowly. But with the gradual establishment of caravan routes between distant parts of the Far and Near

supplied the countries bordering the eastern Mediterranean from Egypt to the Euxine.

"After the tenth century, the commerce in products of the East was taken over by Italian cities: Naples, Amalfi, Pisa, and especially Venice with its Mediterranean fleet in contact with all Levantine ports. The commercial pre-eminence of Venice

> came to an end at the close of the fifteenth century with the rapid development of water-borne commerce after the circum-navigation of Africa and of the world by the venturous mariners of Portugal who initiated an era of geographical discoveries. Merchantmen of other European nations soonembarked on long journeys to strange lands and began to bring the products of far corners of the earth directly to the

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Camel Caravan North of the Perslan Gulf

During several thousand years before the discovery of the sea-route to India, the products of the East found their way to the western world by overland routes. Trains of pack camels played an important part in this trade. The illustration reproduces one of the mural paintings, by Julius Moessel, recently installed in the Hall of Food Plants. The color photograph is by Clarence B. Mitchell, Research Associate in Photography, to whom the Museum is indebted also for the gift of this and other color printing plates.

East these became highways of commerce for the exchange of the most valued products of each. Aromatics and spices of the Orient began to arrive in the western world where exotic condiments, such as pepper, nutmegs, ginger and cinnamon, were prized as much as silks and jewels. More than 3,000 years ago this trade extended from China and India to Arabia, Palestine and Syria. Much of it passed through Babylon, some of it by a more northerly route to the Black Sea. At the time of Phoenician power, Damascus, Tyre, and Sidon were important centers in a trade that extended also to Egypt and to Carthage and even beyond the pillars of Hercules. After the fall of the Roman Empire, the trade of the Near East remained for some time largely in the hands of the Persians: later it passed to the Arabs, who

The slow and cities of western Europe. costly overland caravan transportation, always exposed to bandit attacks, excessive ransoms, and toll-gate levies, declined; and the center of the world's commerce shifted from eastern Mediterranean to Atlantic ports. The historic visit of French merchants of St. Malo to Yemen, the chief coffee district of Arabia, described by La Roque in his Voyage to Arabia Felix (and depicted in another of the Moessel paintings in Hall 25 of the Museum), was an event typical of the beginnings of the modern trade by which the special products of distant parts of the world became readily available everywhere."

CAMEL MEAT CANNED IN NEAR EAST

Mr. Richard A. Martin, Curator of Near Eastern Archaeology at Field Museum, who has traveled by camel on expeditions for this and other institutions, states that the "four-legged ships of the desert" are still of considerable importance in the trade and transportation of the East, although in recent years their importance has given way to the motor trucks. Mr. Martin makes the amusing comment that, from being an important carrier of food, the camel has in late years become an important article of food, since its meat is popular with Near Eastern peoples, and today is even being canned for the market. Also, herds of camels are important sources of milk and butter to the inhabitants of regions where the natural conditions for raising cows, sheep, and goats are not favorable. Further, their hair is locally utilized and is an important export product for use in the manufacture of clothing and brushes.

Camels were not important as pack animals in the truly ancient world, as they were not "domesticated" until 1000 B.C., Mr. Martin says. In fact, they are still not truly domesticated, he adds. The ass and the ox had been the important bearers of burdens for centuries before camels were thus used. The average load borne by a pack camel is around 400 pounds. For transport of goods, and also as draft animals for agricultural purposes, the Arabian single-humped or Bactrian two-humped camels are used. For riding, however, the lighter, fast moving Dromedary is preferred, and it is pertinent to note that camels are still vital as cavalry animals in desert military operations.

#### AMERICA WAS CAMEL'S FIRST HOME

The evolution of the camel presents an interesting study in natural history. Mr. Paul O. McGrew, of the Museum's Division of Paleontology, who has conducted extensive research on this subject writes:

"The living members of the camel family are now limited to Asia, Africa, and South America. For some 30,000,000 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....

"Abundant fossils show us that in the last 35,000,000 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....

"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 Bering Strait, permitting the camel, along with other mammals, to migrate to Asia.... Likewise, migration to South America was made possible by the elevation of the Central American isthmus late in the Pliocene, reuniting North and South America which had been separated

almost from the beginning of the Age of Mammals (55 to 65 million years ago).

"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.... The guanacos and llamas that went to South America, however, were smaller and without humps.

EXHIBIT SHOWS EVOLUTION OF CAMEL

"All of this does not mean that camels simply evacuated North America.... Those 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 had died."

In Ernest R. Graham Hall (Hall 38) there is an exhibit illustrating each important step in the evolution of the camel. In Hall 16 there is a habitat group of guanacos, the modern South American species most closely resembling certain extinct species.

# BOTANISTS OF FIELD MUSEUM DISCOVER UNUSUAL PLANT

BY JULIAN A. STEYERMARK
ASSISTANT CURATOR OF THE HERBARIUM

Easily the most spectacular and showiest member of the aster family (Compositae) in Guatemala, and one of the most beautiful plants anywhere in Central America, is a plant discovered by Curator Paul C. Standley and the writer on recent Field Museum expeditions to Guatemala.

This plant proved, after much critical study, to be not only a species but also a genus new to science. It has been called Rojasianthe superba, which means "superb flowers of Rojas," and commemorates the name of Professor Ulises Rojas, Director of the Botanical Garden at Guatemala City, professor of botany in the schools of Guatemala, and author of several botanical textbooks. He provided the Museum collectors with every possible courtesy, and extended many facilities to them. Mr. Standley and the writer have brought the new plant to the attention of botanists all over the world by a description and illustration in a publication issued by Field Museum.

The plant stands ten to fifteen feet tall, has stout hollow stems, and large angled leaves. Its most striking feature is its showy black-and-white-flower-heads, which are about the size of a sunflower. The long, pointed, paper-white rays, which look like petals, surround a black central part made up of many little flowers. This black-and-white color combination is a rather unusual one, especially since the flower-heads are so large. The gorgeous color effect made by a mass of blossoms can be well imagined.

The plant grows in southwesternmost Guatemala, where the Field Museum botanists collected it from the higher moist slopes of deep forested gorges of the volcanoes of Zunil, Tajumulco, and Tacaná, and it has been observed also on the Mexican side of Volcán Tacaná by the writer. It appears to be fairly common along the smaller streams flowing down through the deep gorges on the mountain slopes.

The most remarkable feature of this story, however, is that this beautiful plant has evidently never before been recorded by any botanist or explorer traveling through the country in which it grows. In the hundreds of years which have elapsed since exploration began in Central America, one would have expected at least some traveler to have collected it, but this evidently is not the case. Therefore, it appears indeed a noteworthy discovery to make in the twentieth century.

The genus is related to Dahlia and Helianthus (sunflowers) on the one hand, and to Perymenium on the other, but it shows many characteristics which set it apart generically from any other known genus of the aster family. One of the most unusual marks of distinction is the jagged-edged fan-shaped chaff surrounding each of the flowers in a head. These enlarge and give a slightly bristly appearance to the heads after they have flowered.

Because the plant is so striking in appearance, it seemed that it ought to be introduced into horticulture in the United States so that many people might be able to enjoy its exceptional beauty. For this purpose, mature fruit was collected and brought back to Chicago. Seeds have been germinated at Garfield Park and Marquette Park Conservatories, but thus far only one plant has lived (at Marquette Conservatory).

# LARGE FISH SPECIMENS RECEIVED FROM MR. MICHAEL LERNER

Field Museum has recently received from Mr. Michael Lerner, of New York, two very interesting specimens for exhibition in the new hall of fishes (Hall O), which is now in preparation. One of these is a large Pacific black marlin, the other, a thresher shark.

The thresher is a large shark with a very long tail fin. Sailors have noticed the great length of this tail and have made up many fanciful stories to account for its presence and use. The most probable theory seems to be that the shark uses its tail in some way in rounding up groups of the small fishes on which it feeds.

Anglers have found many species of sail-fishes and spearfishes or marlins in the waters of the island groups of the south Pacific. Very large specimens have been caught, the heaviest probably being of the species called black marlin on account of its uniform dark color. The range of this fish seems to extend from Panama to Australia and Japan. A few have been caught in the Gulf of California. The largest reliably recorded seems to be one weighing about a thousand pounds, caught a few years ago in the waters of northern New Zealand.

—A.C.W.

# MUSEUM FURNISHES AN EXPERT FOR A OUIZ PROGRAM

At the Sixth Annual City-wide Recreation Conference, held November 8, Field Museum was represented by Mrs. Leota G. Thomas, one of the lecturers on the staff of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures. The conference was sponsored by the Chicago Recreation Commission, of which Field Museum's Director, Mr. Clifford C. Gregg, is a member.

A feature of the meeting was a quiz program along the lines of "Information Please," well-known radio network headliner. Mrs. Thomas participated in this as one of the board of experts. Associated with her in this were Miss Maude Bennot, Director of the Adler Planetarium; Dr. Howard K. Gloyd, Director of the Chicago Academy of Sciences; Mr. Roberts Mann, Superintendent of Maintenance, Cook County Forest Preserves, and Mr. Edward H. Bean, Director of the Brookfield Zoo.

Theme of the conference was "Recreation and Preparedness," discussion being directed upon recreation as an aid to civilian morale in time of emergency, and on plans for promoting wholesome activities.

# China Before and After Buddhism

Exhibits pertaining to the archaeology of China, in George T. and Frances Gaylord Smith Hall (Hall 24), are arranged in two main divisions: one illustrating the ancient original culture of China prior to the intrusion of Buddhism, and the other, the culture of Buddhistic China, as influenced and modified by religious and artistic currents coming from India and producing notable effects from the third century A.D. onward.

# CHINA'S ANIMAL FRONTIER by Clifford H. Pope

"Friends of Field Museum, and everyone interested in natural history, will welcome the opportunity provided by this book to become acquainted with the background of a notable scientific career-that of the author, who is the Museum's Assistant Curator of Amphibians and Reptiles," says Mr. Karl P. Schmidt, Curator of Amphibians and Reptiles. "Mr. Pope is wellknown to a host of readers through his earlier popular books, Snakes Alive, and The Turtles of the United States. The present work is written in a style which holds the reader's interest, and it is well illustrated with the author's own photographs."

On sale at THE BOOK SHOP of FIELD MUSEUM—\$2.50. Prepaid mail orders accepted.

# LIVE SNAKES TRAVEL BY EXPRESS IN "SPECIAL PULLMANS"

BY KARL P. SCHMIDT CURATOR OF AMPHIBIANS AND REPTILES

Queer packages in astonishing variety arrive at museums by the morning mail and in express shipments. An envelope may contain the fragmentary pressed and dried remains of an insect for identification, or there may be a box of carefully packed insects from a collector or another museum.



Photograph courtesy of Railway Express Agency, Chicago
"Chlcago!—Far as We Go"

New arrival from Louisiana, a corn snake, is greeted at Field Museum by Assistant Curator Clifford H. Pope after journey in "Snake Pullman" especially designed to provide benefits for the animal, as well as shipper, carrier, and receiver.

Fossils, minerals, single bones and whole skeletons, and dried plants (these often in large packages) are frequently received. An innocent-looking box coming by express may bear the label "Poisonous Snakes—Handle with Care." The evident respect with which such packages are handled has often tempted us to label other packages in the same way.

Living reptiles are often received by both mail and express. The shipment of live harmless reptiles (such as lizards and turtles) is specifically permitted by postal regulations, and it is only recently that snakes have been altogether excluded from mail packages. The shipment of living reptiles by mail and express is made simple by the fact that these creatures survive for days, even for weeks, without food or even water, so that in any ordinary case they travel without hardship. They even need astonishingly little air, and although metal cans must always be perforated, paper wrappings and wooden boxes seem to admit sufficient air without any special provision of holes.

# LIZARD DISRUPTS POST OFFICE

Lizards are often sent by mail from Europe, and even from more remote places. The Museum's Division of Reptiles has a living specimen of that most extraordinary of lizards, the true chameleon, received from a correspondent in Jerusalem. It was a memorable day in the Chicago Post Office when an innocent-looking package from Spain was opened for customs examination. It contained an exceedingly lively adult ocellated

lizard, which immediately took flight over desks and filing cases, and required an hour's pursuit by the hardier members of the office staff before it was recaptured and restored to its box.

The soft-skinned frogs and salamanders may be sent from Europe to the United States and in the contrary direction, in metal cans, with only a few air holes, filled with

damp sphagnum moss. It has proved to be essential that the moss be only damp—it should not be wet.

Express regulations for shipments of snakes require a screen wire covering of the box. Small specimens may be shipped in lard or syrup pails with the cover wired on; it is essential that the cover be securely fastened, for snakes constantly explore any enclosed space in the effort to escape, and are surprisingly powerful. It is always best to put them into cloth bags before plac-

ing them in the container. We were once advised of the shipment of a snake from Texas which had the power to change color, and as this capacity is unknown in snakes, we awaited the package with more than usual interest. Alas, the pail had been only loosely covered with wire, and arrived at the Museum empty; the identity of the color changing snake of Texas remains unknown to this day.

"LUXURY" FOR TRAVELING SERPENTS

A most satisfactory shipping box for living reptiles, devised by Dr. Howard K. Gloyd, Director of the Chicago Academy of Sciences, has become widely known among herpetologists as the "Snake Pullman," evidently because it gives the impression of a mode of travel for snakes which is nothing short of luxurious. It may well be that the impression of luxury in the mind of the human shipper leaves the snake even colder than that cold-blooded animal is normally. The advantages of this type of shipping box lie simply in its provision of a neatly screened opening at each end and in its two hinged lids, the outer one wooden, the inner one of screen wire. The latter feature makes it possible to see what is in the box before opening it completely, which is especially important when there is a poisonous snake to be dealt with. This is the principal advantage at the receiving end. The main advantage in the field lies in the fact that it does not occur to most express agents to refuse a container which is so obviously well-made as the "Snake Pullman,"

# A STORY OF FRAGMENTS-How an Archaeological Object, and Its History, are Both Reconstructed

BY C. MARTIN WILBUR CURATOR OF CHINESE ARCHAEOLOGY AND ETHNOLOGY

Two "behind the scenes" stories illustrate how Field Museum tries constantly to enrich and improve its collections from all over the world. Arising from a recent installation of Chinese specimens dating near the beginning of our era, the first story concerns one of the Museum's newest treasures, an ancient lacquered wooden grille. The second discloses the recent discovery of inscriptions on two bronzes which have been owned by the Museum for thirty years.

More than a year ago the Chicago firm of R. Bensabott, Inc., offered to sell Field Museum an unusual specimen secured by Mr. Julius Bensabott in Shanghai during the fall of 1938. When Mr. Clifford C. Gregg, Director of Field Museum, and the writer, first saw the specimen it was broken into scores of elaborately carved and heavily lacquered wood fragments which had been roughly stitched to sheets of cardboard. The bits of wood, though shrunken and warped, obviously fitted together to form a complicated and beautiful lattice-like design, and it looked very old. According to Mr. Bensabott's information the grille came from Ch'ang-sha, and to strengthen this claim he showed two objects secured in the same lot which were immediately recognized as missing parts of two famous specimens known to have come from there: wings of the great lacquered cranes in the Cleveland Museum of Art, and horns from a carved wooden "monster" owned by Mr. John Hadley Cox.

#### TREASURE FILLED TOMBS

Ch'ang-sha is the name of a city in Hunan province in central south China, and recently it has been an exciting name for people interested in Chinese antiquities. Its archaeological importance became known about 1935 when extensive leveling for public buildings, highways, and airports began to uncover many tombs stocked with a rich hoard of burial furniture. There were two types of tombs: pits, sometimes as much as thirty feet deep, with stout timbered chambers at the bottoms, and unmarked by grave mounds; and graves constructed close to the surface and covered by tumuli. The

presence of deep pit tombs was only discovered when the top soil had been removed showing rectangular areas of earth which differed from the undisturbed soil all around. These tombs, some of which had never been disturbed by grave robbers, were full of bronze, pottery, and jade objects stylistically of late Chou or Ch'in date, that is, of the last few centuries prior to 200 B.C. The mound-covered tombs, on the other hand, contained familiar mortuary objects of Han and later periods. The deep pits had probably been below the water level much of the time, and they alone still preserved such wooden objects as the lacquered cranes and snakes in the Cleveland Museum, a number of mortuary figurines of people, sculptured tigers and elephants, "monsters" of unknown significance, and other things which were altogether unique in the annals of early Chinese art. If the Bensabott grille had indeed come from Ch'ang-sha it was not only an important addition to the corpus of materials from that site, but also a unique specimen of ancient Chinese decorative woodwork and the starting point for a study of Chinese lattice patterns.

Field Museum asked for the sadly damaged grille on approval in order to determine whether it could be reconstructed and to learn more about its provenience. Because of the Sino-Japanese war the closest contact to the source was Shanghai. A clipper letter to a friend there started an investigation among antique dealers which strengthened the belief that the grille was a Ch'ang-sha piece. From 1935 to 1937 Mr. John Hadley Cox, now at Harvard, had lived in Ch'angsha where he closely followed the excavations in progress. He kindly studied photographs and samples of the grille, and by comparing the wood, lacquer, and adhering earth with specimens collected by him on the spot, he deduced that the piece came from Ch'angsha. When later he saw the grille here he was even more convinced. Therefore Field Museum purchased the piece, confident that Mr. Tokumatsu Ito and Mr. John Pletinckx, skillful restorers in the Department of Anthropology, could put it together.

Reconstruction was a long and tedious

process. Through centuries of submersion and later drying the wood had become shriveled, shrunken, and light as cork. Because one surface was thickly lacquered the shrinkage was uneven, and most of the pieces were badly warped. At first this warping seemed to be the only serious problem, one that could be solved by soaking and pressing the pieces under water. This proved fruitless. As soon as the wood dried out it buckled as badly as before.

CHEMISTRY AIDS RESTORATION

Mr. John R. Millar, Curator of the N. W. Harris Public School Extension, who had had long experience in treating woods and plants for exhibits in the Department of Botany, suggested a better technique. After careful experimentation he found the wood could be boiled in dilute acetic acid to expand the cells, and then soaked in glycerine which settled all through the wood and prevented the cells from collapsing when the water dried out. Besides stretching the wood approximately to its original size, the boiling process also flattened the pieces out and cleaned the lacquer surface without damage. After all fragments had been treated in this way they had to be fitted together like a jig-saw puzzle, mounted

on a permanent frame, and missing parts

filled in with plastic wood modeled to

resemble the original. Most of this work

was entrusted to Mr. Pletinckx, who finally

completed it after months of patient toil.

The grille is 68½ inches long, 13½ inches wide, and about five-eighths of an inch thick. It was carved from a single plank and then tooled down to give the ribboned effect along the centers of the lines. The complexity of the interlacing grille-work can be appreciated best if the reader will follow various lines with the point of a pencil. The thick coat of dark brown lacquer was apparently applied in several layers, and on top of this there was originally a geometric design painted with red pigment which had nearly all vanished by the time the grille reached Chicago. Photographs, even when made with infra-red film, ultra-violet light, and various colored filters, failed to recapture the lines of the original painting.



Final Solution of an Archaeological Jig-saw Puzzle

This intricately designed Chinese grille of carved wood, from a tomb prohably prior to 200 B.C., arrived at Field Museum as a bundle of fragments. Its restoration required chemical treatment of the wood, and months of toil in fitting and fastening the pieces together and filling in gaps where bits were missing. Simultaneously research was conducted to establish facts concerning its history. All the evidence available indicates that it was originally designed as the inside cover to a coffin, states Curator C. M. Wilbur.

What was the thing used for? This question cannot be answered definitely since the grille was not excavated scientifically but was removed surreptitiously when the tomb was accidentally uncovered. The investigation in Shanghai brought out the idea that it was the inner lid of a coffin, a suggestion already advanced by Mr. Bensabott. This, apparently, was the explanation which accompanied the grille from the Ch'ang-sha seller to the Shanghai market. Mr. Cox was able to give some support to this idea because he knew of two very crude pieces of similar function discovered in shaft tombs while he was in Ch'ang-sha. The shape of the grille, and also the fact that it narrows slightly toward one end, strengthens this hypothesis. Modern Chinese wooden coffins, and also those of Han date excavated in northern Korea by Japanese archaeologists, have the same general proportions and often narrow toward the foot. Furthermore, since the grille came from a tomb it must have been closely associated with a coffin. It seems likely that it rested on a frame of pegs over the deceased and just under the stout outer lid of the casket.

Thanks to the combined knowledge and technical skill of Field Museum staff members and friends this unique specimen of Chinese woodwork, tentatively dated as third century B.C., was now ready for exhibition. The next step was installation. To put the grille in its proper time relation to other Chinese archaeological specimens in George T. and Frances Gaylord Smith Hall (Hall 24) a case of Chinese bronzes was emptied and taken to the workrooms for reinstallation. It was while preparing the new exhibit that discovery was made of two inscriptions which had escaped notice during thirty years that the bronzes had been in Field Museum. The discovery of inscriptions dating from the first and the third centuries A.D., and their interesting content, are the subjects of a second article which will appear in an early issue of FIELD MUSEUM NEWS.

#### Meteorite Studies

The first serious studies of meteorites by scientists were made in 1833. Field Museum today has, in Hall 34 of the Department of Geology, the world's most nearly complete representation of recorded meteorites, including specimens of nearly two-thirds of the approximately 1,200 falls which are known.

# Leaflet on Mistletoe and Holly

A leaflet, Mistletoe and Holly, by Miss Sophia Prior, is on sale at the Museum. It presents in interesting form the principal botanical informamation as well as the folk-lore of these two Christmas plants.

# THINGS YOU MAY HAVE MISSED

#### Model of a Gold Mine Illustrates the Complexities of Obtaining Precious Metal

Gold today, despite almost world-wide aberrations from the monetary gold standard, is still the subject of much speculation by economists and comment by politicians and journalists. Although the United States Treasury has buried most of its supply at Fort Knox, and the average citizen cannot obtain any except for dental purposes, gold watches, jewelry, and other limited uses, gold retains its lure. It is still mined, and still cherished for its value—for what it

a hoisting compartment through which the ore is raised on an elevator called a cage, and a smaller compartment, the ladder way. Through this compartment, equipped with ladders for emergency use, all pipes and wires are led. A hoist in the background raises and lowers the cage.

Two levels lead from the shaft horizontally across the model. They connect the shaft with the working places. At the shaft the levels are somewhat enlarged forming the



Exhibit Shows Gold Mine in Cross Section

Because it was found that many laymen regarded gold mining as a simple operation of digging a hole in the ground and bringing out the ore, the Department of Geology devised this model of a mine, illustrating the various types of workings and the principal methods employed. Other models show how the metal is extracted from the ore.

represents in our domestic financial system, and in international exchange.

On exhibition in Frederick J. V. Skiff Hall (Hall 37) of the Department of Geology is a small model of an Arizona gold mine which shows most of the ordinary methods of mining vein ores. The model represents a small gold mine of medium richness in a vertical quartz vein. From this model one may learn how gold is mined, what the various types of mine workings are, and the reasons for the methods employed. The ore in the upper part of the mine is a weathered iron-stained quartz which contains minute particles of free gold. In the lower part, the ore is in the form of brilliant metallic-yellow sulphides of iron and copper. Near the right edge the vein is intersected by another which contains silver and lead in the form of black grains of the sulphide of lead (galena) in the lower part, and as brownish and yellowish earthy oxidation products above.

On the left is a two compartment shaft which gives access to the mine. It contains

stations. The levels contain tramways and ore cars. A pipe for compressed air branching from a main pipe conducts compressed air from the compressors at the surface to the drills.

The stopes are chambers hollowed out above the levels and are the working places where the ore is extracted by drilling with compressed air drills and blasting. Forms of stopes vary to suit mining conditions. Those in this model are overhand stopes, so-called because the ore is removed from overhead and the work proceeds upward. Ore is drawn from these stopes, from time to time, through the chutes to ore cars in the levels. Access to the working faces is through cribbed manways which lead through the broken ore. Worked out stopes are filled with rock.

The shaft-like openings at the right are raises, so-called because they are driven from below. They are excavated for exploration and ventilation. Several small pits sunk from the floor of the levels are called winzes. These are excavated for exploration.

# Field Museum of Natural History

FOUNDED BY MARSHALL FIELD, 1893 Roosevelt Road and Field Drive, Chicago TELEPHONE: WABASH 9410

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### BOTANICAL EXPLORATIONS IN VENEZUELA

BY LLEWELYN WILLIAMS CURATOR OF ECONOMIC ROTANY

Venezuela is a fascinating country of Andean highlands with peaks towering up to 16,000 feet, of broad savannas and plains or llanos, and of extensive forests harboring many useful products. It received its name, which means "Little Venice," in 1499 when the Spaniard, Alonzo de Ojeda, explored the north coast of South America, which in the seventeenth century became the Spanish Main of Sir Henry Morgan's piratical forays.

Its flora is unusually rich, conforming with the variation in the topography of the country, and furthermore serving as a link between the flora of Central America and that of northern South America. Botanically, the best known region is that bordering the Caribbean Sea, where explorations have been conducted by such eminent botanists as Loefling, Jacquin, Bredemayer and Schacht, Humboldt and Bonpland, Vargas, Moritz, Fendler, Karsten, Ernst, Pittier, and others.

#### PLANT SURVEY FOR GOVERNMENT

From early in 1938 to the end of October, 1940, the writer (on leave of absence from Field Museum) as a member of the Botanical Service of the Ministry of Agriculture and Animal Husbandry, under the direction of its chief, Dr. Henri Pittier, has been engaged in the botanical exploration of little-known parts of Venezuela. Frequent excursions of brief duration were made to various areas along the coast and particularly to the National Park, a large tract of virgin forest extending northward from Lake Valencia to Ocumare de la Costa and Choronf. But the principal investigations were conducted

in the region south and east of the Orinoco River, which is popularly known as the Venezuelan Guiana.

History relates that the first white man to ascend the Orinoco was Ordaz, who in 1531-32 went as far as the mouth of the River Meta. After him followed the usual band of treasure seekers in quest of El Dorado, but instead of golden cities they found yawning graves in a hostile tropical forest. Early in the eighteenth century the Jesuit fathers established missions as far up the river as Esmeralda, near the famed Mount Duida, but these have long since disappeared. In 1800, Humboldt and Bonpland made their memorable voyage to the Casiquiare, the natural channel between the upper Orinoco and the Río Negro. Later, Richard Spruce and Richard Schomburgk explored these remote areas, to be followed at irregular intervals by a number of other scientific expeditions. In spite of all the efforts of these pioneers, both early and late, it is remarkable that even to this day the Venezuelan Guiana still remains one of the least known territories of the western hemisphere.

The first expedition to the Guiana undertaken by the writer left Caracas early in February of 1939 and returned in May, all of which time was devoted to the study of the middle and lower Caura. This is one of the principal affluents of the Orinoco, rising in the highlands near the Brazilian frontier (see FIELD MUSEUM NEWS, July, 1939, page 4).

In conjunction with the Venezuelan-Brazilian Frontier Commission, the second expedition started in late February of this year and was concluded in July. During this period investigations were made in the middle Paragua, at El Palmar, close to the Delta Amacuro, in the vicinity of the River Cuchivero, Middle Orinoco, and in the northern limits of the federal territory of Amazonas. A brief excursion was also made to the upper reaches of the Ventuari.

#### MANY IMPORTANT PRODUCTS

As a result of these explorations there were discovered many new species of plants, and others which, although known, were hitherto unrepresented in the principal herbaria. Duplicate specimens from these collections have been added to the Herbarium of Field Museum. At the same time there was assembled the first known collection of woods of the region, which is now represented by duplicate samples in the Museum's study series. In addition, there was gathered considerable data regarding the various types of plant formations, and the distribution and occurrence of economic forest products of increasing commercial importance at the present time, such as rubber, chicle, balata, fibers, and vegetable oils, particularly those of palms. Other plant materials now little known, but possessing potential value, were also studied. Among the latter are barbasco, a woody vine of

the pulse family, employed by the natives as a fish-poison and now finding extensive use in the manufacture of insecticides, and curare, a highly poisonous substance widely utilized by the various Indian tribes for application on the darts and arrows with which they hunt game.

#### **NEW MEMBERS**

The following persons became Members of Field Museum during the period from October 16 to November 15:

#### Non-resident Life Members Oscar U. Zerk

#### Associate Members

George W. Dixon, Jr., Mrs. Moise Dreyfus, Edward H. Fabrice, Alan K. Gidwitz, Arnold Horween, Miss Isabel Kopf, George E. Kuh, John R. Magill, Miss Anne L. Milburn, Paul Moore, Clinton F. Smith, Merle J. Trees, Joseph J. Tumpeer, David C. Verson.

#### Annual Membera

A. J. Adams, Sidney Adler, Fred T. Brandt, Charles H. Cooper, Stanley Dobricky, Heber T. Dotson, Donald W. Easter, Walter L. Eckhouse, Hubbard H. Erickson, Donald N. Gellert, Mrs. Manny Guzik, Mrs. Byron Harvey, Jr., Charles M. Hofman, Arthur M. Hollaman, Joseph Hollerbach, Miss Berenice Holmes, Dr. Robert E. Huff, Miss Kathryn M. Johnson, Mrs. E. W. Kettering, William L. Latimer, David A. Lawson, Joseph Kirk Love, Mrs. Cora E. Lynch, Mrs. Donald MacMurray, Mrs. Albert F. Madlener, Jr., Alfred J. Moss, Mrs. William R. Payne, William C. Peck, Fred W. Rembold, Miss Maud E. Scott, Mrs. Ross Siragusa, John P. Suomela, Robert F. Taylor, William R. Uhlemann, Mrs. James J. Versluis, and Charles J. Zimmerman.

#### 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 6 P.M.

May, June, July, August. 9 A.M. to 6 P.M.

Admission is free to Members on all days. 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 achools, and special entertain-ments 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 Satur-day afternoona (at 2:30 o'clock) in March, April, October, and November.

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

Chicago Motor Coach Company No. 26 bussea 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 automobilions the Museum mobiles at the Museum.

# BUSINESS MAGAZINE APPRAISES FIELD MUSEUM'S SERVICES

BY RICHARD LYON BROWN
PART II

(Editor's Note.—Members of the staff of Field Museum could write about the services of this institution to business and industry, but it is even more interesting to obtain the viewpoint of a writer from outside. Following is the second and concluding installment of an article which appeared in the August issue of COMMERCE, published by the Chicago Association of Commerce, and reprinted here by permission of the editors of that periodical. The first part appeared in the November issue of FIELD MUSEUM NEWS).

The Department of Geology at Field Museum furnishes help on questions about minerals and mineral products. More than one State Street jeweler turns to the Museum for positive identification of rare gems. This year a woman brought in an amber necklace she had bought in China. It had begun to peel, and the geologists were obliged to tell her that the beads were wood, and the warmth of her neck was taking off the lacquer. For years a man in Arkansas has been sending in suspected ores for analysis. If he ever finds a mine, the Museum will share in his triumph if not in his profits.

Rock specimens that may contain gold or silver come in from all parts of the country. While the scientists will not assay the samples, since that would be encroaching upon private business, they usually provide enough information to prevent individuals and firms from being swindled or to encourage additional investigation before investing.

The striking color harmonies found in the Museum's collection of precious stones were reproduced a decade ago by a motor car manufacturer in an array of alluring hues. The large collections of clay, coal, alkalies, and ores have furnished ideas and information of value to many industries. The light yellow of titanium ore, for example, suggested its application in dentistry. Recently titanium ore has been found to be the only substance that gives the correct yellow cast to artificial teeth.

During the last war, the Department of Geology was able to supply the government with immediate data on the location of American deposits of minerals. Since then, one necessity—potash—has been discovered in sufficient quantities in Texas to make the United States independent of outside help. Other such new information—which the geologists are often the first to have—can be made available to the government if the need arises.

#### COMBATING INSECT PESTS

The Zoology Department's collection of exotic birds inspired the iridescent hues offered by Dupont a few years ago. The entomologists of this department give valuable advice on insect pests that attack

foods, woods, cloth, and animals, and suggest the physical or chemical methods for combating them. A packing concern whose cold storage houses became infested with an insect was shown by the Museum the proper method for disposing of it. Before launching new products, insecticide manufacturers often check with the Museum authorities.

Commercial houses dealing in animal products frequently bring specimens to the department for identification; a few hairs, feathers, or a bone or a sample of leather may be enough. From these the source can be identified, often to the species, from the Museum's exhaustive collections of zoological specimens.

Many breeders of game and fur-bearing animals and, of course, fur merchants, habitually confer with the department's experts. The exhibits of mounted animals in the Museum are frequently used as models by illustrators and advertising artists.

Of all these diverse contributions to our commercial life, no record is made. But so it is, time after time, that the truth of a stated claim, the genuineness of a sample, the verdict on a bit of printed matter, or the decision on whether or not to accept a shipment—any of these may rest entirely upon the word of a scientist in Field Museum. Manufacturers, mail order houses, traders, retailers, and service institutions all may find that their questions may be answered or their hopes realized or dispelled by this vast bureau of scientific information.

Long ago, a good many firms learned of its usefulness to industry, and lately more and more businesses are turning to it for authentication of vital facts. In a world where the search for truth and its dissemination are not looked upon entirely with compassion, and at a time when some of the great European storehouses of age-old knowledge are in spiritual if not physical jeopardy, it behooves us to stop and consider the immeasurable value of our own museums, not only in our immediate interests, but as a civilizing force in what is, we wish to believe, the ascent of man.

#### Soil Composition

How are soils formed? Of what are they composed? What plant foods do they contain? These, and other questions about the nature of the several kinds of soils, are answered by an exhibit in Hall 36 of the Department of Geology.

### 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.

### SUNDAY LECTURES THIS MONTH TO DEAL WITH METEORITES

"Mysterious 'Night-Riders' of the Sky," a subject entirely new among the "Layman Lectures" given on Sunday afternoons at Field Museum by Mr. Paul G. Dallwig, will be introduced to his audiences during

December.
Under this
title, Mr.
Dallwig will
take his hearers
on an imaginary trip into
that mysterious outer space
we call the Universe, with its



planets, stars, and meteors all traveling at terrific speed. He will explain the differences between comets, meteors, and meteorites, and tell the fascinating stories connected with the more important meteorite "falls." In addition, Mr. Dallwig will dramatize the phenomena which science indicates a party of human beings would encounter should they find it possible, by means of rockets or some other device, to visit the moon. He will also relate some interesting lunar mythology and folklore.

The lecture will be illustrated by the Museum's meteorite collection, which is the most comprehensive in the world and contains specimens representing the more important "falls" to which Mr. Dallwig will refer in his lecture. His hearers will also be given opportunity to study the large model of the moon on exhibition in the Department of Geology.

To meet the demands for accommodations. the same lecture will be presented on each of the five Sundays of the month (December 1, 8, 15, 22, and 29). Lecture audiences assemble promptly at 2 P.M. Because the number that can be conducted among the exhibits under comfortable circumstances on a lecture of this type is limited, it is necessary to make reservations for all Sunday lectures well in advance. This may be done by mail or telephone (WABash 9410). Children cannot be accommodated. The lectures last until 4:30 P.M., but midway there is a half-hour intermission. During this interval those who desire to smoke or obtain refreshments may do so in the Cafeteria, where special tables are reserved for the group.

Mr. Dallwig's lectures in January will be on the subject "Digging Up the Cave Man's Past," to be illustrated by the dioramas and other exhibits in the Hall of the Stone Age of the Old World. Reservations for January are currently being taken.

From the middle of the fourth millenium B.C. to the fourth century A.D. is the span of the cultures illustrated by exhibits in the Hall of Babylonian Archaeology (Hall K).

# 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 wrapping, and the dispatching of gift purchases to the designated recipients, together with such forms of greeting as the purchaser may specify. Purchasers may also indicate the date upon which delivery is to be made.

#### GIFTS TO THE MUSEUM

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

Department of Anthropology:

From Messrs. Grow and Cuttle, Chicago—4 porcelains and one lacquer piece of the Sung and Ch'ing periods, China; from T. H. MacAllister, Chicago—2 metates and 4 manos, New Mexico.

Department of Botany:

From Museo Nacional, San José, Costa Rica—134 herbarium specimens, Costa Rica; from George L. Fisher, Houston, Texas—52 herbarium specimens, Texas; from Dr. V. W. Lindauer, Keri Keri, New Zealand—8 specimens algae, New Zealand; from Dr. Angel Maldonade, Lima, Peru—11 specimens of Arthrospira platensis, Peru; from Donald Richards, Chicago—432 specimens of cryptogams; from Illinois State Museum, Springfield—155 herbarium specimens.

Department of Geology:

From John W. Jennings, Eureka Springs, Ark.—a specimen of percussion cone on chert, Arkansas; from Museo Nacional, San José, Costa Rica—177 specimens of fossils and 13 of minerals, Costa Rica; from Charles E. Blum, New York City—a stylolite, Wisconsin; from E. E. Schneider, Chicago—2 specimens blue "opaline" quartz porphyry, Texas; from Mrs. L. Jeannisson, Park Ridge, Ill.—a specimen of azurite and malachite, Arizona; from Mrs. Cora Jenkins, Chicago—16 barite roses, Oklahoma; from Bryant Mather, Chicago—a specimen of shortite, Wyoming.

Department of Zoology:
From University of Maine, Orono, Me.—
2 fish specimens, Maine; from Mrs. Don L.
Frizzel, Negritos, Peru—4 snakes, Peru;

from Padre Cornelio Vogl, Caracas, Venezuela—686 specimens spiders, scorpions, harvestmen, and insects, and 5 fish, 11 frogs, and a lizard, Venezuela; from Boardman Conover, Chicago—22 parrots and 3 ant-thrushes, South America; from Princess Sigismund of Prussia, Barranca, Costa Rica—a green snake and 7 specimens of land shells, Costa Rica; from Rupert L. Wenzel, Chicago—10 salamanders and 361 insects, Indiana; from Lincoln Park Zoo, Chicago—2 lizards; from Chicago Zoological Society, Brookfield, Ill.—15 birds, 4 snakes, and 6 mammals.

The Llbrary:

Valuable books from Emil Liljeblad, Karl P. Schmidt, and Dr. Earl E. Sherff, all of Chicago.

# Distinguished Visitors

Among distinguished visitors recently received at the Museum are: Dr. William B. Pettus, president of the College of Chinese Studies, Peking; Dr. John T. Buchholz, head of the Department of Botany at the University of Illinois, and Professor George N. Jones, also of the botanical faculty; His Beatitude, Eshai Shimun, Patriarch of the Church of the East; Dr. R. H. Palmer, of Havana, a distinguished authority on Cuban paleontology, formerly chief paleontologist of the Instituto Geologico of Mexico; and Miss Margaret C. Irwin, special librarian and cataloguer of anthropological specimens at the Santa Barbara (California) Museum, who studied the system, used in Field Museum's Department of Anthropology, of cataloguing specimens by subjects.

#### 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 showing the subjects on each date, and the names of the lecturers assigned to special subjects:

Week beginning December 2: Monday—The Differences Between Monkeys, Apes and Men (Mr. Loren P. Woods); Tuesday—General Tour; Wednesday—Tomorrow's Plants (Miss Marie B. Pabst); Thursday—General Tour; Friday—Man in the Geographic Theater (Mr. Clarence Brown).

Week beginning December 9: Monday—What Is a Bird? (Mrs. Leota G. Thomas); Tuesday—General Tour; Wednesday—The Grand Canyon Tells Its Story (Mr. Bert E. Grove); Thursday—General Tour; Friday—Primitive Man's Superstitions and Beliefs (Miss Elizabeth Hambleton).

Week beginning December 16: Monday—A Rock May be A Treasure Chest (Mrs. Leota G. Thomas); Tuesday—General Tour; Wednesday—Life Usually Unseen (Miss Marie B. Pabst); Thursday—General Tour; Friday—Habits and Habitats of Reptiles (Mr. Loren P. Woods).

Week beginning December 23: Monday—Our Precious Resources (Mr. Bert E. Grove); Tuesday—General Tour; Wednesday—Christmas holiday, no tour; Thursday—General Tour; Friday—Aspects of Animal Defense (Mr. Loren P. Woods).

Week beginning December 30: Monday—Fashions from Cave Men On (Miss Elizabeth Hambleton); Tuesday—General Tour.

Persons wishing to participate should apply at North Entrance. Tours are free. By pre-arrangement with the Director, special tours are available to parties.

#### Staff Notes

Dr. Paul S. Martin, Chief Curator of Anthropology, has been honored by an invitation to represent scholars of New World written languages at a symposium of epipigraphers to be held in December at the Oriental Institute of the University of Chicago. Dr. Martin will present a paper on the only two known systems of writing originated in the New World, those of the Mayas and the Aztecs. Scholars from other institutions will present papers on other principal systems of writing in other parts of the world.

Mr. D. Dwight Davis, Assistant Curator of Anatomy and Osteology, recently visited leading museums in various eastern cities to study comparative data required in his special research project in connection with the anatomy of the giant panda.

Mr. Clarence L. Brown, a graduate student at Northwestern University, has joined the staff of the James Nelson and Anna Louise Raymond Foundation as a volunteer.

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