BULLETIN

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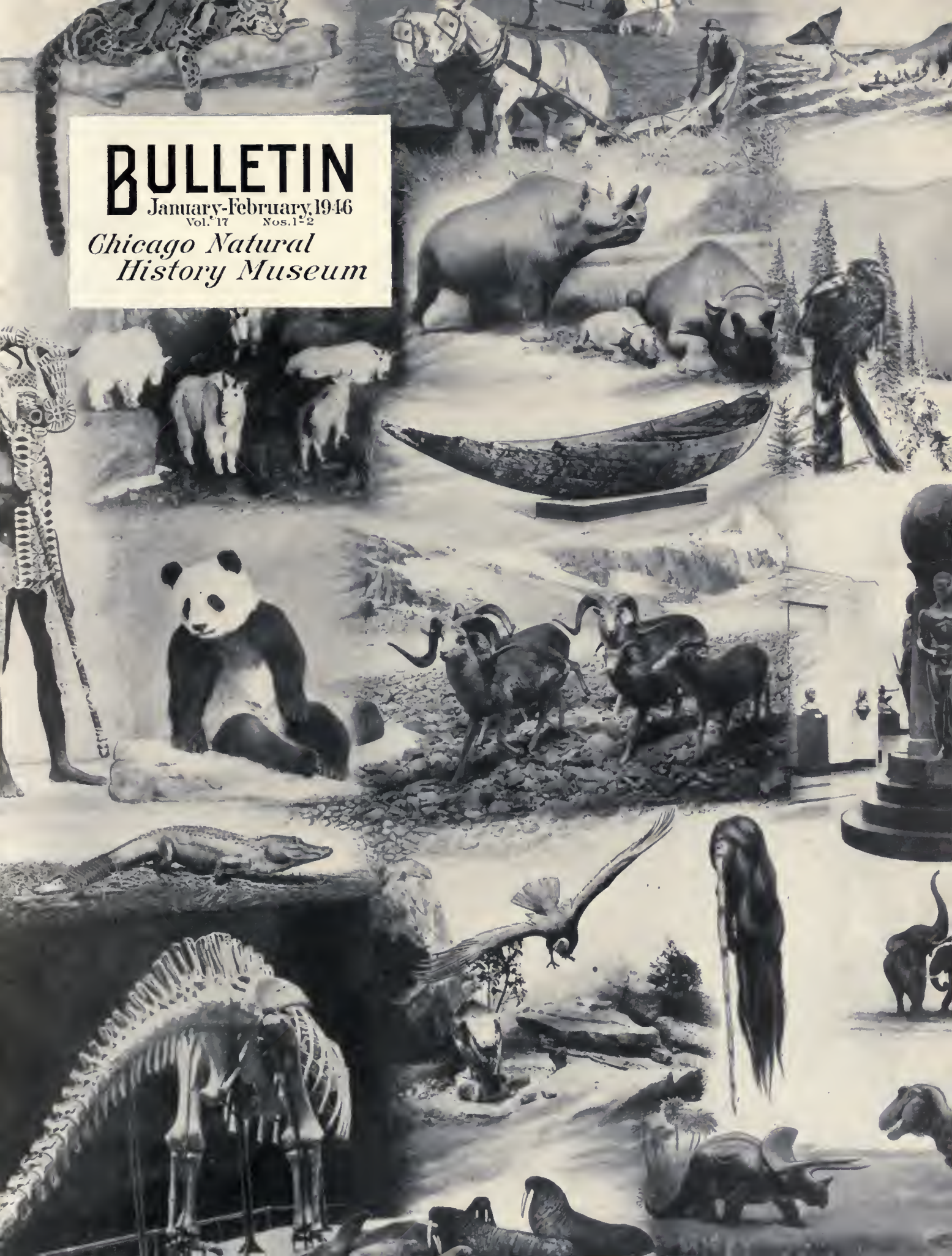
Chicago Natural History Museum



HAPPY NEW YEAR

The "montage" of pictures on the first page of this Bulletin is just a reminder that these—and thousands of other exhibits—are available to you and your friends at the Museum every day of the year (except Christmas and New Year's Day) and that new exhibits are constantly being added to the permanent collections.

On page 3 is a calendar of special events scheduled for 1946, to which you are cordially invited.

"IN LOVING MEMORY"

By WILFRID D. HAMBLY
CURATOR OF AFRICAN ETHNOLOGY

The worship of ancestors has been commonplace in many parts of the world. Among African Negro tribes there is a firm belief that souls of the dead carry on their existence in a world of spirits in much the same way as they lived on earth. The chief, king, or other person of high distinction will remain opulent after his death, and he therefore requires cattle, servants, and various worldly possessions to be buried with him. In many African tribes the initial sacrifices at the death of the king were not enough, and elaborate annual ceremonies were held for replenishing the king's household by a sacrifice of slaves.

In many of the islands of Melanesia there is a firm belief in the power of ghosts for good or evil. Funeral rites must be properly carried out, and at periods offerings of food must be placed on the graves. This is necessary because the ghosts of the departed are in close touch with the lives of living people whose welfare they can profoundly influence.

An extremely interesting example of a human effigy which is connected with spiritual beliefs has been presented to Chicago Natural History Museum by Commander Ward E. Guest. It was collected by him during war service in the Pacific. The effigy was made by the Big Namba tribe of Malekula Island in the New Hebrides group, and is typical of similar objects made in other islands.

In order to preserve the memory of the dead, many Melanesians who inhabit a large number of islands in the West Pacific treasure human skulls. These are often kept in men's clubhouses where no woman is allowed to enter. Sometimes ancestral skulls are preserved outdoors in a sacred rock shelter or in a hollow tree trunk. Many of the skulls are lavishly decorated with masses of clay ornamented with various pigments.

The effigy given by Commander Guest has a total length of 66½ inches and consists of the original human skull to which a body has been attached. The body is entirely artificial. The lower limbs consist of bamboo tubes, and the arms are made of sticks. This wooden structure is thickly plastered with clay and fiber which is decorated with stripes of yellow, blue, and white pigments.

The skull is thickly encased with clay which has been molded to take the form of a human face, and this, like the body, is decorated with colored stripes.

The creation of this human effigy is the expression of a very natural desire not to forget the dead; and the sentiment, though no doubt an expression of regret, arises to some extent from fear of the havoc that might be wrought by an offended ghost who feels that his memory has been neglected. Such effigies as this are planned before the death of a person of note, who in some instances makes payments before his death on the understanding that such an effigy will be well constructed and carefully preserved in a hiding place known only to some of the older and more important males of the tribe.

BIG NAMBA TRIBAL MONUMENT

Effigy from Malekula in the New Hebrides, collected for the Museum by a naval officer in the Pacific command. It consists of a wooden and clay body attached to the original skull of the person whose memory is preserved.

In the cave or other shelter where effigies and skulls are preserved there is usually an elderly attendant who guards the relics and tends a slow, smoky fire which serves as a means of protecting the sacred objects against dampness and the attacks of insects.

An exhibit in Hall 34 contains pictures taken without light, by emanations from the radium in uranium minerals.

PREHISTORIC AMERICAN COPPER OBJECTS

By GEORGE I. QUIMBY
CURATOR OF EXHIBITS, ANTHROPOLOGY

Examples of objects representing the first use of copper in North America—probably before A.D. 700, by the "Old-Copper Indians"—are shown in a new exhibit just added to the Hall of American Archaeology (Hall B).

Few people realize that a copper industry had been developed so early in America. These Indians, representing the archaic stage of the early Woodland tribes, made their tools and weapons of copper—and were thus advanced in this respect not only over their predecessors but even beyond later American Indians who were still using bone and stone for these purposes centuries later. Their use of copper was entirely for utilitarian purposes; they did not use it for ornaments as was done by later tribes.

The Indians who did this work inhabited the upper Great Lakes Region and obtained their raw copper from the south shore of Lake Superior. They shaped their implements and weapons by cold hammering or by alternate heating and hammering—the melting and casting of copper were unknown. In the exhibit, several of the specimens have been cleaned to show how they looked when new; others have been left with their full patina as discovered.

FISH MODELING TECHNIQUE EXPLAINED IN EXHIBIT

"Only God can make a tree," says the song, but the Museum recently placed on exhibition a display of something just as intriguing—"How to Make a Fish"—or, to be more exact, at least how to make a model of a fish.

Actual fish specimens are impractical for preservation in a lifelike condition for museum exhibition, but the hundreds of fish models included in the Museum's piscatorial hall (Hall O) are so lifelike that visitors frequently ask "How do you do it?" This is a difficult question to answer, involving many steps and processes, so Staff Taxidermist Leon L. Pray, who prepares most of the fish exhibits, was assigned to devise an exhibit which would give a visual demonstration to answer such questions.

The exhibit represents these steps:

The fish freshly received from the lake, laid out in moist sand ready for casting; the making of the mold of plaster-of-paris; removal of fish cast from the mold; preparation of model for attachment of fins; natural fins and the carved celluloid fins made to duplicate them; application of "pearlessense" in liquid celluloid to give the fish model a lifelike body sheen; finally the finished fish model, painted and waxed—with the colors applied thinly over the pearly coat.

MUSEUM STAFF APPOINTMENTS: DEPUTY DIRECTOR AND NEW HARRIS EXTENSION CURATOR

Mr. John Randolph Millar, a member of the Museum staff for 29 years, and Curator of the Department of the N. W. Harris Public School Extension since 1938, has been appointed Deputy Director of the Museum, effective January 1, 1946.

JOHN R. MILLAR

Mr. Richard A. Martin, Curator of Near East Archaeology since 1937, has been appointed to replace Mr. Millar as Curator of Harris Extension.

Both appointments were affirmed by the Museum's Board of Trustees at its last meeting, held on December 17.

As Deputy Director, Mr. Millar will assist Colonel Clifford C. Gregg, Director, in many details of the administration of the Museum as a whole, and serve for the Director in his absence. He will give particular attention to selection and preparation of material for special exhibits, a number of which he has formerly handled with outstanding success. In addition, he will have charge of certain other activities to which hitherto no staff member has been specifically assigned.

Interested keenly, even before finishing high school, in natural history and in the work being carried on by the then Field Museum, to which he had often been a visitor, Mr. Millar had an early opportunity to enter the museum field. Shortly after graduation, he was employed, in 1917, by Dr. B. E. Dahlgren, now Chief Curator of Botany, in the preparation of a greatly magnified model of a mosquito for the American Museum of Natural History in New York. A few months later he began regular employment as a preparator in the Plant Reproduction Laboratory of the Department of Botany of this Museum. At various periods, he continued his education in courses at the Armour (now Illinois) Institute of Technology, and the University of Chicago.

Mr. Millar has been a member of four important Museum expeditions. The first was to southern Florida in 1918–19. In 1922 he was a member of the Stanley Field Expedition to British Guiana. In 1926 he again went to South America as a member of the Marshall Field Expedition to Brazil. In 1938 he conducted the Sewell Avery Expedition to the Bay of Fundy which obtained the collections and data necessary for the Maine seacoast diorama in Martin A. and Carrie Ryerson Hall (Plant Life, Hall 29).

Since his appointment as Curator of the Harris Extension, Mr. Millar has done much to improve and expand the effectiveness of that department's activities in providing and circulating supplementary educational material throughout Chicago's public, parochial and private schools.

NEW HARRIS EXTENSION CURATOR

Mr. Martin, the new Curator of the Harris Extension, is known for his excellent work in assembling and preparing the Babylonian collections in Hall K of the Museum, and particularly for his restoration of the Kish gateway exhibit which is the outstanding feature of that hall. Before joining the Museum staff, Mr. Martin was Field Director of the Syrian Expedition of the Oriental Institute of the University of Chicago, and spent seven years in the Near East and contiguous regions, directing excavations and making studies of ancient civilizations.

RICHARD A. MARTIN

In 1934 he was a member of the Marshall Field Anthropological Expedition to Iraq, Iran, and other areas of the Near East for this Museum. In 1935, the Museum engaged him to work on material collected at Kish by the Field Museum-Oxford University Expedition. He was appointed Curator of Near Eastern Archaeology in early 1937. In addition to his work on the Kish hall, he has thoroughly reorganized the collections in the Hall of Egyptian Archaeology (Hall J), and the ancient Roman and Etrurian collections in Edward E. and Emma B. Ayer Hall (Hall 2). He is the author of a number of publications in his field. In recent months he has been assisting Mr. Millar in the work of the Harris Extension.

DATES TO REMEMBER

1946 CALENDAR

Of Special Events at the Museum

January:

FIRST INTERNATIONAL SALON OF NATURE PHOTOGRAPHY. Opening January 28 (continuing to February 28 inclusive).

SUNDAY AFTERNOON LAYMAN LECTURES by Paul G. Dallwig. *"Digging Up the Cave Man's Past."* 2:30 P.M., each Sunday (Jan. 6, 13, 20, 27).

February:

FIRST INTERNATIONAL SALON OF NATURE PHOTOGRAPHY. (Throughout the month).

March:

RAYMOND FOUNDATION FREE EDUCATIONAL PROGRAMS FOR CHILDREN. Saturday mornings (Mar. 2, 9, 16, 23, 30). Performances at 10 and 11 A.M.

ILLUSTRATED LECTURES ON SCIENCE AND TRAVEL FOR ADULTS. Saturday afternoons (Mar. 2, 9, 16, 23, 30). 2:30 P.M.

SUNDAY AFTERNOON LAYMAN LECTURES by Paul G. Dallwig. *"Gems, Jewels and 'Junk'."* 2:30 P.M., each Sunday (Mar. 3, 10, 17, 24, 31).

April:

RAYMOND FOUNDATION FREE EDUCATIONAL PROGRAMS FOR CHILDREN. Saturday mornings (Apr. 6, 13, 20, 27). Performances at 10 and 11 A.M.

ILLUSTRATED LECTURES ON SCIENCE AND TRAVEL FOR ADULTS. Saturday afternoons (Apr. 6, 13, 20, 27). 2:30 P.M.

SUNDAY AFTERNOON LAYMAN LECTURES by Paul G. Dallwig. *"Who's Who in the Museum Zoo."* 2:30 each Sunday (Apr. 7, 14, 21, 28).

May:

SUNDAY AFTERNOON LAYMAN LECTURES by Paul G. Dallwig. *"The Pageant of Prehistoric Monsters."* 2:30 P.M., each Sunday (May 5, 12, 19, 26).

July:

RAYMOND FOUNDATION SUMMER PROGRAMS FOR CHILDREN on Thursdays at 10 and 11 A.M. (July 11, 18, 25), (continuing each Thursday to August 29 inclusive).

August:

RAYMOND FOUNDATION SUMMER PROGRAMS FOR CHILDREN on Thursdays at 10 and 11 A.M. (Aug. 1, 8, 15, 22, 29).

October:

RAYMOND FOUNDATION FREE EDUCATIONAL PROGRAMS FOR CHILDREN. Saturday mornings (Oct. 5, 12, 19, 26). Performances at 10 and 11 A.M.

ILLUSTRATED LECTURES ON SCIENCE AND TRAVEL FOR ADULTS. Saturday afternoons (Oct. 5, 12, 19, 26). 2:30 P.M.

November:

RAYMOND FOUNDATION FREE EDUCATIONAL PROGRAMS FOR CHILDREN. Saturday mornings (Nov. 2, 9, 16, 23, 30). Performances at 10 and 11 A.M.

ILLUSTRATED LECTURES ON SCIENCE AND TRAVEL FOR ADULTS. Saturday afternoons (Nov. 2, 9, 16, 23, 30). 2:30 P.M.

SUNDAY AFTERNOON LAYMAN LECTURES by Paul G. Dallwig. 2:30 P.M., each Sunday (Nov. 3, 10, 17, 24). *Title to be announced).*

December:

SUNDAY AFTERNOON LAYMAN LECTURES by Paul G. Dallwig. 2:30 P.M., each Sunday (Dec. 1, 8, 15, 22, 29). (*Title to be announced).*

ANCIENT PERSIA'S CULTURES FROM 4000 TO 500 B.C. TRACED IN MUSEUM COLLECTION

By RICHARD A. MARTIN
CURATOR OF NEAR EASTERN ARCHAEOLOGY

Several thousand objects representing various cultural areas of ancient Persia and dating from Neolithic to Achaemenid times (4000–500 B.C.) were recently acquired by the Museum for integration with the artifacts of other ancient cultures of the Near East already on exhibition in Museum halls, and in its reference collections. These objects made up the personal collection of Dr. Ernst Herzfeld, noted scholar and authority on Iranian history, Institute for Advanced Study, Princeton University.

The Iranian plateau was the highway between the Near East and southern and eastern Asia, and was, consequently, a place for the interchange of ideas between the peoples of the civilized world. By the third millennium B.C. clearly integrated cultures extended from the Mediterranean to the Indus Valley. It is this mingling of cultures that laid the foundations for our civilization, and by studying material from this critical area we are able to trace early developments in our own culture.

PERSIA'S ART ZENITH

The pottery vessels in this valuable collection of Iranian material are especially noteworthy because, in addition to their archaeological value, they represent some of the finest forms of Persian art of the various periods. All are complete specimens. Inasmuch as the painted wares of Sumer were Iranian in cultural origin, the collection contains painted pottery from ancient Samarra near Baghdad, from which developed the much later Jemdet Nasr pottery now on display in the Hall of Babylonian Archaeology (Hall K). There are beautifully painted pots of the buff-ware cultures of western Iran, strikingly ornamented with ibexes and eagles. On some of this ware the animal designs are glazed, the earliest known appearance of glazing on pottery (*circa* 3000 B.C.). Representative of certain cultures from northern Iran are exquisite black vessels with burnished designs, and beautifully polished ware of brilliant red. From Sāwa in central Iran, and exemplifying an early type, we have red-slipped ware with painted black designs. There are delicate hand-turned cups of the fourth millennium from Tall-i-Bakun in the province of Fārs. And finally, from the borders of Baluchistan we have the thin, flinty ware of Sīstān, land of the "120-day wind."

This newly acquired pottery from Persia, combined with the Neo-Persian (Sassanid) material already collected in excavations conducted by the Museum, gives an excellent picture of the development of the potter's art in Persia up to the time of the Arab Conquest.

In addition to pottery, there are in this collection representative specimens of other phases of material culture from the various periods in Iranian history. But it is from excavations at the huge burial mound known as Tepe Giyān near Nihawand in northern Luristan that some of the finest items in the collection were found. Here, from the graves of warriors, are objects delineating progressive developments over some two thousand years, from 3000 to 1000 B.C. The fabulous bronzes of exquisite workmanship and detail which created such interest in the art world when they were first discovered in Luristan a few years ago date from the latest period of the Tepe Giyān burials, 1400–1000 B.C.

Some of the finest examples of Luristan bronzes are horse trappings. From the graves of warriors we have horse bits with highly ornamented cheekplates, tassel caps, harness ornaments, and jingles for chariot poles. Lance and arrow points, mace heads, daggers with inlaid hilts, beautifully shaped drinking cups, some with round bottoms so they could not be put down until drained of their contents, and delicately wrought personal ornaments from those graves are in the collection.

ANCIENT AND MODERN PARALLEL

Perhaps the most striking of these ornaments, which were worn by both men and women, are necklaces with amulets bearing a striking resemblance to the charm bracelets which are a popular "fad" today. These ancient charms are of bronze, silver, stone, bone, and faiënce. Most of them are miniature ibexes, horses, dogs, frogs, animal heads, pots, and human hands and feet —as odd and unrelated an assortment as young girls in this country currently assemble, piece by piece, on their bangle bracelets, and apparently with as little significance apart from the desire for ornamentation. However, it is possible some of these objects may have been associated with superstitions or religious symbolism more than the modern ones.

Many of the non-metallic amulets are charmingly glazed and painted. Of silver and bronze are spiral earrings, coiled bracelets with ends cast in the form of animal heads, flat-band bracelets with bells and jingles, finger rings, and torques. There are large ornamental hairpins of bronze with beautifully designed heads. Of course, with all these objects of beauty and frivolity there would be mirrors. And mirrors there are, made of highly polished bronze.

Stylistic affinities between certain of these Luristan bronzes and objects of similar nature recently unearthed in inner Mongolia suggest a common origin. Allowing for the time lag that always occurred in cultural movements to the Far East, the Luristan material quite possibly may furnish a clue as to the age of the recently found artifacts in Mongolia.

Also in the collection are voluminous strings of exquisitely formed beads. Those from Samarra are of shell and stone—the earliest stone beads as yet known. Those from Tepe Giyān represent various periods in ancient Iranian history and are made of stone, shell, bone, faiënce, bronze, silver, and glass.

FIRST DRAFT ANIMALS

It is of interest that it was the ancestors of these same sophisticated peoples, apparently so concerned with frivolous articles of adornment, who first developed many of our cultivated plants—most of the fruits and small grains that are significant in our present-day economy. And it was these same ancestors who first harnessed animal power by domesticating the ox, the ass, and the horse. We are apt to forget, when we trace our cultural development from the Greeks and Romans, that these peoples in turn took their heritage from the great civilizations of the ancient Near East.

Some of the material from this collection has been placed on temporary exhibition in Stanley Field Hall.

FASHION OF 1300 B.C. A FAD OF A.D. 1946

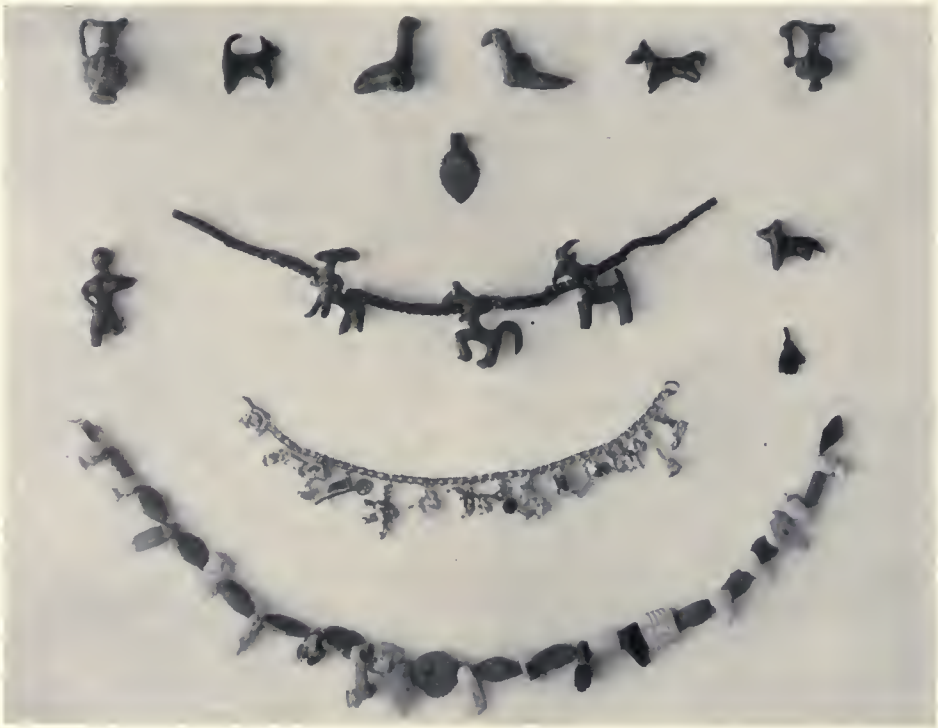
It wasn't today's bobby-soxers who thought up those currently popular bangle bracelets loaded with charms representing sets of false teeth, skulls, whistles, bells, and animals—nor was it the designers whose job it is to create fads for the benefit of novelty manufacturers and merchants.

It was the ancient Persians, circa 1300 B.C., as is proved in a temporary exhibit of 3,200-year old bangle bracelets and necklaces recently placed in Stanley Field Hall of the Museum.

Curator Richard A. Martin, who prepared the exhibit, tells about these and the larger collection of which they are a part, in the accompanying article.

Collecting in Salvador

Under a co-operative arrangement between Northwestern University and Chicago Natural History Museum, Dr. Margery Carlson of the Department of Botany of the University left Chicago December 16 by plane for Central America. She expects to spend about three months in botanical studies in the Republic of Salvador, and part of her collections will come to the Museum. They will be used here for publications now in preparation upon the plant life of Central America.



"COSTUME JEWELRY" OF ANCIENT PERSIA—See preceding page

Special exhibit currently in Stanley Field Hall shows the remarkable resemblance between the motifs of ancient personal ornamentation and some of the popular types used today such as bangle bracelets with figures of animals, human heads and feet, and miniature footballs, pianos, and hundreds of other odd and unrelated objects.

VENOMOUS OKINAWA SNAKES REACH MUSEUM ALIVE

On November 9, 1945, two rare Okinawa pit vipers arrived at the Museum. These snakes were flown in two days from Okinawa to San Francisco by Dr. R. D. Callison, U.S.N.R.; from San Francisco they were sent to Chicago by rail express. Lieut. James R. Slater of Chicago, while in charge of a malaria control team on Okinawa, secured the snakes.

One of the two species is called *habu* by the Japanese and is found only on Okinawa and neighboring islands where it has an especially bad reputation. The Japanese have long prepared an antivenin against the bite of this reptile, which reaches a length of six feet and is more or less arboreal in habits. This is the first live specimen to reach Chicago and one of the first to reach this country. The other species, called *kufah* on Okinawa, is extremely rare in museum collections. So far as we know, no living specimen has reached this country before. It is smaller and less dangerous than the *habu*. The *habu's* scientific name is *Trimeresurus flavoviridis;* the *kufah's* is *Trimeresurus okinarensis.*

The two pit vipers have been sent to the Lincoln Park Zoo where Director Marlin Perkins is attempting to feed them on mice. So far they have refused to eat; one of them has been without food at least since August 20, the other since October 10. If they can be persuaded to feed, they will be exhibited at the zoo until their death when they will be carefully preserved, returned to the Museum, and entered in the study collection of reptiles. —C.H.P.

Museum Authorities Meet

The eighteenth annual meeting of the Midwest Museums Conference was held at Cleveland, Ohio, December 6–8, 1945. The three-day session was devoted to the discussion of museum problems, plans, and achievements, and to the inspection of the several Cleveland museums.

The Conference, which is affiliated with the American Association of Museums, is composed of staff members from art, historical, and natural history museums, principally in the states of Ohio, Indiana, Illinois, Michigan, and Wisconsin. Mr. John R. Millar, Deputy Director, attended as a member of the group and representative of Chicago Natural History Museum.

The relationships between modern elephants and their extinct relatives such as the mammoths and mastodons are illustrated by an exhibit in Ernest R. Graham Hall.

Contributions to the Chicago Natural History Museum, up to 15 per cent of a taxpayer's net income within the taxable year, are allowable as deductions in computing net income for federal tax purposes.

NATURE PHOTOGRAPHY SALON OPENS JANUARY 28

The First Chicago International Salon of Nature Photography, for which both amateur and professional photographers have been making and entering pictures during the last several months, will open at the Museum on Monday, January 28.

Displayed will be the best of the hundreds of photographs submitted, both black and white and in colors. The judges to select those for prizes, honorable mention, and display are: B. D. Holley, of Downers Grove, Ill., an associate of the Photographic Society of America; A. H. Longwell, Chicago, professional photographer; James H. Burdett, Garden Editor of *The Chicago Sun*, and representative of the Chicago Horticultural Society; and Dr. Paul O. McGrew, Acting Chief Curator of Geology, and Karl P. Schmidt, Chief Curator of Zoology of the Museum.

After the exhibit, which will continue until February 28, it is expected that some of the color slides may be obtained for use in educational projects for the school children of Chicago through the Museum's James Nelson and Anna Louise Raymond Foundation.

The salon is held under the auspices of the Chicago Nature Camera Club, with the participation of the Chicago Color Camera Club, and the Chicago Horticultural Society and Garden Center. Each of these organizations is awarding prizes. Associated camera clubs throughout this country and other nations were invited to participate, but entries were accepted from any photographers regardless of affiliation with such clubs. While most of the pictures will be outdoors subjects made in woods and along streams throughout the Middle West and to some extent throughout the world, there may be some also of outstanding Museum material, as the camera clubs staged a field day for this purpose at the Museum on Sunday, December 9.

The photographs and color slides are classified in six divisions:

Plant life—flowers, trees, shrubs, fungi, etc.

Animal life—mammals, birds, insects, reptiles, tracks, etc.

Scenery—with particular emphasis on geological aspects and natural phenomena.

Gardens—especially Victory Gardens and their products.

Anthropology—ethnological and archaeological subjects; primitive man, native habitations, sites of ancient cultures and civilizations, etc.

Color slides—any subjects in the foregoing classifications.

A number of accepted pictures will be reproduced in the *Journal of the Photographic Society of America*, and elsewhere.

THE MUSEUM HONOR ROLL

With the beginning of 1946, the Chicago Natural History Museum BULLETIN omits as a regular feature its Honor Roll of personnel absent in the nation's service. The Museum is proud of the record of its Trustees and employees in the military and naval service, in all grades from private to brigadier general, and in other war work. However, with the passing of the year which witnessed the close of hostilities, we are setting our sights in a new direction. Our people are returning in ever increasing numbers to civil life and to the service of the Museum. Our Honor Roll marks a by-gone period, and we look ahead toward new accomplishments in our own field of research and the dissemination of knowledge.

Trustees Joseph Field, Samuel Insull Return from Service

Mr. Joseph Nash Field, Museum Trustee, who has served during the war in the Navy with successive promotions from the rank of Ensign to Lieutenant Commander, and Mr. Samuel Insull, Jr., who served as Lieutenant-Commander and Commander, have been released from active service. Both have resumed their activity as members of the Museum's Board of Trustees.

Trustee McCulloch Resigns

The Board of Trustees of the Museum has received and accepted the resignation of Charles A. McCulloch, one of its members. Mr. McCulloch's resignation was due to ill health which prevented him from devoting his time further to the Museum's affairs. He had been a Trustee since 1936. His resignation leaves two vacancies on the 21-man board, the other having been caused by the death in France of Brigadier General Theodore Roosevelt in 1944.

Staff Notes

Several more members of the Museum staff in the armed forces have been released recently and returned to their posts at the Museum:

Lieutenant Commander Colin C. Sanborn, who has been on duty in Navy intelligence in South America and engaged in other duties later at Pearl Harbor, has resumed his work as Curator of Mammals.

Mr. D. Dwight Davis has returned to his work as Curator of Anatomy after 37 months in the Army, including six months in the European theater with the 1162nd Combat Engineer Group Headquarters. He was awarded a battle star for participation in the Rhineland campaign. Mr. Davis studied Russian under Army auspices and served as interpreter to a group of more than 300 Russians in France.

Henry S. Dybas, Assistant Curator of Insects, is back at the Museum after serving in the Army Medical Corps as a Staff Sergeant. He was engaged in malarial control work in the Marianna and the Palau Islands, with headquarters at Saipan.

Lieutenant Marie B. Pabst (WAVES), has completed her tour of duty and is scheduled to return to her position as a lecturer on the staff of the James Nelson Anna Louise Raymond Foundation as of January 2.

Lieutenant Alexander Spoehr, U.S.N.R., has been released from service and will return to his post as Curator of North American Ethnology and Archaeology at the Museum on January 2.

Mr. Paul C. Standley, Curator of the Herbarium, has been elected an honorary member of the Sociedad Botánica de México.

Llewelyn Williams, Curator of Economic Botany, recently returned to the Museum from war service with the Foreign Economic Administration, is again on leave of absence from the Museum, for special work in South America.

Miss Norma Lockwood has been appointed to the Division of Illustration as Staff Illustrator.

New Museum Fund

A new fund, to be known as the Broadus James Clarke Fund, has been established in the Museum in memory of the late Chicagoan of that name. The fund was established by Mr. Clarke's widow, and will become a part of the general endowment of the Museum.

Clay Judson Elected a Patron

Mr. Clay Judson, a member of the Chicago legal firm of Wilson & McIlvaine, has been elected a Patron of the Museum in recognition of the many eminent services he has rendered to the institution.

NEW MEMBERS

The following persons became Members of the Museum during the period from October 16 to December 15:

Associate Members

Archie Angelopoulos, William F. Brown, H. C. Bruhn, R. Stanley Cederlund, Philip A. Danielson, William F. Donohue, J. Frank Eaton, Veit Gentry, Dr. Helen L. Button Goldstein, Dr. Charles A. Meyer, Fred A. Preston, Mrs. Edgar P. Rupprecht.

Annual Members

Walter S. Aagaard, Mrs. Arthur L. Allais, Mrs. Ross M. Babbitt, Peter A. Bach, Thomas J. Bach, Paul Bechtner, Otto A. Benzin, G. J. Bichl. Mrs. Leon D. Bloom, Dr. E. L. Bolla, Mrs. Marie J. Bovenkerk, Mrs. John R. Boyle, J. T. Branit, Wallace C. Bridgeman, Henry J. Briede, Mrs. Grace Greenwood Browne, Dr. E. M. Buchner, Mrs. Harry L. Canmann, Mrs. William T. Carlisle, George Wallace Carr, Mrs. James Lyle Cassidy, Dr. P. J. Christenson, Mrs. James M. Cleary, Mrs. Thomas H. Cochran, Mrs. John Coleman, Mrs. Eve Charles Costigan, Knight C. Cowles, Mrs. Tilden Cummings, John A. Dawson, Mrs. S. E. Dean, Jr., Roy R. Deffenbaugh, Dr. N. Alfred Diggs, Mrs. V. B. Dixson, Mrs. William Doepp, Dr. John C. Dubiel, A. D. Elden, Mrs. Arthur Farwell, Mrs. John Favill, Lawrence P. Flavin, Oscar Getz, W. P. Gilbert, Edward B. Groble, William Holabird, Herbert Horwitz, Miss Bohnmilla Hrdlicka, Mrs. John D. Hrdlicka, Marshall E. Huntwell, Harry Kroll, Morris Kroll, Harry Leaf, Miss Theodora Leitz, J. Francis Linthicum, Ralph O. Linville, Abelardo G. Lopez, Joseph G. Lopez, George Loung, Jr., A. B. McMaster, Lyle Munson, Dale O'Brien, Elmer E. Ogilvie, Miss Janet Patzelt, Charles S. Pearce, George A. Ponton, Charles G. Reskin, Mrs. Agnes H. Reynolds, Bernard J. Rix, Mrs. Anthony M. Ryerson, Dr. Robert H. Saunders, Dr. A. L. Schiller, Dr. Carl V. Shipley, Milton Silverstein, Ramond Silverstein, Dr. S. Sinclair Snider, Dr. D. L. Stormont, Dr. August Strauch, Peter VanDahm, Miss Marguerite Lorraine Wallen, Dr. William Wood, Edwin W. Zipse.

Meteorite to Planetarium

The co-operation that exists between scientific and educational institutions in this city as well as those throughout the world, in the exchange of information, publications, materials for study, and in collaboration in research projects, is exemplified by the Museum's action recently in making a long-term loan of a meteorite to the Adler Planetarium.

The Planetarium had lacked an example, and urgently needed one to round out its exhibits pertaining to celestial phenomena. The Museum, having a collection which, in number of falls represented, nearly 800, is the most complete in the world, was able and pleased to fulfill the need of its sister institution. The specimen sent to the Planetarium is a 1,015-pound mass of fused iron and rock from Meteor Crater, Arizona. It fell some 50,000 years ago, scientists estimate.

SCRIMSHAWS

By MARGARET BAUER
DEPARTMENT OF ZOOLOGY

The word "scrimshaw" originally applied to all trinkets made by whalers of the early nineteenth century out of the teeth or the bone of whales. Nowadays the term, as a noun, usually refers specifically to the teeth engraved by the whalemen. The origin of the word is unknown, but scrimshawing was born of necessity during the months of unimaginable monotony and loneliness on long voyages. None of the recreational facilities now enjoyed by sailors were available to these men, nor was any amusement considered necessary to their well-being. They might cruise six to eight months out of sight of land, waiting at times three or four months without seeing whale or sail. Many of their voyages in the Pacific lasted for three or four years.

As sentimental thoughts of home traveled with the men on their long journeys, it was little wonder that so many articles for use by women were made. Carved teeth for bric-a-brac, bodkins, yarn-winders, combs, and toys were made from the sperm whale's large teeth. It was, no doubt, thoughts of New England pies that had an influence on the production of so many pie-crimpers, or jagging wheels.

FAVORITE TROPHY

Though the lower jaw of the sperm whale brought not a cent of profit to the thrifty Yankee shipowner, it was always heaved aboard. It was an inviolable prerogative for all to share, from the captain to the cabin-boy. While the ivory of whale teeth was not the only medium used by the artist (other material being tortoise shell, mother-of-pearl, coconut shells, even emu egg shells) it was his first choice. The teeth of the sperm whale, which could crush thirty-foot boats to splinters, were used because they afforded both a medium for art work, and a trophy of one of the most dangerous and romantic pursuits known to man.

The bone of the lower jaws of various kinds of whales took second place in scrimshaw work. Long straight sections of the great jaws of the sperm whale were excellent for canes and yardsticks, but this material did not have the polished ivory beauty of the teeth, and the bone had a tendency to splinter. Bone from other parts of the whale skeleton was used, but was rather unsatisfactory, being brown in color and without beauty of its own. The whalebone, from the jaws of the whalebone whales, was mainly used as inlay.

GODEY LADY ON SCRIMSHAW
One of the whale's teeth with carved design by a sailor of the mid-19th century, exhibited in the Hall of Whales.

AN AMERICAN ART FORM

Some marvelously delicate and beautiful free-hand etchings were made with the crudest of tools. In decorating the teeth, the design was scratched on the smooth hard surface, and color, such as India ink, paint, or even soot was rubbed into the incised lines. Many sailors less artistically endowed traced designs by pin-pricks from magazines and illustrated papers. They followed standardized motifs mostly, and hence we find many Godey ladies, portraits of Napoleon, and stereotyped scenes of all kinds. While the more original etchings were often cruder, they were more interesting, showing authentic whaling scenes and scenes of home life.

Examples of scrimshaw work may be seen in the Hall of Whales (Hall N-1).

LAKE MICHIGAN "BARNACLES" ARE SOMETHING ELSE

Although there are no fresh water barnacles, Lake Michigan yachtsmen, after hauling their boats out of the water for winter lay-up, are usually busy for a time scraping the season's accumulation of "barnacles" from the hulls.

This has proved very disturbing to Dr. Fritz Haas, Curator of Lower Invertebrates at the Museum, who in addition to being a biologist is a language purist. Says Dr. Haas:

"One might think these sedentary animals, found only in salt water, had appeared in Lake Michigan, for I heard a sailboat owner here say it was time to clean his hull of barnacles. My curiosity was obligingly satisfied by the information that the barnacles were just an outgrowth of weeds and water plants.

"It seems that local yachtsmen, either not knowing what barnacles really are, or merely careless in their use of language, have applied the name to any kind of outgrowth on a boat's hull. This explanation satisfies the biologist's side of my mind, since it shows that barnacles have not really invaded fresh water, which, had it been true, would have been a fact of considerable scientific importance.

"But the linguistic portion of my consciousness is troubled. If the term 'barnacle' is accepted to designate any outgrowth on the submerged parts of boats, the language will suffer the introduction of an inexactitude. As fresh water growths consist entirely of plants, whereas barnacles are crustaceans and thus animals, such change from the original meaning, if unchallenged, may become a permanent, unfortunate and misleading misnomer."

Youth of 4-H Clubs In Annual Visit

Continuing their custom of many years' standing, the National Congress of 4-H Clubs sent delegations of selected young people from the farms of all parts of America on visits to the Museum during their sojourn in Chicago at the time of the Fat Stock Show. A group of 350 4-H girls came to the Museum on December 3, and some 300 4-H boys on December 4. Lectures and guidance were furnished by staff members of the Museum's James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures.

Distension of the ear-lobe, even with objects as large as round cigarette tins, is a fairly common form of African Negro ornament. In Hall E, Case 33, are some examples of round wooden ear-plugs and fine metal chains, worn in the ear-lobes of Akikuyu women of northeast Africa.

JANUARY SUNDAY LECTURES FEATURE CAVE MAN

"Digging Up the Cave Man's Past" will be the subject for the Sunday afternoon lectures by Paul G. Dallwig to be given during January (Jan. 6, 13, 20 and 27).

In these lectures, illustrated by prehistoric man dioramas and other exhibits in the Museum's Hall of the Stone Age of the Old World, Mr. Dallwig will trace the physical evolution of man, and his cultural development through the Old and New Stone Ages, with special attention to prehistoric art. As a special feature he will dramatize a prehistoric murder as it might have occurred due to jealousy over the Magdalenian woman whose skeleton is on exhibition at the Museum together with the weapon that killed her.

The starting time of the lectures is 2:30.

The heavy demand by the public for Mr. Dallwig's lectures, and the necessity of limiting the size of each audience make it necessary to require advance reservations. Lectures are necessarily restricted to adults. Reservations will be accepted by mail or telephone (WABash 9410).

Mr. Dallwig will not appear on Sunday afternoons during February because of out-of-town lecture engagements. He will resume his Museum lectures on the first Sunday in March, continuing through April and May.

GIFTS TO THE MUSEUM

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

Department of Anthropology

From: Comdr. H. K. Rendtorff, Pullman, Mich.—a ceremonial mask of the Big Namba tribe, New Hebrides.

Department of Botany

From: Iowa State College, Ames, Iowa—145 herbarium specimens, Guatemala; Prof. J. Soukup, Lima, Peru—35 herbarium specimens, Peru; Dr. José Cuatrecasas, Cali, Colombia—125 herbarium specimens, Colombia; Museo Nacional, San José, Costa Rica—62 specimens of orchids, Costa Rica; Dr. Paul D. Voth, Chicago—59 cryptogams, Kansas, South Dakota, and Wisconsin; J. Francis Macbride, New Plymouth, Idaho—249 cryptogams, California and Arizona; Dr. Maxwell S. Doty, Evanston, Ill.—31 specimens of algae, Oregon and California; Lawrence J. King, Wooster, Ohio—50 specimens of algae, New York; J. H. Smith and Sons and Schick-Johnson Company, Chicago—veneered panel of English yew; Escuela Agrícola Panamericana, Tegucigalpa, Honduras—400 herbarium specimens, Honduras; Donald Richards, Chicago—29 bryophytes, Maryland, and 621 cryptogams, various localities.

Department of Geology

From: Stuart H. Perry, Adrian, Mich.—one individual meteorite (Odessa), and one slice of Odessa meteorite, Texas; Dr. Rainer Zangerl, Chicago—5 specimens of vertebrate fossils, South Dakota and Wyoming; Mrs. Tracy Higgins, Chicago—11 rock specimens, Pennsylvania; Dr. Henry Field, Washington, D. C.—a specimen of desert sand, North Africa; Levon Harris Arpee, Chicago—8 specimens of fossil crustaceans and plants, Illinois.

Department of Zoology

From: Chicago Zoological Society, Brookfield, Ill.—a mammal, a bird, and a snake; Lincoln Park Zoo, Chicago—an Eskimo dog; Bryan Patterson, Chicago—236 beetles, insects, and allies, and 307 specimens of sea shells and marine invertebrates, Florida, California, and Illinois; Cpl. Eugene Ray, U. S. Army—a lizard and 32 land shells, Okinawa; Dr. Rainer Zangerl, Chicago—80 specimens of reptiles and amphibians, Switzerland and Ecuador; William J. Beecher, Chicago—28 cicadas, ants, and spiders, Guadalcanal and New Caledonia; Mr. and Mrs. A. G. Rueckert, Chicago—a millipede, a snake, 8 frogs, and 8 lizards, Florida; Lieut. Comdr. Colin C. Sanborn, U. S. Navy—10 lizards, Honolulu; Dr. Julian A. Steyermark, Chicago—38 specimens of marine invertebrates, Venezuela; E. M. Chenery, Port-of-Spain, Trinidad—11 bird skins, Trinidad; Mrs. Charles J. Susong, Coral Gables, Fla.—91 specimens of Florida tree snails; Michael S. Bischof, Los Angeles, Calif.—one coral specimen, and 14 snails, parasitic on coral, California; Charles D. Nelson, Grand Rapids, Mich.—728 specimens of non-marine shells, United States; Robert R. Kohn, U. S. Navy—a lizard, Admiralty Islands; Dr. James M. Brennan, Hamilton, Mont.—a snake, Montana; Stephen S. Gregory, Jr., Winnetka, Ill.—a snake, Michigan; S/Sgt. Henry S. Dybas, U. S. Army—2 snakes, 7 lizards, and a frog, Mariannas; Capt. Robert Traub, U. S. Army—4 lizards, 3 frogs, and a snake, Burma; Dr. Clarence R. Smith, Aurora, Ill.—a bat, Illinois; Lieut. (j.g.) J. A. Slater, U. S. Navy—2 snakes, Okinawa; C. J. Albrecht, Homewood, Ill.—a jack rabbit, South Dakota; Elaine Anne Thompson Collection, Ferndale, Mich.—13 plaster casts of animal tracks, Michigan; John Kurfess, Hinsdale, Ill.—3 millipedes, Admiralty Islands; Miss Theresa Clay, London, England—10 paratypes and 3 neoparatypes of four species of bird lice on five microscope slides, Bolivia; Dr. Ruth Marshall, Wisconsin Dells, Wis.—about 5,500 water mites, over 600 vials, holders, slides, etc., and 861 copies of her 35 contributions on water mites; Stanley Jewett, Jr., U. S. Army—5 bird skins, South Pacific; Lieut. Harry Hoogstraal and Stanley G. Jewett, Jr., U. S. Army—20 bird skins, South Pacific.

Library:

From: Dr. Henry Field, Washington, D. C.; Dr. Ruth Marshall, Wisconsin Dells, Wis.; Dr. Albert R. Shadle, Buffalo, N. Y.; C. E. B. Bremerkamp, Amsterdam, Holland; Stig Ryden, Göteborg, Sweden; Third Conferencia Interamericana Agricultura, Caracas, Venezuela; Mr. and Mrs. Henry W. Nichols, Allen Sinsheimer, Col. Clifford C. Gregg, Graham Aldis, all of Chicago.

LECTURE TOURS ON WEEKDAYS, JANUARY AND FEBRUARY

Conducted tours of exhibits, under the guidance of staff lecturers, are made every afternoon at 2 o'clock, except Sundays and certain holidays. On Mondays, Tuesdays, Thursdays, and Saturdays, general tours are given, covering all departments. Special subjects are offered on Wednesdays and Fridays; a schedule of these follows:

January

Wed., Jan. 2—Solutions to the Housing Problem—Substitutes for Park Benches (*Emma Neve*).

Fri., Jan. 4—Gains for Science—Some of Man's Most Important Discoveries (*Mrs. Roberta Cramer*).

Wed., Jan. 9—Designs of Winter—Trees, Tracks, Birds (*Miriam Wood*).

Fri., Jan. 11—Primitive Health Insurance—Charms and Witchcraft (*Emma Neve*).

Wed., Jan. 16—No Income Tax, But—How Primitive People Live (*Mrs. Roberta Cramer*).

Fri., Jan. 18—Plants and Animals Through the Ages (*Marie B. Pabst*).

Wed., Jan. 23—Escaping Winter—Hibernation of Animals (*Miriam Wood*).

Fri., Jan. 25—Costumes Designed for Wear, Beauty and Simplicity Combined in Primitive Dress (*Emma Neve*).

Wed., Jan. 30—Preparing to Be a Tourist—A World to See and Hear (Mexico) (*Mrs. Roberta Cramer*).

February

Fri., Feb. 1—Designs in Wood—Tree Growths that Result in Beautiful Patterns (*Marie B. Pabst*).

Wed., Feb. 6—Bridges and Barriers—Likenesses and Differences Among Peoples of Different Cultures (*Mrs. Roberta Cramer*).

Fri., Feb. 8—The Bond of Slavery—All People Are Slaves (*Emma Neve*).

Wed., Feb. 13—True Fish Stories—The Biggest Ones Didn't Get Away (*Miriam Wood*).

Fri., Feb. 15—Life Usually Unseen—Microscopic Plants and Animals (*Marie B. Pabst*).

Wed., Feb. 20—The Living Past—Primitive People (Natives of the Islands of the Pacific, Africa, and the Americas) (*Emma Neve*).

Fri., Feb. 22—Preparing to Be a Tourist—A World to See and Hear (South America) (*Mrs. Roberta Cramer*).

Wed., Feb. 27—Preview of Spring—Unfolding Buds and Sprouting Seeds (*Miriam Wood*).

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FIRST CHICAGO INTERNATIONAL EXHIBIT OF NATURE PHOTOGRAPHY AT MUSEUM

The First Chicago International Exhibition of Nature Photography was scheduled, as this issue of the BULLETIN went to press,

FIRST IN THE SHOW
"Velvet Petals," by Grace M. Ballentine. Winner of double honors, first in the section of plant life as well as top place in the entire First Chicago International Exhibit of Nature Photography.

to close on February 28, after being displayed in Stanley Field Hall of the Museum for 32 days.

In the exhibit, sponsored by the Chicago Nature Camera Club, were 197 black-and-white prints and 397 color slides adjudged best out of a total of more than 1,750 pictures submitted by competitors in 31 states, Canada, Mexico, Cuba, and Scotland. Entries were submitted in six divisions: Plant life, animal life, gardens, scenery, anthropology, and color slides.

First prizes, consisting of medals, were awarded by the Chicago Nature Camera Club to the picture selected by the jury as best in each division, and an additional medal was presented to the garden section winner by the Chicago Horticultural Society and Garden Center. Twenty-six others were winners of ribbons denoting honorable mention. The names of all first prize winners are to be inscribed on a plaque presented by Mrs. Charles R. Walgreen, of Chicago.

The exhibit, carrying further the innovation made by the "Lenses on Nature" photographic exhibit arranged in 1943 as a feature of the Museum's 50th anniversary celebration, is expected to be followed in future years by similar presentations. A stimulation of popular interest in nature photography is consistent with the purposes of the Museum in its role as an educational institution. It is not unreasonable to suppose that a camera fan's primary interest in photography may lead to an interest in some of the varied aspects of nature by compelling the careful observation and recording of natural phenomena—the first steps in the methodology of science.

The black-and-white photographs were exhibited in standard Museum cases suitably arranged and lighted for this purpose. The color slides, being miniatures, were mounted in a special four-sided cabinet illuminated from the inside, furnished by the camera

FIRST IN ANTHROPOLOGY SECTION
"Cliff Palace," by Charles A. Girard.

club. In this way, despite their small dimensions, these pictures were made available to the public in their full colors and all their details. In addition, on Sunday afternoon, February 17, by means of the projector and screen in the Museum Lecture Hall, they were shown in large size to an invited audience and the general public.

FIRST IN ANIMAL LIFE SECTION
"Ring-Billed Gull," by Ralph E. Lawrence, awarded the first prize in its division in the First Chicago International Exhibit of Nature Photography held at the Museum January 28—February 28.

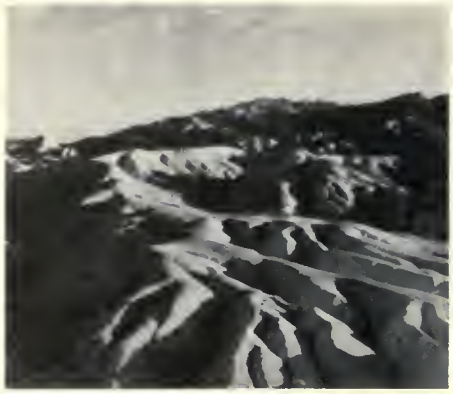
The prize winners are:

First in the show, and first in the section of plant life—Grace M. Ballentine, Upper Montclair, N.J., for "Velvet Petals"; *first in animal life section*—Ralph E. Lawrence, Washington, D.C., "Ring-billed Gull"; *first in garden section*—Ben Hallberg, Hollywood, Ill., "Earfull" (cornstalk); *first in scenery section*—Edward C. Crossett, Chicago, "Erosion"; *first in anthropology section*—Charles A. Girard, Chicago, "Cliff Palace"; *first in color slide section*—V. J. Roufs, Minneapolis, "Guest in the Garden".

Following is a list of the honorable mention awards:

Plant Life Section: "Turk's-cap Lily," Louise K. Broman, Chicago; "Oyster Mushroom," Juanita Schubert, Minden, Nev.; "Mexican Maguey," H. J. Johnson, Chicago; "After the Rain," Charles W. Manzer, New York; "Desert Sentinels," Mrs. Caryl R. Firth, Trappe, Md.

Animal Life Section: "Osprey," Eliot



FIRST IN SCENERY SECTION
"Erosion," by Edward C. Crossett.

Porter, Winnetka, Ill.; "Animated Still Life," Miss Hilleve Lantz, Chicago; "Feed Me" (cardinal and young), Ralph E. Lawrence, Washington D.C.; "Centipede," H. J. Ensenberger, Bloomington, Ill.; "Feathery Fingers," Martin Bovey, Jr., Concord, Mass. A special honorable mention was awarded the color print "Arizona Pyrrhuloxia" by Eliot Porter, Winnetka, Ill.

Scenery Section: "The Jug Handles," Charles A. Girard, Chicago; "Design by

FIRST IN GARDEN SECTION
"Earfull," by Ben Hallberg.

Jack Frost," Dr. B. J. Ochsner, Durango, Colo.; "By Wind and Water Carved," Juanita Schubert, Minden, Nev.; "Erosion in Sandpit," and "Upside Down Icicles," H. L. Gibson, Rochester, N. Y.

Color Slide Section: "Turret Arch," Charles A. Girard, Chicago; "Secretary Bird," Viktor M. J. Aagaard, San Francisco, Calif.; "Bleeding Hearts" (flowers), G. W. Blaha, Chicago; "At Rest," R. E. Carlson, Park Ridge, Ill.; "Cardinal on Nest," R. A. E. Cavendish, Lafayette, La.; "Cherry Cluster," Mrs. Harold L. Medbury, Bloomington, Ill.; "Skunk Cabbage," Frank Proctor, Chicago; "Wild Plums," Frank Rogers, Chicago; "Star and Jelly Fish," R. H. Taylor, Chicago.

The jury which made the selections was composed of: B. D. Holley, of Downers Grove, Ill., an associate of the Photographic Society of America; A. H. Longwell, Chicago, professional photographer; James H. Burdett, garden editor, *The Chicago Sun*, and representative of the Chicago Horticultural Society; Dr. Paul O. McGrew, Assistant Curator of Paleontology, and Karl P. Schmidt, Chief Curator of Zoology on the Museum's staff.

The Chicago Nature Camera Club has compiled an illustrated catalog, copies of which are available by communicating with the secretary of the club, Miss Louise K. Broman at 5834 South Western Avenue, Chicago 36.

Leading magazines devoted to photography and associated hobbies made arrangements for reproducing selected pictures

FIRST IN COLOR SLIDE SECTION
"Guest in the Garden," by V. J. Roufs.

which appeared in the show, and a number were reproduced also in newspapers of Chicago as well as in papers elsewhere served by national news-photo agencies such as Wide-World-Associated Press and Acme News-Pictures.

Installation of the exhibit was made under the supervision of Mr. John R. Millar, Deputy Director of the Museum.

NEW TYPE OF PROGRAMS IS OFFERED FOR CHILDREN ON SATURDAYS

For this spring's series, the James Nelson and Anna Louise Raymond Foundation is offering an improved type of educational programs for children on Saturday mornings during March and April.

In order to give more scope for the innovations being made, there will be *single* presentations at *10:30* A.M. each Saturday morning in those months (instead of two presentations, at 10 and 11 A.M. each Saturday as has been the case in preceding seasons).

Less stress will be laid upon the motion picture features than in the past, although there will be carefully selected educational films on all but two of the nine programs. To make the programs more interesting and more out of the ordinary run of entertainments for children, there will be a greater number of personal appearances of interesting men and women to tell their own first-hand stories of various peoples, or of the inhabitants of the animal and plant kingdoms.

Emphasis is placed on the word *stories*—these will not be formal lectures, but rather will be intimate narratives designed to strike responsive chords within the children's mental world—not *scaled* either, to so-called children's *levels*, for the Museum authorities like other up-to-date educators realize that children's levels are usually higher than adults are apt to estimate, and that they resent attempts at "leveling."

Children may come alone, accompanied by adults, or in groups from schools or other centers.

Following is an outline of the programs scheduled:

March 2—THE BLUE GOOSE FLIES SOUTH.
Color motion picture and story by *Peter Koch*

March 9—EL NAVAJO.
A motion picture (courtesy Atchison, Topeka and Santa Re Railroad).
Also a cartoon.

March 16—JUST STICKS.
Stories of people and places told with a collection of sticks and canes by *Edward L. Jeambey.*

March 23—THE WORLD AROUND YOU.
A motion picture of the commonest things from ants to weeds.
Also a cartoon.

March 30—WHERE THE WEST BEGINS.
Color motion picture and story by *Alfred M. Bailey*, Director, Colorado Museum of Natural History, Denver.

April 6—SONG OF CEYLON.
A documentary motion picture from the hills of Ceylon.
Also a cartoon.

April 13—STRANGE NEIGHBORS.
Color motion picture and story by *William G. Hassler.*

April 20—MY ALASKA.
Story of Alaska told by the Eskimo *Nutchuk* (*Simeon Oliver*) and his wife *Sourdough* (*Ethel Oliver*), of Anchorage, Alaska.

April 27—MY FRIEND FLICKA.
A motion picture story of a boy and his horse.

If you're going to Mexico, get a pre-acquaintance with that country's archaeology and ethnology in Hall 8 at this museum. If you can't go, this hall will provide you with a stay-at-home tour.

HIROSHIMA AFTER ATOMIC BOMB IN ONE OF SATURDAY AFTERNOON LECTURES AND FILMS

Nine illustrated lectures on natural science and travel in many parts of the world will be presented for adults in the annual Spring Lecture Course on Saturday afternoons during March and April.

The lectures, most of which are accompanied by motion picture films in color, will be given in the James Simpson Theatre, and all begin at 2:30 P.M.

Following are the dates, and the subjects and lecturers booked:

March 2—BIG BEND.

Peter Koch.

Mr. Koch, photographer naturalist, presents a picture story of the last frontier of America in the heart of the Rio Grande's big bend, west of the Pecos River. The area, now desert, was once a lake, and before that was part of an ocean. Fossil trees a million years old are found in its forests. Volcanic action time and again covered this southernmost spur of the Rockies. The flora varies from the lush, semi-tropical species along the Rio Grande, through desert chapparal and cacti, to the forested summits of the Chisos Mountains. As in a "lost world," birds, mammals, and reptiles of species found nowhere else are isolated there by the desert.

March 9—JAPAN AFTER CONQUEST.

Bob Hall.

Mr. Hall, who spent thirteen months in photographic work as a member of the United States Strategic Bombing Survey, shows in color motion pictures Japan as it is today—the people and the country under occupation by General Douglas MacArthur's forces. **A feature is a sequence of the ruins of Hiroshima following the explosion of the first atomic bomb.** Other sections of the film are devoted to Tokyo today, rural Japan, the beauties of the mountains including famed Fujiyama, and a "G.I." rodeo in Tokyo.

March 16—ALASKA WILD LIFE.

William L. Darden.

Recently returned from Alaska after twelve years' of residence there and travel throughout the territory, Mr. Darden brings color motion pictures of many "world's largest" members of the animal kingdom—for example, the Kenia moose, and the Kodiak bear, both the biggest members of their families. Other interesting animals shown in Mr. Darden's pictures include the caribou, fox, beaver, and the rarely seen Dall sheep, the beautiful white animal found only in Alaska.

March 23—GRASSROOT JUNGLES.

Edwin Way Teale.

Mr. Teale turned an old orchard into an insect garden by planting the things most attractive to the small creatures. He then set his motion picture camera, with color film, to make continuous and intimate studies of the life and activities of the inhabitants in the community he had thus established. The result is a most unusual and interesting documentary record of natural history unobtainable in any other manner.

March 30—THE LAND OF THE LONGHORNS.

Alfred M. Bailey.

Mr. Bailey, formerly a member of the zoological staff of the Chicago Natural History Museum, and now director of the Colorado Museum of Natural History in Denver, is famed for his explorations in many parts of the Far West, and for the remarkable color motion pictures in which he records the highlights of his natural history studies. The present lecture and film present some of the most thrilling episodes and beautiful pictures in a life devoted almost entirely to the study of nature in all of its manifestations.

CHANGING YOUR ADDRESS?

Members of the Museum who change residence are urged to notify the Museum so that the BULLETIN and other communications may reach them promptly. A post card for this purpose is enclosed.

Members going away during the summer may have Museum matter sent to their temporary addresses.

April 6—THE PACIFIC—AT PEACE AND WAR.

Curtis F. Nagel.

Mr. Nagel's "colorlogue" films bring to the screen the romance, color and charm of Hawaii—then wing out over the vast Pacific to Midway Island, where the marvelous bird life of that little coral island is pictured as well as the amazing undersea coral gardens of Wake Island, with their exotic tropical fish and sea anemones. The native life of Guam is shown and then the Philippines—from Manila to Zamboanga. Exploring the perilous Igorot country of Luzon, Mr. Nagel filmed the bizarre "Head Dance." The film ends with pictures of the attack and destruction on Wake Island and the historic Battle of Midway.

April 13—THE STORY OF TOBACCO IN KENTUCKY.

Edward T. Camenisch.

Mr. Camenisch presents in vivid narrative, accompanied by color motion picture films, the things few people know about the golden brown leaf that has become the basis of one of the country's biggest industries. In Mr. Camenisch's pictures are shown the burning of the beds, planting, seeding, weeding and transplanting; the young leaves forming, the delicate blossom, the topping of the plants, and threats to the plants such as preying insects and diseases. The story continues through the cutting and storing in spacious barns, from the stripping and loading for market to warehouse and auction.

April 20—ALASKA AND THE ALEUTIANS.

Nutchuk (Simeon Oliver).

Nutchuk (Simeon Oliver) is a native Alaskan, part Aleut and part Norwegian—his father was a trapper. He knows Alaska and the Aleutian Islands as few men do, and for two years during the war served the Army Intelligence. In his lecture Nutchuk tells about Alaska and the Aleutians, and what the future holds for their people. His material on Dutch Harbor is illuminating, and he gives the kind of intimate and exact information about the people—White, Aleut and Eskimo—that few men can give but which, when obtainable, delights an audience. In his lecture he wears a native parka, and brings to the platform a small but interesting exhibit.

April 27—RAINBOW'S END.

Earl L. Hilfiker.

Mr. Hilfiker, former science teacher and member of the staff of the Rochester Museum of Arts and Sciences, and later official photographer for the New York State Conservation Department, presents the story, with color films, of the beauties of nature in the great out-of-doors anywhere. He emphasizes the fact that we are surrounded by a world of strange sights and interesting creatures. Commonplace things and ordinary creatures become intensely fascinating subjects when they are shown in giant proportions and in full color. This film features our native wild flowers, the butterflies and the giant silkworm moths. It also shows many of the interesting creatures of our woodland swamps in the early spring.

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. 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.

AN EXHIBIT ILLUSTRATING SOURCES OF PENICILLIN

Penicillin—the most famous recent addition to materia medica—what it looks like, what it is derived from, and how it is produced in quantity for use by the medical profession—is the subject of a special exhibit recently installed in Stanley Field Hall.

Mr. William A. Daily, writer of the accompanying article, who has been engaged in research on penicillin at Butler University, acted as scientific consultant for the Museum in preparation of the exhibit.

A notable feature, and one which would not be available to the average layman anywhere else, is a scientifically accurate model of a pinpoint fragment of the blue mold (Penicillium notatum) from which the drug is obtained, magnified 400 times. Modeled in glass by Mr. Emil Sella of the Museum's plant reproduction laboratories from direct studies of an actual specimen under the microscope, it resembles superficially a cluster of ice-coated twigs on a leaf-bare tree in winter. Most of the profusely branching filaments are colorless, but a few which stand more or less upright bear sparse tassels formed of four to eight chains of the reproductive cells or spores to which Mr. Daily refers in his article following. The spores in mass impart a blue color to the mold. Other branches, as shown in the model, grow more or less downward, and from these penicillin diffuses into culture bases used in the production of penicillin.

The remainder of the exhibit consists of material illustrating the appearance and growth of blue mold, and the methods devised for quantity production of penicillin. Two familiar molds found on rotting fruit, stale bread and other organic matter are shown as they grow on agar to which food has been added. Both species are employed in the commercial production of penicillin.

THE INVISIBLE MADE VISIBLE

Model of a pinpoint fragment of the blue mold Penicillium notatum as seen magnified 400 times under the microscope. Included in the exhibit relating to the sources and production of penicillin, prepared in the plant reproduction laboratories of the Department of Botany and currently displayed in Stanley Field Hall. Note the spores on the upright filaments—it is these which impart a blue color to the fungus organism from which Sir Alexander Fleming first extracted the antibiotic substance penicillin.

One model is of a culture which is a direct descendant of the original used in 1929 by Sir Alexander Fleming, the discoverer of penicillin and its effect on bacteria, thus lending a historical aspect to the exhibit.

PENICILLIN—ITS HISTORY, DERIVATION AND USES

By WILLIAM A. DAILY
BUTLER UNIVERSITY

The discovery of penicillin is credited to Sir Alexander Fleming of London, who for this reason received the Nobel prize for physiology and medicine. Fleming was by no means, however, the first to observe the antagonistic action of some organisms against others growing in culture.

Having previously isolated a substance from egg white which would dissolve bacteria, and being especially interested in finding new antibacterial substances, he made an extensive study when he found the growth of a culture of pathogenic bacteria inhibited by a contaminating mold, *Penicillium notatum*. An attempt to isolate the active agent by extraction from the culture medium in which the mold grew was only partially successful, because the substance obtained, which he called "penicillin," was unstable. By his experiments, however, he demonstrated that if it could be obtained in stable form, penicillin had qualities recommending it for clinical use.

The study of penicillin was not resumed until ten years later when Dr. Howard B. Florey and his colleague, Dr. Ernest B. Chain, both of Oxford University, began the work which resulted in the successful isolation, purification and clinical testing of this substance. They likewise have been honored by sharing the Nobel prize with Sir Alexander.

Spurred by increasing misfortune in war, Great Britain in 1941 sent Dr. Florey to the United States with the seemingly difficult task of encouraging American scientists in government and large commercial institutions to take up the study and preparation of this little-known drug. The result from combined English and American effort is now a major landmark in medical history, and large quantities of penicillin are now being produced commercially.

In the manufacture of penicillin, strict attention is directed toward the maintenance of suitable cultures of *Penicillium notatum*. A spore of this "blue mold" germinates to produce a thin-walled cellular filament (hypha) which branches many times to form a prolific whitish fluffy mold (mycelium). From this mycelium arise numerous erect branches which produce at their ends chains of spores in a brush-like arrangement. The characteristic color of the mold is produced by the spores *en masse* and partly by the aerial and submerged mycelium.

In the popular method of production, a piece of the mold of proper specifications is placed in a huge metal tank which contains thousands of gallons of liquid suitable for the growth of the fungus. Proper temperature, aeration and agitation are necessary in the tank during the period of growth to ensure the maximal production of penicillin. As soon as the mold has ceased producing it, the penicillin is extracted and purified from the liquid. Tests are made for potency and safety.

Penicillin is an acidic nitrogenous compound with a marked instability toward heat, acid, and alkali; and the commercial product is a deep reddish-orange fluid, yellow in dilute solutions, with a faint but characteristic odor and a bitter taste. Potency is lost rapidly while in the liquid state; therefore penicillin is dried *in vacuo* as a sodium or calcium salt and stored as such. Pure crystalline material is now being prepared, but only in small quantities. In spite of nation-wide intensive research, efforts to synthesize penicillin have been futile to date.

Some of the bacteria highly susceptible to penicillin are *Streptococcus pyogenes* (causing pus formation and puerperal fever), *Staphylococcus aureus* (causing bone disease, boils, etc.); both of which are important in war wounds, and *Streptococcus pneumoniae* (causing pneumonia). The usually fatal staphylococcic and streptococcic septicemias show decided improvement within 24 hours after treatment with penicillin has begun. Other susceptible organisms are those causing diphtheria, gas gangrene, gonorrhea, syphilis, meningitis, tetanus and actinomycosis.

Broadly speaking, the Gram positive bacteria and Gram negative diplococci are sensitive to penicillin; whereas the Gram negative bacilli are affected by it to various degrees. Some of those much less sensitive to the effects of penicillin are the bacteria causing typhoid fever and a form of food poisoning; while some, such as those of plague, cholera, dysentery, and tuberculosis, are quite insensitive. Malaria has not been controlled by penicillin.

'LOST WORLD' BOTANIZING IN THE GRAN SABANA

By JULIAN A. STEYERMARK
ASSISTANT CURATOR OF THE HERBARIUM

After Dr. Steyermark had terminated quinine exploration work in Ecuador and Venezuela for the United States government in October, 1944 (as reported in a recent issue of the BULLETIN*), he conducted two expeditions to collect botanical specimens for the Herbarium of the Museum, from October to December, 1944, and from February to May, 1945. The accompanying article relates some of his experiences.*

ONE of the unique New World areas yet to be completely explored scientifically is a portion of southeastern Venezuela, near the Brazilian and British Guiana borders, known as the Gran Sabana. Within this area, and in the adjacent Upper Paragua and Upper Orinoco River regions, lie isolated mountains of sandstone separated from one another by distances of from five to 200 or more miles.

Topographically they appear like huge truncated mesas protruding above the flat forested lowland or upland savanna. Their lofty summits, in some cases towering 9,000 feet or more above sea level, are separated from the virgin forests that envelop their bases, often as much as 6,000 to 7,000 feet of vertical distance, usually by sheer perpendicular sandstone bluffs of Roraima sandstone. These bluffs usually vary from 1,500 to 3,500 feet in height and thickness and, since they extend on all sides of these isolated mountains, usually obstruct any means of ascent. Only where a portion of the bluff has broken or weathered off to allow soil and woody growth to develop is it possible to reach the summit.

If one is fortunate enough to reach the summit of one of these mountains, one usually finds an entirely different world from that over which one has traveled below, for here on top may be rocky formations, of diverse shapes producing a barren rocky flat summit, or the summit may be broken up into undulating savanna-like or forested slopes alternating with bluffs along stream-laden valleys and waterfalls.

TWO 'LOST WORLDS'

The best known of these sandstone mountains are Roraima, Duida, and Auyan-tepui. Tepui is an Indian word for mountain. Mount Roraima has been termed the "Lost World," because so many unique plants and animals were originally collected on it. Auyan-tepui was called another "Lost World" and on its north side was recently discovered Angel Falls, considered to be the highest waterfall in the world.

Cerro Duida was not scaled until G.H.H. Tate of the American Museum of Natural History of New York climbed it in 1931 with the help of Indian-made ladders. Tate's collection of animals and especially of plants from the summit of Duida yielded one of the richest collections of endemic new species and genera ever to have been found in the New World.

The same was true of Mount Roraima when it was first scaled in the late part of the 19th century by Everard F. im Thurn whose botanical collections are at Kew. But the most interesting feature of these mountains is that each one thus far explored shows a partly endemic flora and fauna characteristic and peculiar to it.

The writer had the great privilege during his exploration work in Venezuela of climbing to the summit of both Roraima and Duida in 1944; the ascent of the latter was made *without* the use of rope or ladder. This represents the only ascent to the summit besides that made by Tate.

Because of his trips to Roraima and Duida, the writer, after his release by the government, lingered in Venezuela to continue the study of the flora of other sandstone mountains, and visited the group of Ptari-tepui and Sororopán-tepui about 100 miles northwest of Roraima. These had been explored previously for birds by Mr. and Mrs. William Phelps, Jr., and Mr. William Phelps, Sr. of Caracas.

LARGE COLLECTIONS OBTAINED

Several camp sites were established for one or two weeks at a time, and exploration trips made with Indian guides and carriers of the region. Nearly 1,700 numbers and about 5,000 specimens were obtained for the Herbarium. These include many specimens of trees and shrubs, and represent a far greater collection than has ever been made from either Duida, Roraima, or Auyan-tepui. They provide the herbarium with genera and species of plants hitherto unknown to it.

Curious insectivorous plants like sundews (*Drosera*), and *Heliamphora* related to and resembling our pitcher plants, grow beside *Bonnetia* with pink and white *Camellia*-like blossoms. There are *Luxemburgia* with bright yellow blossoms resembling a yellow rose, and curious members of the Rapateaceae with stiff erect iris-like leaves. Odd and beautiful large purple-flowered bladderworts also occur, their lower stems and roots submerged in the water found in the leaf-bases of the large bromeliad, *Brocchinia*. Other plants found are striking and endemic ferns of the genus *Pterozonium*, and lady-slipper orchids of the genus *Phragmopedilum*, many beautiful bromeliads, bladderworts, pipeworts (Eriocaulaceae), Rubiaceae, and Melastomaceae. Hundreds of other specialties make the flora of this and other adjacent mountains a true botanical paradise.

The collection, while showing relationships with the flora of Roraima and Auyan-tepui, has already been found to contain many highly interesting new species. As study progresses, the collection is expected to yield a considerable number of novelties.

FIRST POST-WAR EXPEDITION DISPATCHED TO PERU

The first step toward resumption of the Museum's world-wide expeditionary program, suspended since Pearl Harbor, was taken with the departure January 19 of Mr. Colin Campbell Sanborn, Curator of Mammals, to conduct the Peruvian Zoological Expedition-1946. This expedition will take up the survey by two expeditions carried on from 1939 to 1942, and interrupted by the war's advent.

COLIN C. SANBORN

Mr. Sanborn had returned to Chicago and his post at the Museum only a few weeks ago, following his release from the Navy as a lieutenant-commander after more than three years' service. He was a member of the previous Peruvian expeditions, and nine months of his naval service also was spent as an observer in Peru for intelligence purposes.

JUNGLES AND MOUNTAINS

Mr. Sanborn's first destination, after sailing from New Orleans, was Callao, port for the Peruvian capital, Lima, where he will complete organization of his project. The earlier expeditions worked almost entirely in southern Peru, and this year the collecting will be principally in the jungles of Amazonian Peru and in the mountains of the central part of the country. The work is done in co-operation with Peruvian scientists and, as in the past, Mr. Sanborn plans to arrange to have a local student accompany him.

The area to be covered this time will extend the scope of the Museum project which aims eventually at a survey of most of Peru, which has never before received adequate exploration from a scientific standpoint. The main objective of the expedition is the assemblage of a comprehensive collection of mammals, birds and reptiles. It is considered likely that a number of species not hitherto recorded will be found, and special efforts will be directed toward obtaining specimens of certain known rare animals.

Mr. Sanborn and his assistant will engage motor trucks for most of the travel and hauling of equipment into and specimens out of the interior, but the actual work of the expedition, when collecting areas are reached, will be done afoot, penetrating regions inaccessible in any other manner. Mr. Sanborn, it is expected, will complete his work and return to Chicago about the end of May.

Chicago Natural History Museum
FOUNDED BY MARSHALL FIELD, 1893
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THE BULLETIN

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

SILAS H. STRAWN

The Museum has suffered a severe loss in the death of Silas H. Strawn, a member of its Board of Trustees and Second Vice President. Mr. Strawn died February 4, at the age of 79.

Photo by Harris & Ewing

SILAS H. STRAWN

Mr. Strawn had been a Trustee for 22 years, having been elected in March, 1924. He became Second Vice President in January, 1940. He was also a Patron, a Contributor, a Corporate Member and a Life Member. In 1929, he contributed a substantial sum towards the fund for the creation of the Hall of the Stone Age of the Old World. He took an extremely active part in the deliberations of the Trustees, and rendered special services of high value as a member of the Auditing Committee (1926–29), and the Executive Committee (1928-45).

Mr. Strawn was born in 1866, in Ottawa, Illinois. He was admitted to the bar in that city in 1889, and began practicing in Chicago in 1891. In 1918, he became the senior member of the firm of Winston, Strawn and Shaw. He was on the board of directors of several important corporations, and took a prominent part in civic affairs, being a Trustee not only of the Museum but also of Northwestern University and the Carnegie Endowment for International Peace. In 1926, Mr. Strawn served as the United States' delegate to a special conference on Chinese customs tariff and as chairman of the Chinese Extra-Territoriality Commission.

MARSHALL FIELD, JR., NOW A TRUSTEE

Mr. Marshall Field, Jr. of Lake Forest, Ill., son of Mr. Marshall Field, publisher of *The Chicago Sun*, was elected to fill a vacancy on the Museum's Board of Trustees at the annual meeting held January 21. Mr. Field, Jr., recently was released from the Navy after some four years of service as a lieutenant in gunnery, notably aboard the aircraft carriers *Enterprise* and *Cabot*, both of which were in major action in the South Pacific. He was awarded the Silver Star for outstanding valor while severely wounded, as well as the Purple Heart, and a Presidential Unit Citation.

Mr. Stanley Field was re-elected President for the 37th consecutive year. Also re-elected were: Colonel Albert A. Sprague, First Vice President; Mr. Silas H. Strawn, Second Vice President (deceased since the election); Mr. Albert B. Dick, Jr., Third Vice President; Colonel Clifford C. Gregg, Director and Secretary, and Mr. Solomon A. Smith, Treasurer. Mr. John R. Millar, Deputy Director, was elected Assistant Secretary.

Three New Contributors

Three new names have been added to the list of Contributors to the Museum by recent action of the Board of Trustees (Contributors include all persons whose contributions in money or materials range between $1,000 and $100,000, and their names are inscribed in perpetuity on the Museum rolls).

Two of the new Contributors are Mr. William S. Street, until recently of Chicago and now of Seattle, and Mr. Rush Watkins, of Chicago. They have contributed funds for the support of the Museum's expeditionary program, suspended during the war but resumed early this year.

The third new contributor is Mr. Elmer J. Richards, of Chicago, donor of funds for purchase of botanical specimens.

Charles A. McCulloch

News of the death on January 24 of Charles A. McCulloch, former Trustee of the Museum, was received with regret by his associates on the Board of Trustees. Mr. McCulloch had been a Trustee since 1936. He resigned last November because ill health made it impossible for him to devote further time to the interests of the institution. He was well known for his spectacular business career, and for his participation in Chicago civic affairs.

Staff Notes

The Museum staff welcomes back to its midst a number of members returned from service in the armed forces, in addition to those previously reported in the BULLETIN. Among recent returnees are the following:

Rupert L. Wenzel, Assistant Curator of Insects, who returned after several years' service as a captain in the Army Sanitary Corps. Mr. Wenzel entered the service in 1942 as a first lieutenant. One of his assignments was in Brazil.

James H. Quinn has returned as Chief Preparator in the Division of Paleontology. He was a metalsmith 2/c in the Navy.

Dr. John Rinaldo, formerly Associate in Southwestern Archaeology, has returned to the Museum to accept an appointment as Assistant in Anthropology. He enlisted in the Army shortly after Pearl Harbor, and was a staff sergeant, serving in France and Germany.

Herbert Nelson, painter at the Museum, has returned. He served in the Navy as a painter 1/c from early in 1943.

John W. Moyer, Taxidermist in the Division of Birds, has been released from his service as a chief specialist (motion pictures) which took him virtually around the world in Navy service. He is scheduled to return to his Museum post March 1.

Miss Winona Hinkley has been appointed to the lecture staff of the James Nelson and Anna Louise Raymond Foundation. A resident of Lombard, Ill., Miss Hinkley is a graduate of Antioch College, and specialized in zoology. She was engaged for a year in lecture work at the Cleveland Museum of Natural History.

Mr. John A. Weber, a pensioner of the Museum, died at his home in Chicago, January 9, at the age of 77. Joining the guard force in 1901, he had served faithfully for almost forty years, being retired in 1940.

Technical Publications Issued

The following technical publications have been issued by Chicago Natural History Museum Press during the last two months:

Fieldiana—Zoology, Vol. 31, No. 4. *A Bird Collection from the Solomon Islands.* By W. J. Beecher. December 21, 1945. $0.10.

Fieldiana—Geology, Vol. 10, No. 2. *Fossil Specimens of Macrochelys from the Tertiary of the Plains.* By Rainer Zangerl. December 21, 1945. $0.15.

LARGE FOSSIL TURTLE FROM ALABAMA

By RAINER ZANGERL
CURATOR OF FOSSIL REPTILES

This is a story of how scientific discoveries, widely separated by years, and made by different institutions or researchers, finally interweave to build up our knowledge.

In 1895, Professor G. R. Wieland discovered a very large and most extraordinary turtle in the Upper Cretaceous formation along the Cheyenne River in South Dakota. The specimen, a giant with a shell about seven feet wide, was described as *Archelon ischyros* and is now reconstructed and exhibited in the Yale Museum collection.

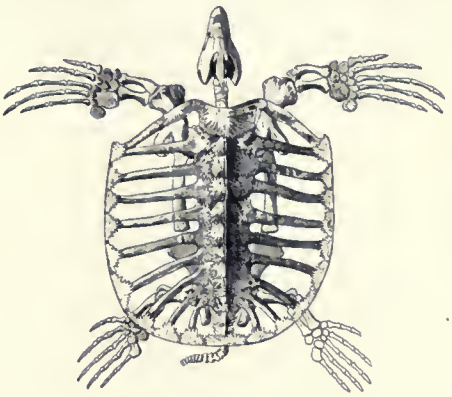
In subsequent years, Dr. Wieland collected two more specimens, one a fairly complete, smaller individual and the other, only partially preserved, appears to have been even larger than the first specimen. Dr. Wieland estimates the length of its skull in excess of three feet! Size, however, is only one—and to the anatomist, perhaps the least—interesting feature of the skeletal make-up of *Archelon*.

The upper portion of the shell consists of a relatively thin, narrow disk extending from the base of the neck to the base of the tail, and a chain of peripheral bones connected to the disk by strong ribs. The lower part of the shell consists of two pairs of thick, more or less circular plates from which finger-shaped projections radiate all around, and some lesser bones whose exact relationship to the rest of the shell is still somewhat uncertain. The skull is unusually long and ends in front with a beak not unlike that of a bird of prey.

It was no small surprise to the members of a recent Chicago Natural History Museum field party—Mr. C. M. Barber, Mrs. A. Zangerl and the writer—to discover the skeleton of an *Archelon* in the gray marls of the Selma formation (Upper Cretaceous) of Alabama. Although the different bones were not preserved intact—the various plates were scattered over an area of about 30 square yards—there was no question as to the identity of the find.

The specimen is now being prepared and, while the skeleton is not complete, practically all the major structural elements are represented. There appear to be considerable differences between Wieland's *Archelon* and its Alabama neighbor. For one thing, a fairly large plate belonging to the lower shell was found in the new skeleton. This plate was apparently missing in all of the South Dakota specimens, and its discovery will solve an old argument concerning the front end of the plastron, a question that was repeatedly disputed in the technical literature. Numerous differences of minor importance seem to indicate that the materials from Alabama do not belong to the same species as the South Dakota skeletons, but to a new species yet to be described and named.

The skeletons of vertebrates collected in Alabama are for the most part very fragmentary, and are often broken into hundreds of pieces. Thus it was a great surprise to find that another, much smaller, specimen of



GIANT FOSSIL TURTLE

Archelon ischyros Wieland—close relative of the Alabama Archelon recently collected for Chicago Natural History Museum. The picture represents the reconstructed type specimen in the Yale Museum collection, found in 1895 in South Dakota. The shell is about seven feet wide.

Archelon was collected without our knowledge of it in the field. The two skeletons seem to supplement each other in such a way that the skeletal anatomy of this southern *Archelon* can be determined rather accurately.

Thus, after an interval of nearly fifty years, the famous *Archelon* has reappeared in the form of a close, southern ally.

ALBINOS

This museum possesses one of the largest and finest collections in existence of albino birds and mammals. A selection of typical ones is on exhibition in an alcove north of the entrance to Hall 21. Several hundred others are in the study collection maintained in the Department of Zoology for the use of scientists and students.

Albinos are pure white birds and mammals, usually with pink eyes, which occur occasionally among species which are normally of some other color. There are also various degrees of partial albinism in which animals are flecked with white or have white patches not normal to their species. Very beautiful color combinations often occur due to partial albinism. Many albinos are more handsome than the normal animals of their species.

Albinism, explains Dr. Wilfred H. Osgood, Curator Emeritus of Zoology, is caused by the absence of color pigment in the hair or feathers. It is hereditary to a certain extent, but it is not accompanied by other abnormalities, and does not indicate any physical weakness in the animal. Occasionally it occurs among human beings.

Among the albino birds and mammals exhibited at the Museum are blackbird, crow, red-tailed hawk, grouse, brown thrasher, mallard duck, red cardinal, robin, ruff, quail, sparrow, porcupine, skunk, woodchuck, opossum, raccoon, and gopher.

Albinos must not be confused with animals which are normally white, such as polar bears, Arctic hares and many other mammals and birds, especially those which are found in northern climes.

Normal animals often react with repulsion toward albinos, but nevertheless considerable inter-mating occurs. Breeders of animals and birds, particularly chickens and rabbits, often purposely raise a continued white strain by mating albinos exclusively.

The nucleus of the Museum's albino collection consists of two famous collections given to the institution. One of these is that gathered by Mr. Ruthven Deane, of Chicago, and the other is that of the late Nicholas Rowe, a Chicago naturalist and editor.

NEW MEMBERS

The following persons became Members of the Museum during the period from December 16 to February 11:

Patrons

Clay Judson

Contributors

Mrs. Broadus James Clarke, Elmer J. Richards, William S. Street, Rush Watkins.

Life Members

Arthur Rubloff

Associate Members

Mrs. Roland I. Bosworth, Henry S. Embree, Mrs. Nathan Klee, Maurice Lazar, Mrs. B. S. Majors, Dr. George W. Moxon, Dr. Owen O'Neil, Richard E. Pritchard, John P. Spencer.

Sustaining Members

George Wolnak

Annual Members

Harold R. Alex, Dr. S. Glidden Baldwin, Hagop Berberian, Lambert Bere, L. G. Bratton, Mrs. Anna W. Burton, Burtram B. Butler, Samuel S. Byron, Mrs. Anson Cameron, John I. Cannon, Miss Mary Coffey, Mrs. Wallace T. Combiths, William B. Croney, James L. Crowder, Mrs. Fred G. Dickerson, Mrs. Ralph K. Dupee, Arthur A. Ellerd, George W. Enke, Carl A. Erikson, Godfrey J. Eyler, Jospeh T. Fortin, Rudolph Frankenstein, Mrs. Kellam Foster, Mrs. George B. Frederick, Hermann J. Gaul, Sr., Monroe F. Garrabrant, Mrs. James M. Gilchrist, Mrs. Samuel M. Golden, Dr. Abraham Goldstein, Joseph W. Hibben, Dr. Eugene T. Hoban, Miss Mirian L. Hockman, Lawrence Ingram, Paul A. Krumske, Milton I. Holland, William H. Lerch, Waldo H. Logan, Edward M. Olson, Louis L. Penner, Harry Z. Perel, Charles H. Praeger, Miss Margaret A. Roberts, Edwin J. Roos, O. Trumbull Scalbom, Willson Spielmann, Robert C. Springsguth, Mrs. E. F. Snydacker, Charles Steffen, Oscar A. Stoffels, Dr. Lillian S. Tarlow, Oscar M. Wolff, Otto H. Theiss, Patrick Warren.

SUNDAY LAYMAN LECTURES RESUME IN MARCH

Mr. Paul G. Dallwig, the Layman Lecturer of the Museum, will resume his Sunday afternoon lectures in March after an absence of one month to fill out-of-town lecture engagements.

His subject in March will be "Gems, Jewels and 'Junk,'" and this lecture will be presented each Sunday of the month (*March 3, 10, 17, 24 and 31*). There are three main divisions of the lecture. First, Mr. Dallwig will trace precious gem-stones from their original rock sources through the operations of mining, sorting, cutting, and marketing to the jeweler's showcase and the jewel chest of the ultimate owner. Then, he will relate the superstitions that led to the customs, observed in many parts of the world and many ages, of wearing gem-stones as charms against evil and illness, or to bring good luck and further the aspirations of those enthralled in romance. Finally, Mr. Dallwig will describe the production of imitation and synthetic gem-stones and disclose methods of determining the genuineness or artificiality of stones.

The starting time of the lectures is 2:30.

The heavy demand by the public for Mr. Dallwig's lectures, and the necessity of limiting the size of each audience make it essential to require advance reservations. Lectures are restricted to adults. Reservations will be accepted by mail or telephone (WABash 9410).

On Sundays in April, Mr. Dallwig will lecture on "Who's Who in the Museum Zoo"; in May, his subject will be "The Pageant of Prehistoric Monsters."

GIFTS TO THE MUSEUM

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

Department of Anthropology:

From: Carman Thomson, Chicago—an object of carved bone, Wisconsin; Frank A. Love, Chicago—an ear-plug of fired clay, Louisiana; Maj. Herschel W. Carney, Kalamazoo, Mich.—41 ethnological specimens, New Guinea.

Department of Botany:

From: Mrs. Christian F. Radden, Chicago—2 specimens of yew (foliage and fruit); Robert Runyon, Brownsville, Tex.—22 cryptogams, Texas; Dr. Walter Kiener, Lincoln, Neb.—107 specimens of algae, Mexico, Texas, etc.; Robert P. Ehrhardt, Redmond, Wash.—18 specimens of algae, Washington; Dr. Fred A. Barkley, Austin, Tex.—74 specimens of algae, Texas and Mexico; Lawrence J. King, Wooster, Ohio—135 cryptogams, Ohio and Indiana; Donald Richards, Chicago—460 specimens of mosses, Europe and North America; University of Texas, Austin, Tex.—69 herbarium specimens, Mexico; Museo Nacional, San José, Costa Rica—171 herbarium specimens, Costa Rica; Dr. George J. Goodman, Norman, Okla.—100 herbarium specimens, Mexico.

Department of Geology:

From: James H. Quinn, Chicago—proboscidean femur, Nebraska; Dr. Rainer Zangerl, Chicago—a specimen of Palaeoxyris, Illinois; Stuart H. Perry, Adrian, Mich.—2 etched slices of meteoritic irons, Edmonton, Kentucky, and New Westville, Ohio.

Department of Zoology:

From: Chicago Zoological Society, Brookfield, Ill.—a maned goose, a kangaroo, a Celebes black ape, and 30 birds; Roger Conant, Philadelphia, Pa.—a scorpion and 5 mountain black snakes, Hawaiian Islands and Maryland; Henry S. Dybas, Chicago—110 fishes, 2 snakes, 14 lizards, 2,411 moths, butterflies, dragonflies, insects, and allies, Pacific Islands, Florida, Texas, and various localities; Robert R. Kohn, U. S. Navy—6 lizards, Caroline Islands; Lincoln Park Zoo, Chicago—a spotted hyena and a parakeet; Dr. Ruth Marshall, Wisconsin Dells, Wis.—original plates, figures, notes, and duplicate papers on water mites; Karl Plath, Chicago—an Argus pheasant, Borneo; Eugene Ray, Chicago—2 fish, a salamander, 2 snakes, 9 frogs, and 11 lots of land and fresh-water shells and other invertebrates; Louis Ruhe, Inc., New York—a snow leopard; Colin C. Sanborn, Chicago—2 geckos, 119 bat flies and mites, water bugs and beetles, and 104 lots of marine invertebrates, Hawaii and Peru; Dr. Henry van der Schalie, Ann Arbor, Mich.—165 specimens of fresh-water mussels, Michigan.

Library:

From: *Africa*, Madrid, Spain; Miss Meribeth E. Cameron, Milwaukee, Wis.; Costa Rica Servicio Meterologico Nacional, San José, Costa Rica; Stanley Field, Lake Forest, Ill.; Col. Clifford C. Gregg, Valparaiso, Ind.; Dr. Marcel Guinochet, Nancy, France; F. W. Haecker, R. Allyn Moser, and Janet B. Swenk, Omaha, Neb.; Antonio Krapovickas, Buenos Aires, Argentina; Arthur Posnansky, La Paz, Bolivia; Mrs. Harold R. Robertson, Buffalo, N. Y.; Prentiss Smith, Homewood, Ill.; Dr. Narciso Souza, Meridio, Yucatan, Mexico; O. W. Tiegs, Melbourne, Australia; Madison S. Broscoe and Dr. Henry Field, Washington, D.C.; Warren E. Cox and Netherlands Indies Board, Surinam and Curacao, New York; and Boardman Conover, Mr. and Mrs. Henry W. Nichols, Allen Sinscheimer, Swift and Company, and Alex K. Wyatt, all of Chicago.

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).

LECTURE TOURS ON WEEKDAYS, MARCH AND APRIL

Conducted tours of exhibits, under the guidance of staff lecturers, are made every afternoon at 2 o'clock, except Sundays and certain holidays. On Mondays, Tuesdays, Thursdays, and Saturdays, general tours are given, covering all departments. Special subjects are offered on Wednesdays and Fridays; a schedule of these follows:

March

Fri., Mar. 1—Mauna Loa and Her Sisters—The Story of Volcanoes (*Marie B. Pabst*).

Wed., Mar. 6—The Nature of China—Insects, Reptiles, Birds, Mammals, Plants (*Emma Neve*).

Fri., Mar. 8—Natural Storage of Foods—Seeds, Roots, and Animal Fat (*Miriam Wood*).

Wed., Mar. 13—Tails Have Tales—Animal Tails and Their Uses (*Winona Hinkley*).

Fri., Mar. 15—"The Ides of March Are Come"—Unlucky Days and Bad Luck Superstitions (*Mrs. Roberta Cramer*).

Wed., Mar. 20—Picture the Word—Natural Sources of Vocabulary (*Emma Nere*).

Fri., Mar. 22—Spring Preview—Expectations for Firsts Among Birds, Flowers, and Reptiles (*Miriam Wood*).

Wed., Mar. 27—Preparing to Be a Tourist—A World to See and Hear (Malaysia) (*Mrs. Roberta Cramer*).

Fri., Mar. 29—Pranksters Among the Animals—Every Day is April Fool's Day (*Winona Hinkley*).

April

Wed., Apr. 3—Canopy of Flowers—Little Seen Tree Flowers (*Miriam Wood*).

Fri., Apr. 5—Courtship Displays—Birds and Animals Win Their Mates (*Winona Hinkley*).

Wed., Apr. 10—Earth History—How the Face of the Earth Was Shaped (*Marie B. Pabst*).

Fri., Apr. 12—Suggestions for Your Easter Bonnet—Primitive Peoples Wear "Funny Hats" (*Mrs. Roberta Cramer*).

Wed., Apr. 17—Primitive Heavens—Beliefs in a Next World (*Emma Nere*).

Fri., Apr. 19—Animals' Easter Parade—Brilliant Feathers and Furs (*Winona Hinkley*).

Wed., Apr. 24—Bird Tourists—Spring Migrants of the Chicago Area (*Marie B. Pabst*).

Fri., Apr. 26—Preparing to Be a Tourist—A World to See and Hear (China) (*Mrs. Roberta Cramer*).

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LIFE IN THE BAYOUS OF LOUISIANA BEFORE COLUMBUS, SHOWN IN NEW DIORAMA

By GEORGE I. QUIMBY
CURATOR OF EXHIBITS, DEPARTMENT OF ANTHROPOLOGY

A new miniature diorama recently installed in the Hall of American Archaeology (Hall B) brings to life an extinct Indian civilization of the lower Mississippi Valley. This old civilization or culture had ceased to exist by the time White settlers entered the region, and thus it is known only through the researches of archaeologists.

Now in 1946, in the city of Chicago, we are able to look upon this extinct culture—an illusion produced by the science of archaeology and the art of diorama construction. We are able to see an Indian village, the original of which was seen only by pre-Columbian Indians. To echo the title of a popular book, "Columbus came late"—too late to see these Indians of the lower Mississippi Valley and too early to see our diorama.

SWAMP COUNTRY VILLAGE, A. D. 1300

Community of prehistoric mound-building Indians of Louisiana as restored in a new miniature diorama recently added to the Hall of American Archaeology (Hall B). The culture depicted was unknown to archaeologists until 1933. Reconstruction by Dioramist Alfred Lee Rowell; data supplied by Curator George I. Quimby.

The culture depicted in the diorama was not discovered until 1933. At that time, archaeologists investigating a prehistoric village site on the bank of Coles Creek in southwestern Mississippi, realized that they had discovered a new culture. Looking about for something to name the culture after, they chose the stream; hence the name, "Coles Creek" culture. Later investigations showed that there were many other Coles Creek sites in Mississippi and particularly in Louisiana. The village shown by the diorama is in east-central Louisiana.

The Coles Creek Indians were dominant in the lower Mississippi Valley from about A.D. 1300 to 1500. These broad-headed Indians were farmers who supplemented their vegetable diet by hunting, fishing, and the gathering of wild foods. They raised corn, squashes, and beans. Their only domestic animal was the dog. The Coles Creek villages consisted of a central square or plaza with one or more large mounds at each end. The mounds were truncated pyramids made of earth. An earthen ramp or a stairway of logs led to the summit of the mound where there was a temple made of saplings covered with thatch. Surrounding some temples there were rows of poles surmounted by skulls—the heads of enemies displayed as trophies, or perhaps the heads of venerated tribesmen.

The mounds were made of earth and clay. Single basket-loads of earth were brought from the surrounding areas and dumped in place, until finally a mound was built. At irregular intervals there were additions made to existing mounds or, on occasion, the surface of an existing mound was capped or plated with fresh clay, a practice analagous to the Central American custom of facing earthen pyramids with stucco or stone.

The villagers lived in small huts at the sides of the plaza. These huts were made of saplings and thatch.

The Coles Creek Indians made pottery vessels of several kinds, and tools, weapons, and utensils of bone, stone, wood, and shell. Personal ornaments were made of shell and fired clay. These Indians smoked tobacco pipes of stone or clay, some of which were in the form of crouching figures of animals or humans.

The dead were buried in cemeteries near the village. The bodies were flexed or extended. Very few burial offerings were placed in the graves.

The Coles Creek diorama depicts a typical village in east-central Louisiana. In the left foreground there are the houses of the villagers, a cornfield between the houses and the river, and a live-oak tree with Spanish moss. In the center foreground, Indians with baskets of earth are building a mound.

In the right foreground there is a large pyramidal mound freshly plastered with clay. On top of it there is a thatched temple surrounded by poles displaying trophy skulls. In front of the temple at the top of the log stairway there is an Indian priest. Behind and at the side of the mound is a cypress swamp, palmettos, dugout canoes, and a freshly killed alligator. Buzzards look down on the village from their perches in the cypress trees. In the middle ground there is a priest being carried on a litter and accom-

panied by his retinue. One member of the retinue is blowing a conch-shell trumpet to announce the priest's approach.

The center background shows another pyramidal mound with a temple on its summit, and additional houses of the villagers.

The diorama was constructed by Alfred Lee Rowell, dioramist in the Department of Anthropology. Archaeological data for the diorama were supplied by the writer.

THE MOST IMPORTANT AMERICAN WOODS

By ROBERT H. FORBES
ASSISTANT IN DENDROLOGY

IF THE cases in Charles F. Millspaugh Hall of North American Woods (Hall 26) were arranged according to the present economic importance of the eighty-three trees represented, the existing botanical arrangement would be greatly changed.

The conifers, or "softwoods," would remain in a group as at present. That would be about the only similarity between the existing order and the one suggested here. But even that order would not be unchanged, although the conifers are more important than the broad-leaved trees, or "hardwoods," if the quantity of wood produced be the criterion.

The wood of the so-called "hardwoods" might assume greater value from a dollars-and-cents standpoint, but such features as growth in relatively pure and dense stands, ease of lumber manufacture and favorable strength-weight relationships must be considered. These have resulted in the utilization of five times as much "softwood" as "hardwood."

DOUGLAS FIR TOPS LIST

At the head of the cases would be the one containing Douglas fir—the world's outstanding wood tree. According to the latest available statistics, published by the U. S. Forest Service, it appears that the recent production of southern pine exceeds that of Douglas fir by the equivalent of several billion board feet.

However, it should be realized that the cut of southern pine comes mainly from *four* tree species—longleaf, loblolly, shortleaf and slash pines—whose woods are so similar that official statistics do not attempt to differentiate between them. The annual production of *four* southern pines amounted to the equivalent of about 12,250,000,000 board feet in recent years, while that of the *single* species, Douglas fir, was about the equivalent of 7,500,000,000 board feet.

In third place would be another western conifer—ponderosa pine—which ranges over a greater expanse of land, in commercial quantity and quality, than any other in in the United States. Ponderosa pine grows in magnificent stands from Canada to Mexico in the eleven western states, plus North and South Dakota and Nebraska.

The nine cases devoted to the various oaks would be next in order of importance, although it would be impossible to separate them, beyond the first two species, according to their relative worth. White oak may be considered first among the many oaks, and black oak second, wholly on the somewhat unsatisfactory basis of the estimated occurrence of the two species.

It is safe to conclude that more white oak is logged than black because the forests contain roughly twice as many merchantable trees of the former species as of the latter, according to U. S. Forest Service surveys. And the number of standing black oaks, in the same forests, is thought to be approximately twice as great as that of the next three oaks: red, southern red, and chestnut oak.

Possibly the greatest handicap in the presentation of the total quantity of wood used, whether in regard to a certain species or a given region, is the fact that wood measurement lacks a common denominator, such as tons or other unit of weight. The board foot has long been the standard applied to more or less rectangular lumber in this country. But it is very unsatisfactory when dealing with pulpwood or fuelwood, wood for making barrels, poles, shingles, mine timbers and a host of other products.

Therefore, the ranking of species can be little more than an estimate. The thirty most important woods, as of the period 1943 to 1945, in the Hall of North American Woods may then be listed in this order:

"Softwoods" or Conifers	*"Hardwoods" or Broad-leaved Trees*
Douglas fir	Oak
Southern pine	Red gum
Ponderosa pine	Maple
Western hemlock	Yellow poplar
Eastern white pine	Tupelo
Western red cedar	Chestnut
Eastern hemlock	Birch
Western white pine	Beech
Southern cypress	Cottonwood
Redwood	Ash
Sitka spruce	Elm
Sugar pine	Basswood
Western larch	Hickory
Balsam fir	Black walnut
Port Orford cedar	Sycamore

If the woods were ranked on the basis of their value per unit measurement, the order would be quite different.

YEWS AND REDWOODS

Two conifer products in the exhibition hall are of outstanding value—the archery bow of Oregon yew and the redwood burl. Yew is one of the choicest of the coniferous woods because it combines the qualities of high bending strength and elasticity with relative scarcity and the small size of individual trees. The often large proliferations, produced upon the trunks of redwood trees, are of as great interest as of monetary worth. These groupings of thousands of stunted buds are so valuable that the only way they can be used economically is by slicing them into sheets of veneer.

Because of their growing scarcity and excellent physical properties, at least three

U. S. Forest Service photo

STAND OF DOUGLAS FIR

This species of tree furnishes more wood for utilitarian purposes than any other single variety. Southern pine total production outranks it but only by combining the footage from four species. Photograph was taken in a forest of Washington.

lumber producing conifers have been elevated into the upper brackets. Eastern red cedar has been known as the "pencil cedar" and "mothproofing cedar" because of its fine, uniform texture and fragrance, respectively. The southern cypress has been increasingly cut and manufactured into lumber and wood products for uses which demand its extreme durability. Port Orford cedar also is valued for its uniform texture and gingery odor.

The three premier "hardwoods" may be chosen on the basis of exceptional properties, scarcity and beauty. The most strictly utilitarian of these is flowering dogwood, whose fine-textured, hard, heavy wood is unsurpassed in shock-resistance and wearing qualities. It became a critical material early in the war because no satisfactory substitute could be found to replace it in textile manufacture, where the single item, shuttle blocks, consumes about 90 per cent of dogwood production. Another unique dogwood use is for golf club heads.

Black cherry and black walnut are the two most beautiful domestic woods. And they are all the more beautiful because of their desirable properties. Both produce the finest furniture and cabinet veneers and both are much sought to that end. Black cherry, as well, occupies a unique place in the printing trade, for that industry used the equivalent of 3,000,000 board feet in 1940 for electrotype backings alone. Black walnut has just passed the period of its greatest exploitation, as it was the wood from which a majority of the millions of gunstocks for World War II were manufactured. Its high shock resistance, dark natural color and light weight were responsible for an accelerated cut of the species, mainly in the eastern United States.

GROTESQUE ARE THE DENIZENS OF THE COLD, BLACK SUB-DEPTHS OF THE SEA

By MARION GREY
ASSOCIATE, DIVISION OF FISHES

Animals dwelling in what we consider an abnormal environment are inclined to develop a bizarre and exotic appearance due to adaptive changes in their structure. It is not surprising, therefore, to find the depths of the sea inhabited in part by invertebrate animals and fishes that surpass in eccentricity of form any of the mythical creatures that man, with his versatile imagination, has been able to imagine.

A temporary exhibit of paintings by Staff Taxidermist Leon L. Pray has recently been installed in the corridor outside Hall O, in order to illustrate a few of these strange animals.

The deep sea is generally considered to include all of the waters below a depth of about 100 fathoms (600 feet); thus defined, it contains 92½ per cent of the water in the sea, and more than half of it exceeds a mile in depth.

The most outstanding characteristics of this vast volume and area of very deep waters are its cold, pressure and darkness. Low temperatures are an all-important factor in deep-sea life. In surface waters, temperatures vary widely in different latitudes and they also change with the seasons. But below a depth of about 150 fathoms, there is no annual variation, and the water gradually becomes colder until, from about 500 or 600 fathoms downward, it remains more or less constant between 41° Fahrenheit to just above the freezing point, whether in the tropics, where surface temperatures are high, or in the Antarctic or Arctic, whose upper waters are also cold.

It is partly due to this uniformity of temperature that the deep-sea fauna does not vary much from south to north or from west to east, whereas in surface waters the animal population of Arctic waters, for example, differs greatly from that of a tropical coral reef.

Perhaps the most awe-inspiring characteristic of the deep sea is the immense weight of the waters above, equalized as an all-pervading pressure. However, though the weight of sea water increases 14 pounds a square inch with every ten meters of depth, the influence of the resulting pressure upon animal life is less vital than one might suppose, since the same pressure exists on all sides of a marine animal, as well as within its tissues and body fluids.

The loose flesh and soft or cavernous bones of deep-sea fishes are probably largely adaptations to facilitate the equalization of the pressure inside and outside of the body. That these creatures are adjusted to great water pressure is shown by their frequent attempts, when alive and active after capture, to dive through the shallow vessels that confine them. Sudden changes of depth are of course disastrous to some, and if accidentally brought out of their normal depth zone, they may actually "fall upwards."

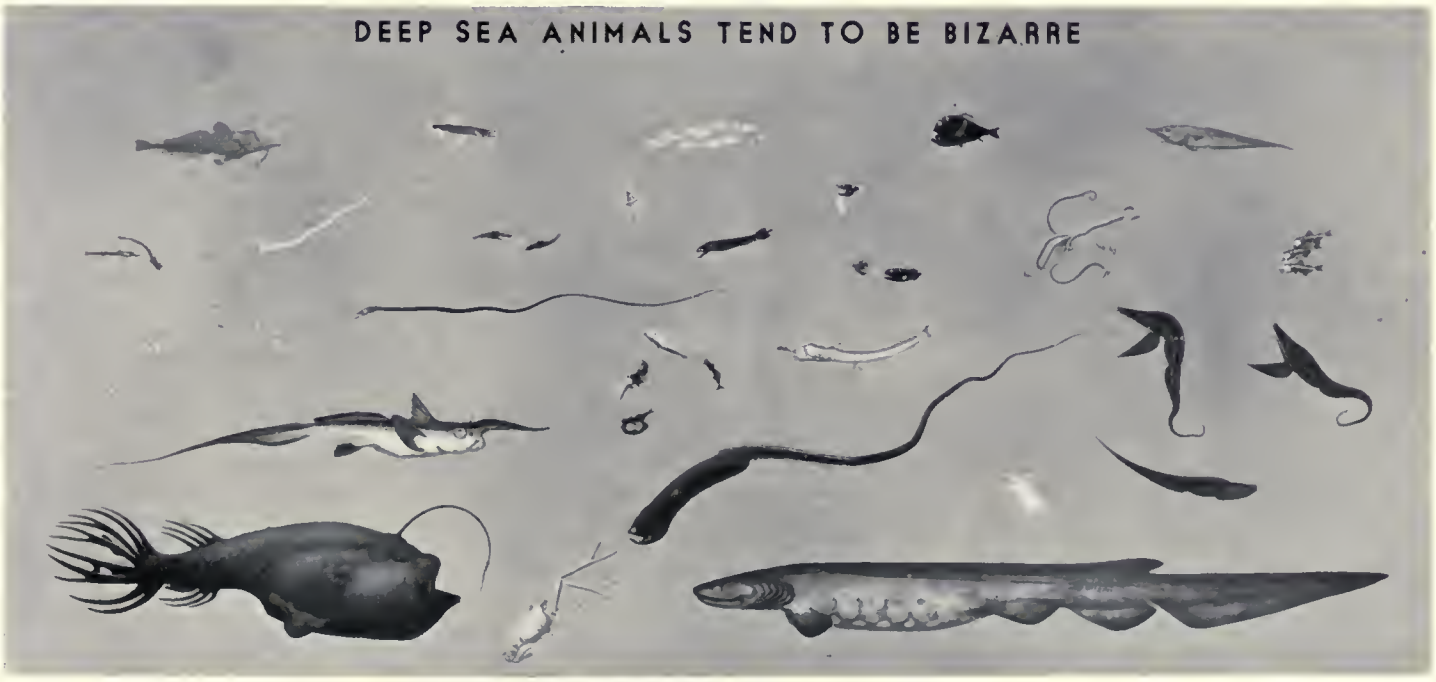
The importance of light to deep-sea animals lies chiefly in its absence, although of course the sun is the original source of nourishment even for them. Sunlight does not penetrate deeper than 3,000 feet into the sea and traces of light reach that depth only under optimum conditions; 200 feet is the approximate bottom limit for enough light to be effective in plant production.

Attached animal forms, sponges, sea-lilies and the like, mimic members of the vegetable kingdom in the deep sea even to the possession of root-like tendrils anchoring them in the bottom ooze, but living plants, the kelps and grasses so characteristic of the seashore, are entirely absent in the depths except for a few parasitic types and the still little-known bacteria.

The endless masses of microscopic vegetable matter found at the surface of the open sea, which vastly exceed in bulk all of the visible plant material of the oceans, are not represented in the lightless zone except as a part of the dead food-rain from above. All deep-sea life is ultimately dependent upon surface life, since animals exist by virtue of plants and plants by the agency of the sun.

A deep-sea angler fish may swallow a little lantern fish that had in turn eaten a tiny crustacean. The crustacean had perhaps fed upon minute plants, either at the surface at night or as corpses slowly sinking through the depths. In surface waters the plants had existed through photo-synthetic use of sunlight. The life of an animal is so intimately associated with its surrounding environment, and with its neighbors, that it is impossible to speak of one without also stressing the others.

In the upper reaches of the deep sea,



SOME OF THE WORLD'S STRANGEST CREATURES—INHABITANTS OF THE DEEP SEAS BELOW 600 FEET

High among desiderata for the Department of Zoology are the fishes shown on this screen, painted by Staff Taxidermist Leon L. Pray as a temporary exhibit in the Hall of Fishes until specimens can be obtained. Note the grotesque angler fish (Reganula gigantea) at lower left which carries its own fishing rod and bait as a lure to smaller fishes which it devours. All these fishes are conditioned by Nature to withstand the intense pressures, cold and darkness in the sub-depths of the oceans.

called the twilight zone, we find many silvery fishes and invertebrate animals with very large eyes and an abundance of luminescent organs, such as *Argyropelecus* and the little myctophids.

Below this twilight zone the darkness is absolute except where broken by the light produced by the animals themselves. Rooted in mud on the bottom are luminous sessile organisms forming oases of light in the blackness that surrounds them, and swimming free, far above the bottom, are the erratic moving lights of various kinds of animals. Some of the fishes, squids and shrimps have very complicated light organs and others glow by means of a coating of luminous mucus.

There are, of course, non-luminous creatures as well, and some of these are blind. *Phoberus*, a large, pink, lobster-like crustacean inhabiting the sea floor about 2,500 feet beneath the surface, has only vestigial eyes. The fish *Ipnops* is apparently blind, too, but for some obscure reason has developed large luminescent plates where its eyes should be.

Many deep-sea fishes, particularly those that are blind or with small eyes, have acquired various sensory organs to compensate for the darkness or for their poor vision. Thus *Chauliodus* has the first ray of its back fin elongated and directed forward over its head. Long fin-rays of this sort are rather common and are considered to be tactile in function.

Chin barbels are another form of sensory organ, although we can only guess at their purpose. *Lamprotoxus* wears a slender barbel much longer than its body. *Linophryne arborifer*, one of the anglers, has a relatively shorter one, stout and extensively branched, with some of the branches loaded with little sensory swellings.

FISHES WITH FISHING-RODS

Linophryne is only one of a queer lot of angler fishes. Derived from surface forms like the goose-fish of our Atlantic coast or the little frog-fishes that live among sea weeds, these deep-sea anglers have changed the lure of the surface forms into a luminous bait to attract the little fishes of the depths whose curiosity, or whatever, leads them to investigate a light in the water.

The various species of anglers exhibit an infinite variety of lures that include simple rod-like structures as well as large head lights with assorted branches and tentacles. *Lasiognathus* has even gone so far as to develop three horny hooks at the end of its long rod. The rod is joined to the head in such a way that it can be cast forward and then withdrawn, when, presumably, the fishing-fish clamps its capacious jaws over the prey.

The stomachs of many deep-sea fishes are appallingly distensible. Among others, *Chiasmodon niger* is often found to contain a recent meal consisting of a fish larger than itself. The act of swallowing such a disproportionate morsel is made possible by possession of a large mouth conveniently equipped with backwardly depressible teeth that facilitate the entry of prey but at the same time render escape difficult. Indeed, the fish is probably unable to release a victim that has once entered its mouth and is forced to swallow whatever is seized, whether he will or no.

PROTOZOANS TO WHALES

Almost every large group of the animal kingdom is represented in deep water, from one-celled protozoans to vertebrates. There are coelenterates and worms, echinoderms and mollusks. Deep-sea crustaceans are most common of all, except for the fishes, and squids have also evolved into a wide variety of forms ranging from less than an inch in length to a giant species known mostly from fragments found in the stomachs of whales.

The most abundant and highly specialized forms of fishes are found among primitive groups whose greater age has given them more time to develop special adaptations to insure a successful tenancy of the depths. Most of these are strange, unfamiliar, and entirely lacking the popular names with which their more available cousins have been endowed. Whole families and even orders of fishes are entirely confined to deep water, and some of them are so unique that relationships to other fishes are obscure.

One of these nonconformists, *Stylophthalmus*, was assigned a family to itself until proved to be the young of fishes belonging to entirely different families. The most obvious character of stylophthalmine fishes is that the eyes are carried at the ends of stalks, which are gradually absorbed as the infant matures and acquires its other adult characters. Differences in shape and proportions render these baby fishes so alien in appearance to their parents that it is impossible to determine their true relationships until a complete series of growth stages has been secured.

A BOTANICAL EXPEDITION TO UPPER ORINOCO

By LLEWELYN WILLIAMS
CURATOR OF ECONOMIC BOTANY

History relates that the first white man to explore the Orinoco was Ordaz, who in 1531–32 ascended as far as the estuary of the River Meta. In 1800, Humboldt and Bonpland undertook their memorable voyage. About 50 years later the English botanist, Richard Spruce, entered from Brazil. They were followed by Richard Schomburgk, Chaffanjon, and other scientists.

Despite their efforts, the southwestern section of Venezuela remained until recent years one of the least known though richest regions of the western hemisphere, from the standpoint of plant life and forest resources.

In collaboration with the Venezuelan Ministry of Agriculture, and in continuation of previous botanical explorations made in 1939 and 1940, Chicago Natural History Museum sponsored a third expedition to the Orinoco basin through most of 1942. From Caracas the writer traveled by truck for several days through the *Llanos* or plains to Cuidad Bolívar, thence on a steamer up the Orinoco.

With field equipment and food supplies, and accompanied by native guides, we left Sanariapo in two open dugout canoes, powered by outboard motors, arriving two days later at San Fernando de Atabapo, a center 30 or 40 years ago for the rubber tapping industry.

Except for the small rapids of Chamuchina and Guarinuma, traveling along the Atabapo River presented no serious hazard. Two days after leaving San Fernando we reached Yavita, and entered the ancient trail leading about 11 miles through lofty forest, which furnished the shortest and most traveled route between the river systems of the Orinoco and the Amazon.

On the return trip northward from San Carlos we retraced the route over Pimichin-Yavita trail, down the Atabapo and Orinoco to Puerto Ayacucho. We then turned southward to San Fernando de Atabapo and continued up the Orinoco. In these forests one frequently encounters stands of cacao trees, remnants of those planted several hundred years ago by Spanish colonists. We continued upstream to Esmeralda, located in a plain dominated by the lofty mountain Duida, with an elevation of 8,000 feet.

Between Duida range and the mountains of Guapo and Padamo extend wide grassy plains. A semi-circular ridge of fantastically piled granite blocks, in whose crevices grow small trees and scattered shrubs, cuts off a small savanna on which stands Esmeralda. Along the Orinoco and on the margins of the plain rise hills of granite and schist, some nearly naked, others forest-clad. The rock is chiefly micaceous schist, leading the Spanish explorers to believe that they had discovered emeralds. As Spruce wrote in 1854, "If you can fancy all this by a setting sun—the deep ravines that furrow Duida on the east buried in nocturnal gloom, while the salient edges glitter like silver—you will realize in some degree a scene which has few equals." But though the site may be a paradise from the viewpoint of panorama, in reality it is an inferno scarcely habitable by man.

The vast region is one of the most interesting floristically of Venezuela. Seven-eighths of its area is covered by rain forests, containing a wide variety of palms, narcotic plants or stimulants and many latex-yielding trees, chief of which is *Hevea* rubber. As a result of seven months' effort, a large and valuable collection of plant materials, wood specimens, fibers and other products was obtained for the Museum.

CALIPERS AND PATIENCE EXTRACT A STORY FROM SKULLS

By WILFRID D. HAMBLY
CURATOR OF AFRICAN ETHNOLOGY

ONE of the few benefits of war was a revision course of our geography, and names long forgotten were revived in connection with naval strategy and major sea battles. So it was with the New Hebrides on account of their commanding position in the Western Pacific.

But, thanks to Jack London and other writers of romances of the South Seas, the geography of the Pacific had not been quite forgotten. The thrills of hurricanes, of pearl diving, and of contacts ashore with the cannibals and head hunters of New Hebrides and other islands were familiar to many readers.

VILLAGE SCENE: AMBRYM IN THE NEW HEBRIDES

Some Melanesian types studied by Dr. Hambly as told in accompanying article

During the recent war, the Museum received from Lieutenant Commander W. E. Guest decorated ancestral skulls and a sacred effigy of a distinguished person of the New Hebrides. But the interest of this Museum in the ethnology of Melanesia goes far beyond current events to the period 1909–13. At that time the late Dr. Albert B. Lewis, then Curator of Melanesian Ethnology and leader of the Joseph N. Field South Pacific Expedition, made a large collection of human skulls in New Guinea, Solomon Islands, New Britain and New Hebrides. More than 400 of these are adult, in excellent condition, and undecorated, facilitating accurate measurements.

It would be natural to inquire what interest there might be in making such measurements. The process of recording dimensions, angles, and internal capacity of the brain-box is tedious; so also is the calculation of averages. Averages are the important data, and little attention is paid to the measurements of an individual skull.

Before recording measurements, the skulls are divided according to the localities where they were collected; then follows a division by sex. The males are distinguished by heavier brow ridges, larger mastoids, and stronger muscular attachments at the back of the skull. The male skull is usually thicker than the female, and it needs to be if the owner is to survive primitive warfare with stone clubs. Incidentally, a few skulls indicate a knowledge of primitive surgery in removing fractured bone that pressed on the brain.

When the average measurements for the sexes have been worked out, the scientist is able to study sex ratios of the various traits. These generally show the female skull to be appreciably smaller than the male. But we must not argue, because the feminine brain-box is on the average smaller than that of her consort, that the latter has superior intelligence. The craniometrist has enough worry with instruments and technique without setting such a controversy in motion. The fact is that the smaller brain is correlated with the smaller body weight. Nature places emphasis on *quality* of brain matter rather than on quantity. So when we say that the average skull capacity (brain-box contents) is greatest for the white race, next for the Mongolians and Polynesians, and lowest for the Negroes and Australian aborigines, the obvious snap judgment must be avoided.

In his desire to know something of the remote history of Melanesians, Polynesians, and Australian aborigines, the anthropologist searches for evidence. Where did these Pacific peoples originate? What were their lines of migration? And was there a mixture of races, languages and cultures?

Years ago, the study of languages was relied upon as a hopeful solution of these problems. But scientists now realize that languages mix readily through trade and warfare, and the evidence afforded by the presence of foreign words is not a reliable guide to past wandering and mating. The Polynesians had no written language, but their priests kept verbal records of sea voyages, and of family trees (genealogies) for many generations. The deductions from such evidence are that the original home of the Polynesians was near northeast India, and that they voyaged through the Pacific in the period A.D. 500–1400.

But for Australian aborigines and Melanesians verbal records are meager, and there is not even a guess at the date of their entry into the Pacific. The natives of Australia, a non-Negro people with wavy hair and heavy brow ridges, seem to have been isolated in Australia for a long period. Their languages have so far shown no structural relationship to languages outside the Australian continent, though further study may establish some connection.

The research technique followed in this Museum first takes cognizance of the average measurements and general appearance of Negro skulls of Africa; and the same kind of data are recorded for skulls of native Australians. Exactly the same kind of measurements and other observations have been made on 429 adult Melanesian skulls.

From Museum records and those published by other institutions there accrues a vast amount of statistical data which gives the following main results:

There are groups of skulls from New Guinea and Solomon Islands (Melanesia) that are strongly Negroid and many average measurements come close to those for African Negroes. Skull measurements for Melanesians show clearly a Negro and an Australoid mixture in the western Pacific.

In New Britain, local groups of Melanesians indicate by their general appearance and skull measurements both Negro and Australoid migrations.

Cranial measurements afford scarcely any evidence of racial crossing between Polynesians and Melanesians.

The skulls of Ambrym Island (New Hebrides) are the subject of research in a recent Museum publication.* They show some affinities to Negro skulls of Africa, but heavy brow ridges and sloping foreheads make them more akin to Australians.

The craniometrist emphasizes the importance of his research because he feels that skull characters are the most reliable indication of the presence and mating of different racial types.

* See "Scientific Publications," p. 7.

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THE BULLETIN

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

ALBERT A. SPRAGUE

The Museum suffered a great loss in the death, on April 6, of Colonel Albert Arnold Sprague, its First Vice-President, and, in point of number of years served, the oldest member of its Board of Trustees.

ALBERT A. SPRAGUE

Colonel Sprague was 69 years of age at the time of death, which followed an illness of several months' duration. He was born in Chicago May 13, 1876. After graduation from Harvard, he lived in and devoted most of his life to the business and cultural interests of his native city, and municipal affairs.

He began his long association with the Museum in 1910 when he was elected a Trustee and Corporate Member. In 1922 he was elected by his fellow Trustees to the post of Third Vice-President; in 1929, Second Vice-President, and in 1933, First Vice-President. He was also a Life Member, an Honorary Member in recognition of eminent services to science, a Patron in recognition of eminent services to the Museum, and his name is on the roll of Contributors for his generous gifts to the institution.

As a Trustee and Officer of the Museum, Colonel Sprague was one of the most active members of the Board. He took a prominent role in directing the affairs of the Museum, and his counsel was greatly respected by his fellow Trustees and the administrative heads of the institution. Especially was he instrumental in obtaining, for this and other museums in Chicago, the share of Chicago Park District taxes upon which they rely for part of their operating expenses, and later, when the continuance of this was threatened, he directed the course which assured a sympathetic ear in the state legislature for the plea of the museums.

Colonel Sprague was prominent also in the affairs of many other civic organizations. After service in World War I, first as a private and later as an officer, he took a leading part in the founding of the American Legion. Among other institutions which enjoyed the benefits of his services were the John Crerar Library, Shedd Aquarium, Museum of Science and Industry, Chicago Medical Center, Otho S. A. Sprague Memorial Institute, Children's Memorial Hospital, National Foundation for Infantile Paralysis, American Red Cross, Chicago Symphony Orchestra, and various charitable, political and religious organizations.

His business connections included the chairmanship of Consolidated Grocers Corporation (successor to Sprague Warner & Company founded by his father and uncle), co-trusteeship of the Chicago Rapid Transit Company, and directorships in the Continental Illinois National Bank and Trust Company, International Harvester Company, Marshall Field and Company, Wilson and Company, Baltimore and Ohio Railroad, B. F. Goodrich Company, and other corporations. He served twice as city commissioner of public works, under Mayor Dever and Mayor Cermak; and was chairman of the Chicago Plan Commission for four years beginning in 1935.

LARGE COLLECTION OF PLANTS BROUGHT FROM SALVADOR

Approximately 1,000 different kinds of plants with an average of four specimens each have been received by the Museum Herbarium as a result of the expedition to the Republic of Salvador conducted for this institution and Northwestern University by Dr. Margery Carlson. Dr. Carlson, who is a member of the botany staff at Northwestern, left Chicago by plane for Central America last December, and returned April 11. She was accompanied by Miss Kate Staley, one of her assistants.

Dr. Carlson and her assistant traveled some 2,000 miles, and were the first women scientists to conduct a botanical expedition in the Central American mountain jungles. The collections obtained for the Museum will be used principally for study purposes, partly in the preparation of a publication on the plant life of Central America. For Northwestern, Dr. Carlson collected principally living orchids for use in the university's greenhouse. She also made several hundred color photographs.

NEW MEMBERS

The following persons became Members of the Museum during the period from February 12 to April 15:

Associate Members

Mrs. Albert V. Bori, Henry P. Conkey, Mrs. Edward G. Elcock, Miss Clara L. Emmerich, Irwin D. Groak, Dr. S. I. Hayakawa, Mrs. John P. Hovland, Harry W. Jarrow, Fred S. Roller, Dr. Paul E. Thal.

Annual Members

Dr. David S. Beilin, Dr. Allison L. Burdick, Kenneth J. Burns, George P. Butterfield, Mrs. William Sherman Carson, J. Beach Clow, Arthur B. Craig, Matthew J. Cullen, Donald Davidson, Roy H. Davis, Carl A. Dietz, Mrs. Herman Drobny, Edward R. DuVal, Nathaniel E. Duval, James G. Ehrlicher, Stanley V. Ekman, Miss Nancy T. Elmer, Mrs. William A. Field, Thomas J. Finnegan, Mrs. Juanita E. Frederick, Carl Fredrickson, Mrs. Eugene White Fuller, James W. Gilman, Charles A. Girard, Mrs. Remi J. Gits, Leon G. Godchaux, Dr. Robert Elliott Graves, Dr. Robert M. Grier, Charles Grosberg, Miss Dora Gumbinger, Rev. David Gustafson, Clifford F. Hall, Bernard J. Hank, Hardin H. Hawes, Herbert H. Holland, George Hukar, Mrs. William O. Hunt, Michael L. Igoe, Robert W. Jewell, Mrs. Charles E. Kane, Mrs. Jerry J. Kearns, George M. Keranen, Dr. Nicholas H. Kern, Alan Kettles, James E. Kidwell, Richard E. Kidwell, Mrs. T. L. Knecht, Dr. Edward J. Krol, Albert J. Kuester, Dr. A. F. Lash, Mrs. Theodore E. Lea, Gerhard Lessman, J. Gus Liebenow, Mrs. John A. MacLean, Jr., Henry A. Markus, David F. Matchett, Richard Mayer, Edwin T. Maynard, Elmer C. Maywald, Joel Meyerson, Mrs. Paul H. McDaniel, James J. McNulty, Demetrios Michalaros, Harold T. Moore, Lucien W. Moore, Harold K. Norton, Richard R. Novotny, William G. Praed, Charles H. Ready, William Renouf, Horace J. Resag, Jewett E. Ricker, Ivan Ricks, Mrs. Joseph A. Riggs, Theodore B. Robertson, Dr. Charles A. Sima, Mrs. G. O. Smith, Harold A. Smith, Joseph G. Sola, Carlos A. Spiess, D. Earl Steffey, Robert C. Stratton, Robert K. Stuart, Fitzhugh Taylor, Alfred J. Teninga, Dr. Alfred O. Walker, Miss Aileen Wood, Edward W. Wood, William Henry Wood.

Visiting Hours Change May 1

Beginning May 1, summer visiting hours, 9 A.M. to 6 P.M., will go into effect until September 2 (Labor Day).

STAFF NOTES

Captain Melvin A. Traylor, Jr., U.S. Marine Corps (in civilian life Associate in the Museum's Division of Birds), is a member of the scientific group assigned by the government to make a study of atomic bomb effects at the time of the test, now deferred, to be made by the Navy at Bikini Atoll in the Pacific.

Captain Traylor has already been dispatched to the scene for preliminary work. After the test, he and his associates will collect fishes for comparison with those of similar types caught in advance of the experiment. This survey is under the direction of the Fish and Wild Life Service of the Department of the Interior, and is intended to serve information needs of the fishing industry as well as ichthyological science.

* * *

Captain Emmet R. Blake, Assistant Curator of Birds, has returned to the United States on terminal leave from the Army after service in the European theater. He will return to his post at the Museum on June 1.

* * *

Dr. Alexander Spoehr, who recently returned to the Department of Anthropology after several years' war service as a lieutenant in the Naval Reserve, has been transferred from the post of Curator of North American Ethnology and Archaeology to Curator of Oceanic Ethnology. His casual contacts with various Oceanic cultures during his naval service prompted him to request the change.

* * *

Mr. Karl P. Schmidt, Chief Curator of Zoology, attended a meeting of the National Research Council in Washington, D. C., in April. He also presided at the first post-war meeting of the American Society of Ichthologists and Herpetologists held at the Carnegie Museum in Pittsburgh, where he was joined by Messrs. Clifford H. Pope, Curator of Reptiles, Loren P. Woods, Assistant Curator of Fishes, and D. Dwight Davis, Curator of Anatomy. Messrs. Schmidt and Davis also attended the meetings of the American Society of Mammalogists, likewise held at the Carnegie Museum. The subject of Mr. Schmidt's retiring presidential address was "The New Systematics, the New Anatomy, and the New Natural History."

* * *

Mr. Gustaf Dalstrom, artist in the Department of Anthropology, recently was awarded one of the major prizes for a painting in the exhibit of Chicago artists at the Art Institute.

* * *

Dr. Wilfrid D. Hambly, Curator of African Ethnology, recently attended the first post-war meeting of fellow ethnologists at Northwestern University, at which plans were drawn to continue the interest in the African area aroused during the war. Dr. Hambly was one of the scientists who, at the request of the government, met in Washington before and during the American occupation of Africa and prepared digests of information useful to both combat forces and civil administration.

* * *

Dr. Julian A. Steyermark, Assistant Curator of the Herbarium, attended the recent meeting in St. Louis of the botanical section of the American Association for the Advancement of Science and presented a a paper on "The Flora of Guatemala." Mr. Rupert L. Wenzel, Assistant Curator of Insects, and Mr. Henry S. Dybas, Assistant in Entomology, attended the meeting of the entomological section.

MUSEUM'S 1946 EXPEDITIONARY PROGRAM IN FULL SWING

With the departure in May of an archaeological expedition to Peru, and another to the United States Southwest in June, a paleontological expedition leaving in May, and several others for the Departments of Zoology and Botany scheduled at early dates, the Museum's expeditionary program, suspended since the Japanese attacked Pearl Harbor, moves into high gear. (Entry into the field of the first post-war expedition, that being conducted in Peru by Mr. Colin C. Sanborn, Curator of Mammals, was reported in the last issue of the BULLETIN. In April, Dr. B. E. Dahlgren, Chief Curator of Botany, went to Cuba where, in the interior, he resumed studies begun several years ago of certain plant groups.)

The Archaeological Expedition to Peru will be conducted by Mr. Donald Collier, Curator of South American Ethnology and Archaeology, who will sail or fly from New York about May 20. Mr. Collier, who has explored in South America in the past for both this and other institutions, will remain in Peru through November. He will supervise excavations to collect material representative of the early Mochica and Chavin pre-Inca cultures of circa A.D. 500–1000. The locality to be worked lies in a desert region between the north coast and the Andes. In adjacent areas will be simultaneous expeditions from Columbia University, Yale University, the American Museum of Natural History of New York, and the Smithsonian Institution of Washington, D.C., all co-operating with Mr. Collier in field work and in the sharing of equipment furnished through the Institute of Andean Research and the Viking Fund, Inc.

The Archaeological Expedition to the Southwest, under the leadership of Dr. Paul S. Martin, Chief Curator of Anthropology, will be in the field from June 15 to September 15. Dr. Martin will be accompanied by Dr. John Rinaldo, Assistant in Anthropology, and will be aided in excavations by a crew of fifteen men to be recruited in the vicinity of operations. Dr. Martin plans to complete excavations on the SU site of Mogollon culture near Reserve, New Mexico, where he worked during two prewar seasons. He hopes also to discover some earlier sites. This is Dr. Martin's tenth expedition to the Southwest.

Late in May, Dr. Rainer Zangerl, Curator of Fossil Reptiles, will lead a paleontological expedition to Wyoming to collect fossil vertebrates of the Eocene Period. especially turtles and mammals.

A zoological expedition to the Celebes Islands will be conducted, probably during the spring or early summer, by Captain Harry Hoogstraal upon his release from the U.S. Army Sanitary Corps in the Philippines.

Scheduled for the summer are: A zoological expedition to Texas and Mexico, by Mr. Karl P. Schmidt, Chief Curator of Zoology, to study the divergence in the fauna of eastern and western Texas and along the Mexican border; an expedition to the mountains in the vicinity of Highlands, North Carolina, to collect rare salamanders, by Mr. Clifford H. Pope, Curator of Amphibians and Reptiles; a paleontological expedition to the Southwest, by Dr. Paul O. McGrew, Assistant Curator of Paleontology, to collect fossil mammals; and a zoological expedition to Puget Sound, to be conducted by Dr. Fritz Haas, Curator of Lower Invertebrates, and Artist Joseph Krstolich.

In September, Mr. Paul C. Standley, Curator of the Herbarium, will leave for Nicaragua, Honduras and Salvador to make an eight months' botanical survey.

In November, Staff Taxidermist Frank C. Wonder will go to Trinidad on an assignment to make a general collection of mammals, reptiles, amphibians and birds.

Primitive Fishing Illustrated

A new exhibit illustrating how the Indians of northwestern North America in the period from about A.D. 1000 to 1800 fished for salmon, has been added to the Hall of New World Archaeology (Hall B). The exhibit, combining actual specimens of implements with explanatory paintings, was prepared by Artist Gustaf Dalstrom in association with Mr. George I. Quimby, Jr., Curator of Exhibits in the Department of Anthropology. Included is a primitive engineering development—a pile driver of stone (with a carved face upon it) used in constructing fish weirs and traps.

Scientific Publications Issued

The following scientific publications were issued by Chicago Natural History Museum Press recently:

Fieldiana—Anthropology, Vol. 37, No. 1. *Craniometry of Ambrym Island.* By Wilfrid D. Hambly. February 28, 1946. 150 pages, 30 plates, 7 text-figures, 2 maps, 9 drawings. $2.75.

Fieldiana—Botany, Vol. 24, Part IV. *Flora of Guatemala.* By Paul C. Standley and Julian A. Steyermark. April 11, 1946. 494 pages.

'PREHISTORIC MONSTERS' SUBJECT OF SUNDAY LAYMAN LECTURES

May is the last month in the current season of the Sunday afternoon appearances of Mr. Paul G. Dallwig, Layman Lecturer of the Museum. The subject for this month is "The Pageant of Prehistoric Monsters," and it will be given each Sunday of the month (*May 5, 12, 19, and 26*). In this lecture Mr. Dallwig outlines the principal stages of animal life from the earliest fishes, reptiles, and mammals to the beginning of Man—a span of about 600 million years. He also presents three dramatized sketches—a trip into a prehistoric forest of 250 million years ago; a fight, typical of the ceaseless struggle for existence, between Tyrannosaurus and Triceratops, two of the largest dinosaurs; and the story of several actual Museum expeditions.

The starting time of the lectures is 2:30.

The heavy demand by the public for Mr. Dallwig's lectures and the necessity of limiting the size of each audience make it essential to require advance reservations. Lectures are restricted to adults. Reservations will be accepted by mail or telephone (WABash 9410).

Mr. Dallwig will resume his lectures next autumn, when he will begin his tenth season.

GIFTS TO THE MUSEUM

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

Department of Anthropology:

From: Miss Jennie Broad, San José, Costa Rica—prehistoric pottery ocarina in form of bird-effigy, Costa Rica; Dr. Fritz Haas, Chicago—a musical stringed instrument, Central Angola, Africa.

Department of Botany:

From: Museo Nacional, San José, Costa Rica—215 herbarium specimens, Costa Rica; Escuela Agricola Panamericana, Tegucigalpa, Honduras—200 herbarium specimens, Honduras; Dr. Earl E. Sherff, Chicago—81 negatives; Sr. Ing. Julián Acuña, Santiago de las Vegas, Cuba—23 herbarium specimens, Cuba; Gregorio Bondar, Bahia, Brazil—356 herbarium specimens, Bahia; Dr. William B. Drew, East Lansing, Mich.—72 herbarium specimens, Ecuador; Prof. J. Soukup, Lima, Peru—250 herbarium specimens; Dr. Cesar Vargas, Cuzco, Peru—24 herbarium specimens, Peru; University of California, Berkeley, Calif.—310 herbarium specimens, Peru and Bolivia.

Department of Geology:

From: James F. Daly, III, Caracas, Venezuela—17 mineral specimens, Venezuela; Martin Keessen, Chicago—a gold ore specimen, Colorado; Billy J. Anderson, China Spring, Tex.—a lobster claw, Texas; Karl P. Schmidt, Homewood, Ill.—an echinoid, Texas.

Department of Zoology:

From: Michael Bevans, Tenafly, N. J.—11 snakes and frogs, Korea; Rudyerd Boulton and John Moyer, Museum Staff—3,500 bird and 1,400 mammal pictures; Robert A. Burton, Evanston, Ill.—53 amphibians, 3 snakes, 3 crustaceans; Chicago Zoological Society, Brookfield, Ill.—2 mammals, a turtle, 3 birds; Boardman Conover, Chicago—4 birds; H. W. Cross, Chicago—2 rodents, 6 birds, Venezuela, Colorado, Costa Rica; Henry S. Dybas, Chicago—176 microscope slides of mosquito larvae, Pacific Islands, United States; Dr. Carl L. Hubbs, La Jolla, Calif.—599 fish specimens; Lincoln Park Zoo, Chicago—a leopard, a large South American snake, a duck, a tarantula, 87 frogs; Charles D. Nelson, Grand Rapids, Mich.—40 specimens of fresh-water mussels; Dr. Wilfred H. Osgood, Chicago—105 mammal specimens, 2 birds, Arizona, California; Dr. Jeanne S. Schwengel, Scarsdale, N. Y.— 74 specimens of cone shells, 139 specimens of chitons; Dr. Lewis H. Weld, East Falls Church, Va.—1,125 galls and wasps, including 235 species, 32 paratypes, 21 cotypes, United States; Rupert L. Wenzel, Oak Park, Ill.—848 insects and allies, 203 microscope slides of mosquito larvae, United States, Brazil; Albert Burke Wolcott, Downers Grove, Ill.—4,740 beetles of the family Cleridae, 1,275 pamphlets on insects; Loren P. Woods, Chicago—332 specimens of fresh-water shells, United States; Dr. Rainer Zangerl, Chicago—3 juvenile alligator skeletons, a juvenile alligator skull, 4 lizard skulls; T. W. Stixrud, St. Charles, Mo.—29 reptiles and amphibians, Solomon Islands; J. E. Johnson, Waco, Tex.—12 snakes and lizards, Texas.

Raymond Foundation:

From: Miss Blanche Kolarik, Chicago—9 color slides of Chicago Natural History Museum exhibits.

Library:

From: Anvers Societé Royale de Zoologie, Antwerp, Belgium; Miss Edith Coleman, Blackburn, Australia; Dakar Service des Mines de l'Afrique Occidentale Française, Dakar, Africa; R. W. Fattig, Emory University, Ga.; P. H. Francis, Kentsford, England; Prof. Arthur L. Goodrich, Manhattan, Kan.; Ralph W. Jackson, Cambridge, Md.; Rafael L. Hoyle, Trujillo, Peru; Lt. Comdr. O. A. Oakes, Severna Park, Md.; Dr. A. L. Ortenburger, Norman Okla.; Phi Sigma Society, Mesa, Colo.; Alcides Prado, São Paulo, Brazil; Alfred Rehder, Jamaica Plain, Mass.; Albert G. Smith, Ann Arbor, Mich.; Sociedad Argentina de Botanica, La Plata, Argentina; South Africa Archaeological Survey, Johannesburg, South Africa; Dr. Narciso Souza-Novelo, Merida, Mexico; Charles M. Sternberg, Ottawa, Canada; Texas Forest Service, College Station, Tex.; K. H. Voons, Jr., Amsterdam, Holland; A. B. Wolcott, Downers Grove, Ill.; Watson Davis, William B. Marshall, Carl P. Russell, United States Board of Geographical Names, and United States Geographic Board, Washington, D. C.; Dr. George M. Hocking, Marine Life, Institute for Intercultural Studies, and Arthur Hays Sulzberger, New York; W. Ph. J. Hellebrekers and D. A. Hooijer, Leiden, Holland; and E. Altman, Miss Clair Cotterill, Henry Miller, Dr. Earl E. Sherff, E. M. Smith, John A. Smietanski, all of Chicago.

LECTURE TOURS ON WEEKDAYS, MAY AND JUNE

Conducted tours of exhibits, under the guidance of staff lecturers, are made every afternoon at 2 o'clock, except Sundays and certain holidays. On Mondays, Tuesdays, Thursdays, and Saturdays, general tours are given, covering all departments. Special subjects are offered on Wednesdays and Fridays; a schedule of these follows:

MAY

Wed., May 1—Stories in Flowers—May Basket Day (*Miriam Wood*).

Fri., May 3—Animals of Our Western National Parks (*Elizabeth Best*).

Wed., May 8—Mothers and Mothers-in-Law (*Mrs. Roberta Cramer*).

Fri., May 10—Spring Comes to Chicago Woodlands (*Marie B. Pabst*).

Wed., May 15—The Lean Years—Meeting the Demand for Food (*Emma Neve*).

Fri., May 17—Father Time's Own Diary—Fossils and Tree Rings (*Winona Hinkley*).

Wed., May 22—Preparing to Be A Tourist—A World to See and Hear—Central America (*Mrs. Roberta Cramer*).

Fri., May 24—Animals in Fable and Legend (*Elizabeth Best*).

Wed., May 29—Water Carves A Story—Effects Upon the Earth of Water, Ice and Snow (*Marie B. Pabst*).

Fri., May 31—Wild Relatives of Our Domestic Animals (*Winona Hinkley*).

JUNE

Wed., June 5—Stories in Trees, Told in Tree Rings and Growth (*Miriam Wood*).

Fri., June 7—In Davey Jones' Locker—Undersea Life (*Winona Hinkley*).

Wed., June 12—Native Brides—Marriage Customs (*Emma Neve*).

Fri., June 14—Birthstones—Stories of Gems (*Marie B. Pabst*).

Wed., June 19—Preparing to Be A Tourist—Indian America (*Mrs. Roberta Cramer*).

Fri., June 21—Summer-time Animals—Chicago Area Birds, Mammals, Snakes, and Others (*Elizabeth Best*).

Wed., June 26—Fossil Birds—Birds of Prehistoric Times (*Marie B. Pabst*).

Fri., June 28—The World At Play—Games of Many Peoples (*Mrs. Roberta Cramer*).

There will be no tour Thursday, May 30, on account of the Memorial Day holiday, but the Museum will be open to visitors as usual, 9 A.M. to 6 P.M.

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ATOM BOMBS AND ATOLLS: WHAT BIKINI IS LIKE, AND HOW ITS NATIVES LIVE

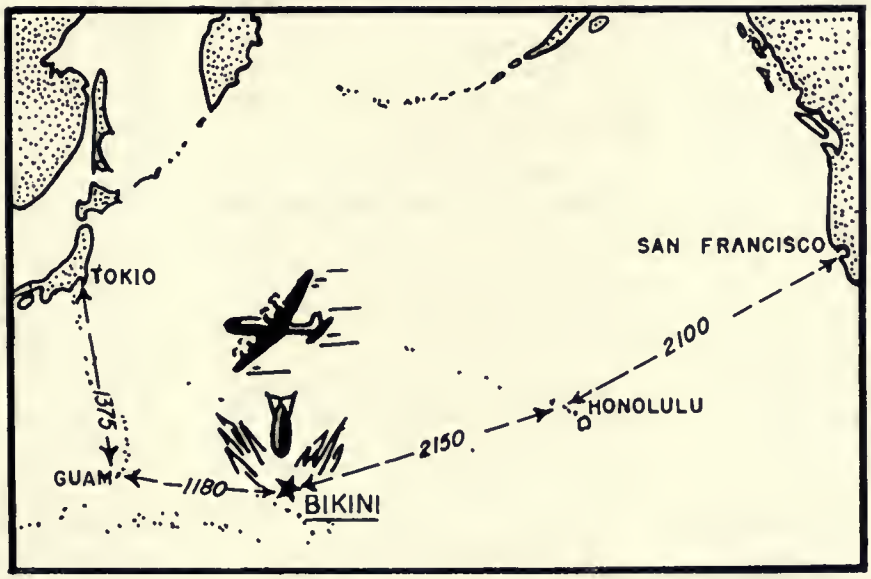
By ALEXANDER SPOEHR*
CURATOR OF OCEANIC ETHNOLOGY

The Navy's atom bomb test at Bikini atoll in the Marshall Islands is not only a sobering reminder that man has finally the means of reducing his civilization to dust, but has also brought Bikini into the center of public interest.

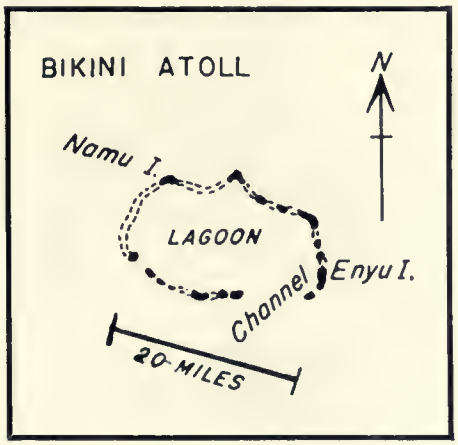
Although the atom bombs to be dropped at Bikini are certainly the most destructive ever to hit an island of the Marshall group, they are by no means the only bombs that have shaken these atolls. In World War II, after the bloody capture of Tarawa in the Gilberts, the American drive through the central Pacific was resumed with the Marshalls operation of early 1944. In the last days of January, American marines hit the beaches of Kwajalein after a terrific air and ship bombardment. Eniwetok was invaded two weeks later and the picturesque atoll of Majuro was occupied without serious resistance to complete the successful American invasion. Control of the air overcame Japanese forces on other islands.

Kwajalein, Eniwetok, and Majuro became important Pacific bases as the front moved on to the Marianas, the Philippines, and finally Okinawa. Until the end of the war, our Marshall bases served to support the vital air route from Hawaii across the Marshalls and on to the west, and provided the necessary facilities for the constant harrassment and piecemeal destruction of the Japanese on Wake Island and on the by-passed bases in the Marshalls and eastern Carolines. At the same time, Kwajalein and Eniwetok served as anchorages for seagoing units of the Pacific fleet.

What are the Marshall Islands like? They are typical low-lying coral atolls, extending in a double chain in a northwest-southeast direction, with Bikini at the north end of one chain. Each atoll consists of a ring of narrow islands and reefs surrounding a clear blue lagoon. The lagoons are large. Bikini is approximately twenty-two miles long and thirteen wide and is by no means an unusually large atoll. Its lagoon is nearly 170 square miles in area and provides good anchorage for ocean-going ships. It is suitable also for seaplane operations.



SPECK IN THE PACIFIC ON WHICH EYES OF WHOLE WORLD ARE FOCUSED



JUST A RING AROUND A LAGOON

Along the lagoon shore of the circular string of little islands that forms each atoll is a fringe of white coral sand backed by a heavy growth of coconut palms shading the islands themselves. Interspersed among the palms are pandanus, breadfruit, and other tropical trees, while the ground is covered with native grasses. Seen from the air, an atoll looks like a green necklace floating on the deep blue tropical sea, with a narrow fringe of white sand beach on the lagoon shore and a band of submerged coral reef on the seaward side.

The northeast trade wind tempers the tropical climate, which is actually much more pleasant than a Middle Western summer hot spell, even though all except two of the Marshalls are less than 12° north of the equator. Fluffy white cumulus clouds always line the blue sky, with frequent rain storms passing over. There is no malaria and the islands are healthful. The native skin diseases can be controlled.

This idyllic picture is what met the eyes of the first discoverer, Alvaro de Savedra, in the 16th century, and Captains Marshall and Gilbert, who rediscovered the group in 1788. But today the war has greatly altered the appearance of the major atolls. At Kwajalein and Eniwetok, what pre-invasion bombardment did not do, the Seabee bulldozers finished, so that the main islands on these atolls are virtually scraped clean of all vegetation.

Majuro escaped bombardment and still retains much of its native beauty, but the Japanese bases at Wotje, Maloelap, Mille, and Jaluit received the attention of American airmen for a year and a half and consequently became bomb-pocked wastes.

The Marshallese natives are Micronesians, closely related in race and culture to Polynesians living in the vast island area to the

* During the war, Dr. Spoehr was a lieutenant in the Navy and served in the Pacific areas of which he writes.

NAVY QUONSET HUT OF WAR DAYS

Dr. Spoehr in the Marshalls in 1945 as war's end neared. He was a lieutenant in Navy aviation.

SIMPLE THATCHED NATIVE HUT

Scene in Laura Village, Majuro Atoll, in the Marshall Islands. This scene could be duplicated on Bikini itself.

east of them. The brown-skinned Marshallese number approximately 10,000. They are a friendly, hospitable, and happy people, despite the fact that the war has disrupted their lives. Intrepid in the face of danger, they served with distinction as scouts in operations against the Japanese.

The native villages consist of thatch houses strung along the lagoon shore, although the dwellings of some of the more important families are made of sawed lumber and nails. Inside, the houses are simply furnished with a large number of woven mats, on which the family members lounge during the day and sleep at night.

FAMED FOR SEAGOING EXPLOITS

On the lagoon beach is drawn up an irregular line of cleanly designed outrigger canoes. Canoe-making was the most important native industry, and although the large ocean-going 50- or 60-foot canoes are no longer made, inter-atoll voyages are still conducted in smaller outriggers, which are also used a great deal for fishing around the home atolls. The Marshallese are famous as navigators and sailors, and developed a special form of sea-chart as an aid to navigation.

In many ways, however, the natives have changed greatly since the early days. European clothes have supplanted the native dress, with the women all wearing the ubiquitous "Mother Hubbards" and the men cotton shirts and trousers or shorts. The old ceremonies, rituals, and dances have given way before the teachings of the Boston Mission Society, which extended its activities to the Marshalls as long ago as 1857, and successfully converted most of the natives to Christianity.

Formerly a strong class system existed, with Marshallese society strictly divided into nobility and commoners. Today this hereditary class system still survives, but in very much weakened form, as there has been a gradual leveling of society during the years of successive German, Japanese, and now American occupation.

ISLANDERS' NEEDS TODAY

The natives of the Marshall Islands may seem remote indeed, and with hostilities over, the interests of most Americans are centered on domestic problems. Yet having driven the Japanese from the islands of Micronesia, we cannot escape responsibility for the welfare of the native islanders. The war has destroyed the peace-time trade of the area and the principal towns in which it was carried on. The life of the natives has been badly disrupted and they are also much in need of medical care and treatment.

Although extensive interference with native affairs is not desirable, we are morally obligated to see that adequate provision is made for the islanders' welfare and for their freedom to develop politically and economically, whether under the administration of the United States or the United Nations. Furthermore, the eyes of the Far Eastern peoples will be upon us, and the manner in which we do the job in the Marshalls and the rest of Micronesia will affect our future relations with the nations of Asia.

MUSEUM MAN AT BIKINI

When the Navy makes its atomic bomb tests at Bikini Atoll, a Museum staff member, Captain Melvin A. Traylor, Jr., Associate in the Division of Birds, will be present. Captain Traylor, in service with the U.S. Marine Corps since almost the beginning of American participation in the war, is a member of the official government observation group. He and his associates will collect fishes both before and after the bomb tests to make comparisons and determine the effects of radioactivity. This survey is for the Fish and Wildlife Service of the Department of the Interior. The results will be of interest both to ichthyologists and to the fishing industry. Captain Traylor served in some of the most severe action on various Pacific Islands, was severely wounded, and won various medals and citations for valor beyond the call of duty.

ZOOLOGICAL EXPEDITION TO PERU OBTAINS RARE MAMMAL

The Museum's 1946 Peruvian Zoological Expedition has returned to Chicago, after four months in the mountains and jungles of Peru, bringing back one of the rarest of South American animals. This raccoon-like mammal, of which nine species and subspecies have been described, ranges from Costa Rica down the west coast of South America to southern Peru. There are about twenty-five specimens in museums. Because it is so rare, the creature has never been given an English name; its scientific name is *Bassaricyon alleni*.

To secure this mammal, together with other collections from the interior of Peru, Mr. Colin C. Sanborn, Curator of Mammals, had to travel more than 500 miles by jeep, crossing the Andes and on through the jungle by a road made almost impassable by the rains, and then by launch up the Ucayali and Pachitea rivers.

The *Bassaricyon* is not intended for exhibition because it is urgently needed for anatomical study. Since Mr. D. Dwight Davis, Curator of Anatomy and Osteology, undertook the anatomical study of the giant panda in 1938, many of the bears and raccoons have been examined in order to establish the panda's relationship to them. The only important form lacking to complete this important study was the *Bassaricyon*, and that has now been secured.

Mr. Sanborn also made collections in the jungle of other mammals, amphibians and reptiles, including a frog that carries its tadpoles from pond to pond on its back. One week was spent in the high Andes at Lake Junin, more than 14,000 feet in altitude, where land snails were found living in crevices in the rocks, large and peculiar frogs live in the shallow lakes, and where the small mammals are of especial interest to the Museum's research program.

Mr. Sanborn flew home, but his collections were shipped by steamer. They were due to reach Chicago the latter part of June.

On Mr. Sanborn's trip and work in the Peruvian jungle, he was generously assisted by Mr. Edgar H. Clayton of the Ganso Azul Oil Company, which operates the great new oil field and refinery that has been established in the Peruvian Amazon region.

PREHISTORIC INDIANS OF BOTH MAINE AND CALIFORNIA ARE SUBJECTS OF NEW EXHIBITS

By GEORGE I. QUIMBY
CURATOR OF EXHIBITS, ANTHROPOLOGY

Recent additions to the Hall of American Archaeology (Hall B) include an exhibit of the culture of the Red Paint Indians of Maine and an exhibit of the culture of the Indians who lived on the Channel Islands off the coast of California.

The Red Paint Indians are believed to have lived in Maine from about A.D. 500 to 1100, although some aspects of their culture persisted into later times and were incorporated into the cultures of more recent Indians in New England. The first archaeologists to excavate the remains of these Indians were so impressed by the amounts of red ocher they found that they named the culture "Red Paint." Of course, many other groups of Indians also used red ocher, and the name is thus not particularly apt, although it is well established by usage.

The Red Paint Indians made their living by hunting, fishing, and the gathering of wild foods. Some Indians lived inland, others lived along the coast on middens of shells and other refuse. Possibly the Red Paint Indians lived on the sea shore in summer and inland in winter.

In their earliest stages, these Indians did not manufacture pottery, although they probably did so in later times. Their most characteristic tools were gouges and adzes of stone which may have been used in the construction of dugout canoes.

Semi-lunar and bayonet-shaped knives were made of ground slate. Because these shapes are so typically Eskimo, they may be indicative of some connection between the Red Paint Indians and some old Eskimo culture.

Probably these Indians used the spear and spear-thrower for hunting. The spear-throwers may have been equipped with weights in the form of bannerstones. The spears were equipped with large points of chipped flint or ground slate or perhaps of bone.

"RED PAINT" INDIANS' MOOSE HUNT
New diorama in the Hall of American Archaeology.

The Red Paint Indians buried large caches of tools and weapons with quantities of red ocher. In many instances, such caches were placed in graves with the dead, but because of soil acidity, very few skeletons have been preserved for archaeological inspection.

The new exhibit of the Red Paint culture contains examples of stone tools and weapons, a reconstructed burial, and a miniature diorama illustrating a moose-hunting scene. Visitors have found the combination of diorama and exhibit unusually effective. The foreground of the diorama projects beyond the front of the exhibit. Similarly, some of the foliage extends beyond the opening of the diorama, thereby integrating the diorama with the exhibit as a whole. The miniature diorama is the work of Mr. Alfred Lee Rowell, and other parts of the exhibit were executed by Mr. Gustav O. Dalstrom, both staff artists in the Department of Anthropology. Scientific data for the whole exhibit were supplied by the writer.

The exhibit illustrating some basic

EXHIBIT ILLUSTRATING BASIC ASPECTS OF LIFE AMONG PREHISTORIC ISLAND-DWELLING INDIANS OF SOUTHERN CALIFORNIA

aspects of life among the island-dwelling Indians of California is entitled "Southern Fishermen." The Indians of the Channel Islands (about A.D. 1000–1800) made their living primarily by fishing, hunting sea mammals, and gathering shellfish, of which the most important was the abalone. Not all food was obtained from the sea, however. Rabbits and birds were hunted on land, and wild onions and other edible plants were gathered with the aid of digging sticks.

In place of pottery, these Indians used bowls carved of soapstone. Knives, arrowheads, and spearpoints were made of chipped flint. Fishhooks similar to some of those from lands of the South Pacific were made of abalone shell. Tubular pipes made of stone were used for smoking tobacco.

The Indians of the Channel Islands lived in dome-shaped houses made of poles covered with thatch.

Canoes were unusual. They were built of individual planks tied together with thongs and caulked with asphaltum.

Pendants were made of shell or stone. Beads made of shell served as ornaments. Somewhat stylized effigies of animals were made of soapstone or chipped flint.

Musical instruments such as flutes, whistles, and pipes of Pan were made of bone tubes.

Striking colors have been used to exhibit the specimens and to place them in meaningful categories. The exhibit was prepared by Mr. Dalstrom and the writer, assisted by Curators Donald Collier and Alexander Spoehr, and Miss Bernice Kaplan, University of Chicago Museum Fellow.

MUSEUM EXPEDITION RESUMES 'DIGGING' IN SOUTHWEST

This summer the Department of Anthropology under the leadership of Dr. Paul S. Martin, Chief Curator, will resume investigations in New Mexico interrupted by the war. This will be a resumption of field work discontinued in 1941. Dr. Martin left for the field June 13; John Rinaldo, Assistant, preceded him by several weeks for preliminary reconnaissance and arrangements.

Dr. Martin will finish excavations on the SU site—a pit-house village which was inhabited about the year A.D. 500; and, if time permits, he may start excavation on another site. The digging will continue for about three months.

Digging was first started on the SU site in 1939 and was continued in the summer of 1941. These excavations have shown that this village was part of the Mogollon (pronounced "muggy-own") Indian culture. This culture is one of three that flourished in the Southwest in past times, the other two being the Anasazi (Basket Maker–Pueblo) culture and the Hohokam.

The origins of the Mogollon culture are not yet known, but it is thought that it was derived from the Cochise culture that existed in southern Arizona and New Mexico from about 13,000 to about 2,000 years ago.

Dr. Martin believes that the Mogollon was an undeveloped and unsophisticated culture, and that the Indians who built the SU village lived a very simple life. Although the Mogollon Indians of this period made pottery, it was a simple, undecorated type. Agriculture was apparently new to them, for they depended more on fishing, hunting, and seed-gathering for food supplies than they did on planting and cultivating corn. Houses were merely roofed pits in the ground—hence the name pit houses—and were probably occupied only in inclement weather. Cooking was done out-of-doors.

When the SU site is finished, a new and earlier site will be sought. Dr. Martin desires, if possible, to obtain information that will help close the time gap that exists in archaeological records between the estimated date of A.D. 500 for the SU site and the latest estimated date (500 B.C.) for the Cochise culture. The reason for this is that we have no archaeological proof that Mogollon culture was derived from the simpler Cochise culture as we suppose.

Unlike the Mogollon, the Cochise Indians did not make pottery or plant corn, and they probably did not know the principle of building a pit house.

A BIOLOGICAL SURVEY OF LAKE MICHIGAN

An important and desirable project that has long been on the program of the Department of Zoology of Chicago Natural History Museum is the making of a complete biological survey of Lake Michigan. Such a survey involves not only the simple collection and identification of the many kinds of plants and animals living in these waters, but necessitates also study of the lake environment—the hydrography, meteorology, and chemistry, in terms of the synthetic science known as "limnology."

Collections made over the entire lake at various localities at intervals throughout the year are essential to such a program. It is hoped to make a beginning toward this project in the summer of 1946. Among the objects of such a survey are the correlation of the kinds and abundance of living organisms with the turbidity, temperature, and dissolved gases and salts of the water.

"What are the effects of winds and currents on the fine materials carried in suspension?" "How are these sediments being moved about and where are they deposited and redeposited?" "How much nourishment is being brought into the lake by the rivers and how has pollution affected the distribution of fish foods and of the fishes themselves?" "How can hook and line fishing for lake trout and perch be improved in the southern half of the lake?" "What are the long-term cycles taking place in the lake?" "How do winds, setting up currents in the water, affect temperatures on the bathing beaches?" Numerous other questions that need and deserve study await intensive limnological study of the lake.

Lake Michigan has an area of approximately 22,000 square miles, and is thus two-fifths the size of the state of Illinois. To make a complete study of such an area is a large undertaking and it is hoped that other institutions and individuals in addition to the Museum staff will co-operate in working out certain phases of the survey and special problems using the facilities and equipment provided by the Museum. This co-operation is already being realized. The United States Fish and Wildlife Service, through the courtesy of Dr. O. L. Meehan and Mr. Paul E. Thompson, has placed one of its power launches at our disposal on long-term loan, thus greatly facilitating the field collecting. The University of Wisconsin is lending certain items of equipment.

The Chicago Department of Health has shown us some of the data gathered during the past twenty years on the water dispensed to the city. This was important in planning the program so that studies would not be duplicated. Certain individuals of the Chicago Academy of Sciences and the University of Chicago have agreed to assist.

It is hoped that the studies here briefly outlined will be of immediate practical value to the lake fisheries, to the public health services of the several lake cities, and to the millions of people who use the lake waters for drinking and for recreation.

The researches will be conducted by Mr. Loren P. Woods, Assistant Curator of Fishes, and Dr. Fritz Haas, Curator of Lower Invertebrates; other members of the Department of Zoology will assist. Mr. Woods, who was a lieutenant in the Navy during the war, will command the boat.

MUSEUM PHOTO EXHIBIT

Preliminary planning is now under way for the Second Chicago International Exhibition of Nature Photography to be held early in 1947 at Chicago Natural History Museum under the auspices of the Nature Camera Club of Chicago, which sponsored the successful exhibition held at the Museum last January and February.

The exhibition will follow the usual standards for photographic salons, but, as formerly, the subject matter will be restricted to nature. Both black-and-white and color photographs may be entered.

More extensive vacation travel this year as compared to the war years should result in many new photographs of exhibition quality being made. Members of camera clubs and unaffiliated enthusiasts in this and other countries are urged to take pictures of natural history subjects during the coming months.

HUNTING PRONGHORN IN MEXICO FOR A GROUP BY AKELEY: A PAGE OF MUSEUM HISTORY

By C. M. BARBER

(Mr. Barber in 1904 was a field collector for the then Field Museum of Natural History. He accompanied Edmund Heller, then also of the Museum staff, to Mexico in that year. The following account of the field collecting for the pronghorn group in Hall 16 gives a vivid picture of the experiences encountered by Museum collectors then and now.)

AFTER a successful summer in the Sierra Madre we sold our pack animals and saddle horses in Durango. Our Mexican helper, Antonio, a well-trained camp man, came with us as we boarded a train headed toward the Rio Grande. We left the train at Jaral, in the state of Coahuila.

Heller hired a man with a big ore cart and a ten-mule team to haul our outfit and some water out towards the Mapimi Desert. We placed six large barrels in the cart and filled them with water. This cart was something new in vehicles. The two well-made wheels were six feet high with broad steel tires. Long before daylight, with Antonio aboard, and with the owner as driver, we headed straight out into the desert, Heller and I riding our mules. It was a hard, hot, dry grind, but by dark we had made an estimated forty miles.

After a good breakfast, we watered our mules, then started hunting. We soon sighted a small band of antelope about a mile away. This looked like a good chance to secure specimens. Hobbling our mules on some good grass, we attempted to sneak up close enough for a shot. Heller went one way while I tried another.

To be as inconspicuous as possible, we crawled along on hands and knees. After a half-mile of this, the herd turned grazing in my direction. Heller at once dropped flat to escape detection, leaving the field to me. I now crawled forward slowly on my belly, keeping as flat as possible. Some weeds about a foot high helped a lot. After about an hour of this I finally got within a hundred yards of the nearest animal, a fine young male.

My shot was good, but I wasted a few shells on the fleeing herd. Lord, how they can run! My prize was in good pelage and with small horns.

The next morning I made an early start for antelope. Heller ran the trap line. He was to skin the catch, then make a late try for big game. After riding a few miles I saw something flash in the sun, like a bright tin pan. With the binoculars I could see a large herd of grazing antelope, perhaps two miles away.

I rode towards the herd until they began raising heads to watch me. I then got down, tied my mule to a bush and began my sneak. The herd was suspicious; so I had to crawl on my belly for a long way. To make it worse, they now began grazing straight away from me and traveling faster than I could. For hours I crawled and watched but to no avail.

Heller's trap line produced poorly, but his antelope hunt was a success. He had a fine old doe for his crawl. Bright and early the next morning we started out in different directions. Our experiences were similar. We crawled all day but could not get in range.

As a boy, I remembered my father telling me about shooting geese on the Kankakee marsh. He drove a horse with rope lines towards the geese, staying stooped over behind the horse until he was within range. He then stepped out in plain view and shot his goose.

The next day I went out, located a herd, then rode as close as safe. Dismounting, I removed my saddle, rigged up my lines and started. I did not head directly at the herd, but moved obliquely to intercept them. My mule grazed some as he went along. With my rifle under one arm, I drove him slowly on. There were a few half-wild horses on the range; so the antelope were accustomed to seeing them. They also knew the difference between a range horse and a saddle horse with a rider.

The herd in front of me paid no attention whatever to the approaching mule. When I got in good easy range I pulled up on the reins and my mule started to graze. Kneeling down, I looked the herd over. Nearest to me was an old buck with the best horns we had seen. My shot was good, but two running shots on other targets were useless. I did note that my mule disliked the shooting just under his chin. My buck was a magnificent specimen of the breed in its prime.

Heller, delighted with the success of my stalk, tried it on the next herd we could locate. He shot a buck equal in size to mine. Its horns were very large and long but wider in spread.

MEXICAN PRONGHORN GROUP IN HALL OF NORTH AMERICAN HABITAT GROUPS
This group, composed of specimens collected by Edmund Heller and C. M. Barber, was prepared by the late Carl E. Akeley.

The next morning we again got a specimen apiece, but by this time my mule had become gun-shy. When I next removed my saddle to begin the stalk he showed fear of my rifle. As I drove him toward the game he kept turning his head to watch me. When I stopped to shoot, the mule tried to leave. Sensing his intention, I dropped flat on the ground. Now in plain sight of my game, I tried to fire. Twice the mule spoiled my aim by pulling hard on the reins, which were around my body. The antelope, a yearling doe, or young of the previous spring, stared open-eyed at this new object lying flat on the plain. At last, I did get a bead on my victim and made the kill.

The American pronghorn, the only known hollow-horned ruminant that sheds its horns, is a unique animal. Nothing like it lives anywhere in the world. It is not really an antelope in any true sense of the word. The outer horn covering is shed annually, the new horn growing under the old, then gradually forcing it off the horn core.

Chicago Natural History Museum
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THE BULLETIN

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

MRS. EMILY M. WILCOXSON, LIBRARIAN, RETIRES

After 41 years of devoted service as Assistant Librarian and Librarian of the Museum, Mrs. Emily M. Wilcoxson surrendered her responsibilities as Librarian on June 30. It is a matter of gratification to the administration and the staff of the Museum that Mrs. Wilcoxson will continue as Librarian Emeritus. She has always been known as a cheerful, energetic, hardworking, and helpful Museum colleague.

MRS. EMILY M. WILCOXSON

Mrs. Wilcoxson came to the Museum August 1, 1905, as Assistant Librarian, and succeeded to the position of Librarian on July 1, 1930, upon the retirement of the late Miss Elsie Lippincott. During the time of her custodianship, the Library has undergone a period of great expansion and now contains 128,000 volumes. Also during this time, the Library quarters have been enlarged, rearranged, and completely refitted in order to provide the greatest comfort and convenience to Library visitors. Its services to the Museum Staff, to scientists, to special students, and to the public generally have been broadened and improved.

It was ever Mrs. Wilcoxson's aim to improve and enlarge the Library service and to extend its facilities to persons who previously had not known of its existence as part of the Museum. Her constant solicitude for and co-operation with all those with whom she came in contact set a high standard for Library and Museum service.

NEW LIBRARIAN APPOINTED

Assurance that the high standards of service in the Library will be continued, and that the collections will be further expanded, lies in the appointment of Mr. Carl William Edmund Hintz who comes to the Museum as Librarian after a notable career in university libraries. Most recently, Mr. Hintz has been Director of the Libraries of the University of Maryland, where the collections for the schools of law, medicine, dentistry and pharmacy were all under his supervision. Previous to that, he had been connected with the libraries of DePauw University and the University of Michigan.

CARL W. E. HINTZ

Born in London, Mr. Hintz's elementary and preparatory schooling was in England and Germany as well as the United States. He attended DePauw University, earned degrees of bachelor and master of library science at the University of Michigan, and continued post-graduate studies in the University of Chicago.

ROBERT A. BARTLETT

Captain Robert A. Bartlett, well-known Arctic explorer who collected the specimens used in preparation of the spectacular underwater habitat group of narwhals in the Hall of Marine Mammals (Hall M) at this Museum, died April 28, in New York. He was 70 years old.

"Captain Bob," as he was familiarly known, accompanied Admiral Robert E. Peary on the 1909 expedition that led to the discovery of the North Pole, and made many other Arctic expeditions in subsequent years. He was the author of several books detailing the results of his explorations. He was a native of Newfoundland and member of a long family line of seafarers.

The expedition which collected the narwhals for this Museum was conducted by Captain Bartlett in 1935. It was sponsored jointly by this institution, then Field Museum of Natural History, and the Smithsonian Institution. The expedition brought back from Greenland waters several notable specimens of the narwhals with their spear-like tusks, the function of which remains a mystery to zoologists. In the autumn following the expedition, Captain Bartlett appeared in the Museum lecture course.

Marshall Field 1st Vice-President; Three New Trustees

Mr. Marshall Field, editor and publisher of *The Chicago Sun*, was elected First Vice-President of the Museum at a meeting of the Board of Trustees held May 20. Mr. Field, a Trustee of the Museum since 1914, fills the vacancy caused by the recent death of Colonel Albert A. Sprague.

The Trustees also elected Mr. Albert B. Dick, Jr., who had been Third Vice-President, to the Second Vice-Presidency left vacant by the recent death of Silas H. Strawn; and elected Mr. Samuel Insull, Jr., to the thus vacated Third Vice-Presidency.

To fill vacancies existing on the Board, three new Trustees were elected at a meeting held June 17. They are: Mr. Hughston M. McBain, Mr. Henry P. Isham, and Mr. Clarence B. Randall.

Mrs. Abby K. Babcock was posthumously elected a Contributor in recognition of her bequests to the Museum.

Special Exhibit of Drawings By Art School Students

"Art from Nature," a selection of some of the best drawings made by school children in art classes conducted at this Museum by instructors from the Junior School of the Art Institute of Chicago, is on exhibition in Stanley Field Hall until July 15.

The drawings, inspired by Museum exhibits, are notable for their striking splashes of color and imaginative treatment of subject matter.

2 New Raymond Lecturers

To fill vacancies recently occurring in the James Nelson and Anna Louise Raymond Foundation, Miss Mary Augustine and Miss Shirley Soffel have been appointed guide-lecturers in that division. Miss Augustine, who joined the staff June 15, is a graduate of the University of Chicago. She has been engaged in penicillin research, and at the Museum will specialize in botany and biology. Miss Soffel is a graduate of Northwestern University, and will specialize in zoology here. She begins on July 1.

Professor Neumann Dead

Professor Oscar Neumann, for some years a valued volunteer research assistant in the Museum's Division of Birds, died at Michael Reese Hospital on May 17, at the age of 78. Professor Neumann was well known for his contributions to systematic mammalogy and ornithology and for his personal conduct of notable zoological collecting expeditions in Africa.

STAFF NOTES

Mr. Karl P. Schmidt, Chief Curator of Zoology, was recently elected Treasurer of the newly organized Society for the Study of Evolution.

The society will promote the interchange of ideas and data between experimental biologists and systematists.

Early in June, Mr. Schmidt attended the Pacific Science Conference called by the National Research Council in Washington, and was appointed Deputy Chairman. The Conference hopes to continue scientific projects in progress during and since the war, and to make use of existing installations and facilities of the United States Armed Forces.

* * *

Dr. Robert J. Braidwood, Assistant Professor of Old World Prehistory in both the Oriental Institute and the Department of Anthropology at the University of Chicago, has been appointed Research Associate in Old World Prehistory at the Museum.

* * *

Mr. John R. Millar, Deputy Director of the Museum, represented the institution at the meetings of the American Association of Museums in Washington, May 17–18. He also visited the museums in several other cities of the East for consultations on matters of common interest to those institutions and the Chicago Museum.

* * *

Dr. Charles H. Seevers, Chairman of the Department of Biology, Roosevelt College of Chicago, and Research Associate in the Division of Insects of the Museum, has been awarded a John Simon Guggenheim Foundation Fellowship. He will spend the greater part of next year in Brazil studying insects.

* * *

Dr. Paul O. McGrew, Assistant Curator of Paleontology, has resigned from the Museum staff to accept an assistant professorship in the Department of Geology at the University of Wyoming in Laramie.

* * *

Mr. Bryan Patterson, Curator of Paleontology, will leave shortly for Texas to conduct this summer's paleontological expedition which had been originally scheduled for Dr. McGrew. He recently attended committee meetings in Washington of the Geological Society of America and visited eastern museums.

* * *

Mr. Emmet R. Blake, Assistant Curator of Birds, who has been on leave following his release from service as a captain in the Army, has returned to the Museum.

* * *

Mr. John Winn has been appointed Assistant in the Division of Fishes; Mr. Peter Lambert has been employed as an assistant in taxidermy; and Mr. James E. Trott has been appointed an artist in the Department of Zoology.

Museum Pensioner Dies

Mr. A. W. Mahlman, former pressman in the Museum's Division of Printing, died May 29. Mr. Mahlman was 79 years old, and had been pensioned in 1940.

VALUABLE INSECT COLLECTION FROM FORMER CURATOR

By HENRY S. DYBAS
ASSISTANT CURATOR OF INSECTS

The beetles of the family Cleridae, commonly referred to as "clerids" by entomologists, form one of the more interesting groups within the vast assemblage of beetles. The majority of the 3,000 known kinds of clerids are attractively marked and many possess some of the richest and softest colors found in the beetle group.

A CLERID
Drawing by A. B. Wolcott

Most of the species are rare in nature, but some are occasionally found in numbers on the trunks of dead trees and are important in controlling destructive timber-boring insects. Others are frequently collected on the heads of bright colored composite flowers. One species, occurring in beehives, was well known to the ancient Greeks and is mentioned in the writings of Aristotle.

The Museum recently acquired a collection of this interesting family of beetles as a gift from Mr. Albert Burke Wolcott of Downers Grove, Illinois. Mr. Wolcott, long a staff member of the Museum, began the study of clerids, as an avocation, more than forty years ago, and in addition to building the finest collection of clerid beetles in the Americas, became the recognized authority on the group. His scientific publications, numbering more than thirty technical papers, form an important contribution to the knowledge of this family.

The collection contains about 5,000 specimens representing approximately 1,000 species of clerids. These specimens, each labeled as to locality, collector, and often with further data as to habits, source, etc., represent a roster of many names famous in entomology and a record of many expeditions and travels to little-known areas of the earth. In the collection are specimens collected a century ago by the English naturalist Henry W. Bates on his historic travels in the Amazon region.

The collection was built up gradually by personal collecting, exchange with other entomologists, purchase, and through the retaining of duplicate specimens from collections sent to Mr. Wolcott for authoritative identification by many museums and individuals. Many of the species were described and named by Mr. Wolcott himself as species new to science and his original specimens, the types, will serve as standards with which doubtfully identified specimens can be compared in the future.

Such a collection is an invaluable addition to the Museum's reference collections. While few of the specimens will be publicly exhibited because of their small size, the reference collections are available to special students and scientific workers.

The donor, Mr. Wolcott, was a Museum staff entomologist from 1908, and Assistant Curator of the N. W. Harris Public School Extension from 1921 to 1942 when, because of ill health, he was retired on a pension. In recognition of his gift, the Trustees have elected him a Contributor.

PERUVIAN ARCHAEOLOGICAL EXPEDITION IN FIELD

The Museum's Archaeological Expedition to Peru is under way. Its leader, Mr. Donald Collier, Curator of South American Ethnology and Archaeology, left Chicago May 27 for Callao.

Mr. Collier, who has explored various parts of South America in the past for both this and other institutions, will remain in Peru through November. He will supervise excavations to collect material representative of the early Mochica and Chavin pre-Inca cultures. These Indians, who lived about A.D. 500 to 1000, inhabited a desert between the north coast and the Andes.

Dioramist Studies Site of Mayas in Chichen Itza, Mexico

In preparation for a miniature diorama reproducing an ancient Maya village in Yucatan, Mexico, as it was about 1,000 years ago, Mr. Alfred Lee Rowell, artist on the staff of the Department of Anthropology, made a field trip to Chichen Itza, Mexico, in June.

A temple and other buildings at Chichen Itza were excavated and restored in the years 1926 to 1929 by Dr. Paul S. Martin, then a member of the staff of the Carnegie Institution of Washington, D. C. Dr. Martin, as Chief Curator of Anthropology here, will supervise Mr. Rowell's restoration of the village.

Expedition to Cuba

Dr. B. E. Dahlgren, Chief Curator of the Department of Botany, returned recently from a brief expedition to Cuba, undertaken in order to renew his observations, interrupted by the war, on a genus of palms especially well represented on that island. Photographs and material for study were obtained, as well as desirable items for the department's exhibits and general herbarium.

Incidentally, Dr. Dahlgren reports, a visit was made to Harvard University's botanical station near Cienfuegos.

SIX PROGRAMS FOR CHILDREN OFFERED THIS SUMMER

The James Nelson and Anna Louise Raymond Foundation will present its annual summer series of free motion picture programs for children on Thursday mornings during July and August. Programs will feature motion pictures on natural history and travel; animated cartoons will be included on some.

The entertainments will be given in the James Simpson Theatre of the Museum at 10:30 A.M. Children are invited to come alone, accompanied by parents or other adults, or in groups from clubs and various centers. Admission is free. Following are the dates and titles of the films:

July 11—TITANS OF THE DEEP
Story of undersea life. Fish and animal life seen and photographed from the "bathysphere" developed by William Beebe.

July 18—JACARE
A Frank Buck picture taken in the wild jungles of the Amazon.

July 25—TREKKING TO TIMBUCTOO
A motor trip across Africa.
Also a cartoon.

August 1—BY AIR TO ALASKA
Color motion picture of air trip across Canada and into Alaska.
Also a cartoon.

August 8—CANADIAN ADVENTURES
The making of a bark canoe by the Indians, plus animal stories.
Also a cartoon.

August 15—THE MIGHTY TREVE
Albert Payson Terhune's story of a sheep dog.

GIFTS TO THE MUSEUM

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

Department of Anthropology:

From: Miss Grace S. Mason, Chicago—mano and tripod metate, of stone, Mexico; Eugene Wolfe, Mexico City—8 ethnological specimens, Mexico.

Department of Botany:

From: William K. Babel, Madison, Wis.—57 specimens of grasses, New Hampshire; William J. Beecher, Chicago—62 herbarium specimens, New Zealand; Dr. Harry K. Phinney, New Haven, Conn.—38 specimens of algae, Illinois; Hermann C. Benke, Chicago—112 herbarium specimens and 35 cryptogams, Illinois, Indiana, and Wisconsin; University of Texas, Austin, Tex.—285 herbarium specimens, Mexico and Texas; William A. Daily, Indianapolis, Ind.—29 specimens of algae, Ohio and Indiana; Dr. W. L. Tolstead, Lincoln, Neb.—75 specimens of algae, England; J. Francis Macbride, San Jose, Calif.—49 cryptogams, California; Miss Jean McEown, Saskatoon, Canada—20 specimens of soil algae, Saskatchewan; Albert E. Vatter, Jr., Evanston, Ill.—40 specimens of algae, Guam; Donald Richards, Chicago—133 specimens of mosses, Azores Islands; Museo Nacional, San Jose, Costa Rica; 111 herbarium specimens, Costa Rica.

Department of Geology:

From: Ralph Bruce, Chicago—a chert nodule and a specimen of barite crystals (group), Missouri; Carl Wulfman, Detroit, Mich.—a specimen of anthraconite, Michigan.

Department of Zoology:

From: T. W. Stixrud, St. Charles, Mo.—29 snakes, lizards, and frogs, Solomon Islands; J. E. Johnson, Waco, Tex.—12 snakes and lizards, Texas; Henry S. Dybas, Chicago—750 craneflies and 720 insects and allies, Pacific islands, and 429 beetles, bugs, flies, grasshoppers, and hymenopterons, Texas, Florida, and Washington; Chicago Zoological Society, Brookfield, Ill.—16 birds and a rattlesnake; Lincoln Park Zoo, Chicago—2 snakes, 3 mammals, a large monitor lizard, and a quetzal; Edward F. Ricketts, Pacific Grove, Calif.—250 specimens of sea shells, Vancouver region, British Columbia; Harry Hoogstraal, U. S. Army—34 snakes, lizards, and frogs, Philippine Islands and New Guinea; Dr. Jeanne S. Schwengel, Scarsdale, N. Y.—28 specimens of auger shells; Mrs. A. G. Rueckert, Chicago—105 insects, a frog, and a toad, Florida; Lonsdale Green, Chicago—57 specimens of sea shells, Sanibel Island, Florida; Maj. Harry J. Bennett—271 frogs, lizards, and snakes, Solomon Islands; William J. Beecher, Chicago—174 frogs, lizards, and snakes, and 26 insects and allies, Solomon Islands; A. R. Watkins, Chicago—261 specimens representing 26 species of fishes, Mexico; Eugene Ray, Chicago—523 insects and allies, United States, Pacific Islands, and Korea; Henry Field, Thomasville, Ga.—132 minnows, top-minnows, and tadpoles, Florida.

Raymond Foundation:

From: John W. Moyer, Chicago—21 natural color slides.

Museum Service to Camp Heads

In co-operation with the Chicago Boy Scouts, Girl Scouts, and Y.M.C.A., the Museum presented a Nature Course for Camp Counselors in May and June. The course consisted of four evening lectures and demonstrations in the Lecture Hall. The course was presented by lecturers of the James Nelson and Anna Louise Raymond Foundation, and covered the natural history of the Chicago region.

Puget Expedition Postponed

Because marine biological stations on the Pacific Coast have not completed postwar rehabilitation, the Museum's zoological expedition to Puget Sound, announced in the last BULLETIN as a summer project for Dr. Fritz Haas, Curator of Lower Invertebrates, and Artist Joseph Krstolich, has been postponed until next year.

SUMMER GUIDE-LECTURE TOURS, MORNINGS AND AFTERNOONS

During July and August conducted tours of the exhibits, under the guidance of staff lecturers, will be given on a special schedule, as follows:

Mondays: 11 A.M., The Earth's Story; 2 P.M., General Tour (Exhibition halls, all Departments).

Tuesdays: 11 A.M., The World of Plants; 2 P.M., General Tour.

Wednesdays: 11 A.M., Animal Tales; 2 P.M., General Tour.

Thursdays: 11 A.M. and 2 P.M., General Tours.

Fridays: 11 A.M., The Human Family; 2 P.M., General Tour.

Persons wishing to participate should apply at North Entrance. Tours are free. There are no tours given on Saturdays, Sundays, or on July Fourth.

By pre-arrangement with the Director, special tours are available to parties of ten or more persons.

NEW MEMBERS

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

Contributors

Albert B. Wolcott

Life Members

Mrs. Broadus James Clarke

Associate Members

Abraham J. Clonick, Thomas Drever, James P. Hume, Thomas A. Jancosek, Mrs. Robert E. Langford, Frederick Schenck, Roy V. Thornton.

Annual Members

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HOPEWELL MAN SCULPTURE ENLARGED FROM FIGURINE

By GEORGE I. QUIMBY
CURATOR OF EXHIBITS, ANTHROPOLOGY

The Hopewell Indians who lived in mid-western North America from about A.D. 900 to 1400 were excellent sculptors. They carved realistic reproductions of animals in stone, cut realistic silhouettes of animals and humans from sheet copper and mica, and modeled figurines in clay which were baked in a fire to make them hard.

These figurines modeled in clay are believed to have been likenesses of actual Hopewell men and women. Of course, the Hopewell artist's representation of the human figure was highly conventionalized, either by intent or inability to be more realistic, or both. Nevertheless, the treatment symbolizes something real and may be considered a short-hand method of presenting a specific portrait in terms of a cultural ideal and an artistic convention.

In addition to occasional finds of Hopewell figurines, there are two well-known collections. One of these, from the Turner mound group in Ohio, is in the Peabody Museum at Harvard University. The other, recently excavated from one of the Knight mounds in west central Illinois, is in the State Museum at Springfield.

An enlarged sculpture based upon one of the Knight mound figurines has been placed on exhibition in the Hall of American Archaeology (Hall B) at Chicago Natural History Museum. The purpose of this new exhibit is threefold: First, to show the style in which Hopewell Indians were portrayed by their own artists; second, to suggest something of the Hopewell physical type, even though in a conventionalized form; and third, to provide a large sculpture aesthetically pleasing in itself.

Dr. Alexander Spoehr, of the Department of Anthropology, and the writer planned the exhibit and selected the Hopewell figurine to be copied in the enlarged sculpture. Mr. John Pletinckx, Ceramic Restorer in the Department, made the large copy of the figurine.

The original clay figurine from the Knight Mound is 3 1/16 inches high. The modified copy of this is enlarged 17 times to a height of 50 inches. This large copy is made of colored cement reinforced with steel. The method of manufacture is of considerable interest as a museum technique.

First, Mr. Pletinckx sculptured the large figure in clay, working directly to scale from enlarged photographs of the original figurine. Modifications necessitated by structural problems or aesthetic ends were incorporated into the large clay figurine without, of course, changing the basic

RESTORATION OF HOPEWELL MAN

character of the original Hopewell art style and portrayal. Next a piece mold of plaster was made on the clay model. And, finally, the large figure was cast in colored cement reinforced with steel rods.

The technique of making large sculptures from small originals has been used previously in the anthropology exhibits. In the Babylonian Hall (Hall K) a decorative and informative frieze was made of impressions

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NATURE IMPOSED RATIONING ON THE MOGOLLON INDIANS

By PAUL S. MARTIN
CHIEF CURATOR, DEPARTMENT OF ANTHROPOLOGY

(Dr. Martin is currently in the field in New Mexico as leader of the Museum's 1946 Archaeological Expedition to the Southwest, the tenth he has conducted.)

In the hot, virtually waterless country of western New Mexico, there flourished approximately 1,400 years ago a primitive Indian culture, known today as the Mogollon culture (pronounced *Muggy-own*). During that 1,400-year span the basic problem of life remained unchanged, for then as now the chief problem was that of food.

Rationing was not imposed by any form of government, so far as we know, but from all indications Nature was a frugal and ungenerous master. The high, rocky ridges, the probable dearth of agricultural knowledge, and the almost total lack of evidence of vegetable material or animal bones, certainly lead the present-day archaeologist to believe that the Mogollon diet was a barren and most untempting one. Seed gathering and a little hunting seem to have provided the only supply of food.

TWENTY-TWO HOUSES UNCOVERED

It was in the summer of 1939 that the writer commenced work on the SU site, a Mogollon village, tentatively dated at A.D. 500. Digging was continued in 1941 and again this summer. To date, twenty-two houses have been uncovered. These were merely roughly rounded pits in the ground roofed over with sod and supported by a framework of poles. However, they were large enough to accommodate a family apiece and probably were used only for sleeping purposes or as shelters when the weather was inclement.

A conservative estimate of three to a family would indicate that sixty-six people occupied this one site. Some houses still remain to be excavated.

A number of animal bones were found in several of the houses but their number is scarcely impressive.

Thus, one of our problems is: Why did such a group of people live together?

A seeming contradiction is that there were more people than the available food would

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NATURE'S RATIONING

(*Continued from page 1*)

sustain. We can't be wrong on the number of houses nor much in error on the number of people. The startling lack of food is quite apparent amid the mountains of New Mexico, and particularly in the excavated houses of the SU site.

Our only answer lies in further excavation and study.

The four houses dug so far this summer have yielded several things of interest, but little or nothing to shed light on the previously posed problem.

In Pit House Q, which had been completely razed by fire, and where paradoxically enough we might have expected to find preserved food, we found no traces of it except one animal bone. On the other hand, there were 36 stone artifacts, all apparently for use in the preparation of food.

LARGE POTTERY COLLECTION

We have washed and classified 2,041 pieces of pottery and obtained nine more or less complete vessels from that one house. These, for the most part, must have been used as cooking utensils or as water and food storage vessels.

Two fragmentary skeletons were also discovered. These were buried in a pit which had been dug into the floor, and then covered over. The fire had destroyed the supporting timbers, causing the roof to collapse and at the same time burying the contents of the house and preserving the charred roof structure.

When we uncovered the pit we found the skeletons scattered and broken and could find no burial offerings. There were no rodent holes to indicate that the bones had been disarticulated and carried away by animals; yet several of the bones, including the pelvises, were missing.

Because of the fragmentary and broken condition of their bones, the sex of the two could not be determined. From the teeth and the sutures of the skulls we could ascertain that their ages were between 50 and 60 in both cases. The two bodies had apparently been broken and rammed into the small oval-shaped pit, leaving us with another archaeological mystery.

LECTURE TOURS ON WEEKDAYS, SEPTEMBER AND OCTOBER

Conducted tours of exhibits, under the guidance of staff lecturers, are made every afternoon at 2 o'clock, except Sundays and certain holidays. On Mondays, Tuesdays, Thursdays, and Saturdays, general tours are given, covering all departments. Special subjects are offered on Wednesdays and Fridays; a schedule of these follows:

SEPTEMBER

Wed., Sept. 4—Homes of Plants (*Mary Augustine*).

Fri., Sept. 6—Your Trip to the Rockies—Animals, Plants and Mountains (*Winona Hinkley*).

Wed., Sept. 11—Big Game Hunting (*Winona Hinkley*).

Fri., Sept. 13—Common Superstitions—Friday, the 13th (*Roberta Cramer*).

Wed., Sept. 18—Plant Anchors—Roots of Plants and Their Uses (*Mary Augustine*).

Fri., Sept. 20—The Changing Earth—Shaping the Earth's Surface (*Winona Hinkley*).

Wed., Sept. 25—Indian Hunters and Farmers—Indian America (*Roberta Cramer*).

Fri., Sept. 27—Bright Feathers—A survey of Birds (*Winona Hinkley*).

OCTOBER

Wed., Oct. 2—Snake Stories (*Winona Hinkley*).

Fri., Oct. 4—Plants We Wear (*Mary Augustine*).

Wed., Oct. 9—Hunters and the Hunted (*Winona Hinkley*).

Fri., Oct. 11—From Cairo to the Cape—The Story of Africa (*Roberta Cramer*).

Wed., Oct. 16—Fish Stories (*Winona Hinkley*).

Fri., Oct. 18—Flowers, Fruits and Seeds (*Mary Augustine*).

Wed., Oct. 23—Birds in Autumn—Birds Preparing for Winter (*Winona Hinkley*).

Fri., Oct. 25—The Earliest People—The Old and New Stone Age (*Miriam Wood*).

Wed., Oct. 30—Masks—Magic and Religion (*Roberta Cramer*).

RAYMOND FOUNDATION PROGRAM FOR CHILDREN ON SATURDAYS

Nine free motion picture programs for children, some accompanied with stories presented in person by men who made the movies, will be given in the autumn series on Saturday mornings during October and November. These entertainments are presented under the auspices of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures. The programs will be presented at 10:30 A.M. in the James Simpson Theatre of the Museum. Children from all parts of Chicago and suburbs are invited.

Following is the schedule:

October 5—ANIMALS IN MODERN LIFE
Motion pictures of animals used by peoples of the world for food, clothing, or power, and as pets.
Also a cartoon.

October 12—JACARE (*repeated by request*)
A Frank Buck picture of animals in the jungles of the Amazon.

October 19—AN ALASKAN ADVENTURE
A motion picture. Story to be presented by Bradford Washburn.

October 26—ADVENTURES OF ABNER
A motion picture. Story to be presented by Cleveland P. Grant.
(Abner is a cocker spaniel.)

November 2—INDIAN LIFE IN THE PAINTED DESERT
A color motion picture on Navajo Indians. Story to be presented by Tad Nichols.

November 9—WINGS OVER LATIN AMERICA
A color motion picture: general survey of animals and people of the Latin American countries.
Also a cartoon.

November 16—INDIANS AND ESKIMOS OF THE NORTHWEST COAST
A color motion picture of the Eskimos and Indians of Canada and Alaska.
Also a cartoon.

November 23—OUR OWN COUNTRY
The story of the earliest days beginning with life before the white man, the coming of the Pilgrims, and the pioneers who moved westward.
Also a cartoon.

November 30—A NATURALIST'S DIARY
Animals, birds, and plants. Story to be presented by Karl Maslowski.

HOPEWELL MAN

(*Continued from page 1*)

of small cylinder and stamp seals enlarged 25 times. The enlarged impressions of the intaglio designs of the miniature seals made extremely effective sculptures with the designs in low relief.

The technique of enlarging small-scale aboriginal sculpture was used also in a previous exhibit in the Hall of American Archaeology (Hall B). In order to exhibit some necklaces of pearls, copper and silver pendants, ear ornaments of copper, and an antler head-dress of copper in a functional setting, enlarged sculptures were made of the heads of Hopewell figurines. The actual ornaments excavated from a burial mound in Ohio were placed in their proper positions on the enlarged heads, male and female.

Of course, by enlarging the sculptures and designs of aboriginal cultures or ancient civilizations, the resultant art forms, in a strict sense, are completely out of context. Nevertheless, they are useful museum aids, informative, and aesthetically pleasing. I feel certain that were the Hopewell Indians able to return to the Hall of American Archaeology and see the enlarged figure based upon one of their clay figurines, they would regret that lack of cement or other suitable media prohibited them from large-scale sculptures.

WINDJAMMING 'ROUND WORLD, PHILIPPINES REBORN, ALASKA AMONG SATURDAY LECTURES

Adventuring around the world in an old-time schooner, or lolling lazily on the banks of the Suwannee River—climbing the highest mountain peaks of Alaska or making friends with the birds and mammals in the "hills of the plains" of Nebraska—digging in the dead cities of Maya civilization in Mexico, or tarrying with the present-day Apache and Navajo Indians of the Southwest—the rugged scenic grandeurs of the Rockies, the war's aftermath of reconstruction in the now independent republic of the Philippines, the wonders of timberland country in Alberta, Canada—

—these are the choices offered stay-at-home travelers in the 1946 Autumn Course of free lectures for adults at the Museum on Sunday afternoons during October and November.

Outstanding speakers have been engaged for the course. All nine lectures will be accompanied by motion pictures in natural colors. They will be given at 2:30 P.M. each Saturday during the two months' season, in the James Simpson Theatre of the Museum.

Following are the dates, and the subjects and lecturers booked:

October 5—Sailing to See

Comdr. Irving Johnson, USNR

This is the epic story of the schooner *Yankee's* third trip around the world, with Commander Johnson as "skipper," and a crew of eighteen amateur seamen, including Johnson's wife and one- and four-year-old sons. The films include underwater shots in colors. Commander Johnson aided the Navy during the war on questions of locating bases, and providing guidance for landing parties. On this trip, which began from the old seaport of Gloucester, Massachusetts, Commander Johnson takes his audience in film and narrative to such places as Galapagos with its unique animal life; Easter Island with its stone image mysteries; Pitcairn of *Mutiny on the Bounty* fame; Tahiti with its dancing girls; Pago-Pago, Tarawa, the Solomons, New Guinea, the East Indies including Bali, and Singapore.

October 12—South Along the Suwanee

Allan Cruickshank

Mr. Cruickshank claims for years to have "flown, crawled and ridden" into every corner and cranny of America where animal life could be studied intimately in its most remote habitats. He is an associate of the National Audubon Society, a former member of the staff of the American Museum of Natural History, and during the war was an Army news and combat photographer. In the present lecture he tells, and shows in color films, the story of a river whose name, through Stephen Foster's song, is known to every American, although few know where it is or anything about the life along its banks. The lecture covers the area from its source in the "land of trembling earth" in Georgia, to the mouth of the river 250 miles southwest on the Gulf of Mexico.

October 19—An Alaskan Adventure—Mt. Hayes

Bradford Washburn

By sea and by land, Mr. Washburn provides a travelog of the famous Inside Passage and the colorful Richardson highway leading into the Alaskan interior as he leads the conquest of one of the territory's great virgin peaks, Mt. Hayes, 13,500 feet in altitude. In color films the audience sees how he, his wife, and four companions, aided by radio and airplane-parachuted supplies, made a record ascent in lightning fashion. This is high adventure at its most exciting pitch. Mr. Washburn, veteran of sixteen Alaska expeditions, knows the land as few men can. During the war, he led six expeditions for the War Department.

October 26—Hills of the Plains

Cleveland P. Grant

Mr. Grant is well known to lecture audiences at this Museum. Formerly a member of its staff as curator of the N. W. Harris Public School Extension, he resigned some years ago to go out on his own as a color photographer and lecturer. He has since that time made a name for himself nationally because of the excellent color films he has made of wild life in many parts of America, and because of the interesting style he has developed in his lectures. He has appeared on Museum programs many times, and this year will present his latest color films of birds and big game tracked to the intimacies of their lairs in the Sand Hills of Nebraska and the mysterious Bad Lands of southern South Dakota.

November 2—Home Life of the Apache and Navajo Indians

Tad Nichols

In color film and narrative Mr. Nichols will present the colorful geographical background of the Navajo Indians of northern Arizona. House types in different localities of the reservation, intimate camp life scenes, and the Indian's method of dry farming are followed by the Navajo family preparing and eating a meal. A detailed sequence on the process of sandcast silverwork for making Navajo jewelry shows the forming of an ornamental bowguard and ring. Included in the film is the complete story of the weaving of a Navajo rug, from the shearing of sheep to the finished rug. The camp life of the Apaches is also featured.

November 9—The Philippines—Then and Now

Major John D. Craig

Major Craig, well-known explorer and deep-sea diver, recently released from the Army Air Forces, brings color motion pictures documenting the transformation of the Philippine Islands from a land of tranquil peace to one devastated by the war and their rebirth after liberation from the Japanese invaders by the forces of General Douglas MacArthur. Major Craig's pictures and narrative are especially timely inasmuch as the Philippines were separated from the United States only a few months ago to become the world's newest independent republic. He shows the natural beauties of the islands, and intimate views of the lives of the gallant people who so valiantly resisted the enemy.

November 16—Alberta's Timberline Trophies

Dr. Arthur C. Twomey

Some of the world's most thrilling scenery is to be found in the Canadian Rockies, and this will be brought to Dr. Twomey's audience in color films. Dr. Twomey is an explorer, scientist, writer and lecturer. He is curator of ornithology at the Carnegie Museum, a lecturer in biology at the University of Pittsburgh, and a lecturer in global geography at the Carnegie Institute of Technology.

November 23—Yucatan

Robert Stanton

Mr. Stanton tells the story of "The Egypt of America"—the land of the Mayas, proud ancient people who built glittering silver white stone temples and pyramids in Mexico, and developed a culture and civilization in many respects paralleling that of Europe. Mr. Stanton's color films show the long dead cities of Chichen-Itza, Uxmal, and Kabah, all noted for their magnificence of architecture. He shows Merida, the modern capital, founded in 1542.

November 30—Heritage in the Rockies

Karl Maslowski

If you have never been to Yellowstone, here is your chance to see it in one afternoon. If you have been there, here is your opportunity to revive delightful memories. Mr. Maslowski spent two full seasons filming in color the features of this oldest national park—its spectacular mountain scenery, fascinating geysers, brilliant wild flowers, and the large and small animals which roam freely in the park such as bears, moose, big horn sheep, beavers, and swans. Mr. Maslowski is curator of birds at the Cincinnati Museum of Natural History.

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. 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.

PRIMITIVE WARFARE: So-called 'Savages' Fight Less, and Less Cruelly, Than 'Civilized' Nations

By WILFRID D. HAMBLY
CURATOR OF AFRICAN ETHNOLOGY

Editorial in a Picture

Was this the "GOLDEN AGE"?

As Dr. Hambly suggests, these Neanderthalers of 50,000 years ago had less to fear than we of the Atomic Age

(Diorama in Hall C)

WHEN visitors to this Museum admire the groups of Stone Age man they may sometimes wonder whether there actually was any "Golden Age" of peace and prosperity. A group showing a family of Neanderthal man who existed in Europe probably 50,000 years ago suggests a quiet existence that has been unknown for several years in any part of the world. In those early Stone Age times possessions were so few, and life so limited, that it might be difficult to discover causes for conflict. We can be certain, however, that the sparsity of population and the absence of lethal weapons prevented conflict on a heavy scale, but it may have been that quarrels arose over hunting grounds, division of food, possession of a cave, or of a wife to preside there.

Yet, as far as one can judge by the lives of people who are today organized in a very primitive manner with a view to efficiency in hunting, it might be said that organized fighting plays little part in the tribal life. Among the Pygmies of the Belgian Congo, and with the Bushmen hunters of South Africa, there are stringent rules regulating the division of food obtained in the chase.

MORE PALAVER THAN FIGHTING

The aborigines of Australia have little co-operative warfare, though it is true that they organize what are called avenging parties to obtain satisfaction for the death or injury of a tribesman. Though some fighting does take place, most of the time spent in hostilities is taken up by decoration of the body, magical practices to insure success, as well as an astonishing amount of speech-making both before and after the contest of arms.

The collections exhibited in Hall D, where the warfare of many African tribes is represented, indicate that hostilities have played by no means a minor part in the lives of African Negroes. There are many examples of weapons of offense and defense. Approach to a village was rendered difficult by use of poison bamboo splinters, which were inserted in the ground with the points just emerging to puncture the feet of the attackers. In Hall D, Case 30, is a cuirass made of crocodile skin which was used by a warrior of the Cameroons.

Certain horsemen of French Niger Territory still wear heavy quilted armor which looks capable of turning aside an arrow or a spear, and in a very restricted part of northeast Africa some chain armor is used for the protection of horsemen. The idea, and perhaps even the armor itself, is said to be a survival from the journeys of European crusaders who fought in Palestine in the 11th to 14th centuries.

The value of taking up strategic positions which are accessible and commanding in their view is noticeable in Africa at the present day. The writer observed in northeast Angola that Vasele people lived at altitudes of about 3,000 feet, and their small houses which were arranged in clusters were camouflaged by the rocks and stunted vegetation of the hillsides. The people came down into the valleys to cultivate the crops. In Nigeria, too, the Angas pagans live at considerable altitude.

The use of magic in warfare was prevalent among all African peoples, and practices have survived into modern times to make the bullets of European invaders glance off the body. All kinds of concoctions were prepared for safeguarding the person. Some of these compounds were taken internally and others were smeared on the body.

POISONED WEAPONS

The use of poisons on spears and the tips of arrows was fairly common. The Konkomba and other tribes of north Togoland treated their arrows with poison which was thickly smeared on the points, or they left the arrow tips stuck in a putrid carcass. In the Northern Territory of the Gold Coast, as recently as 1929 (and perhaps even at the present day), tribesmen collected strophanthus seeds at the beginning of the first rains. Young men erected grass shelters away from the compounds where they lived and for two days no person was allowed to approach the secret place where the poison was buried. A sacrifice of fowl was made during this rite and certain prohibitions were observed. Sometimes a magical spell was recited while poison was being made, as for example, "May your heart burst and may your ribs be torn asunder." The Jukun of Nigeria smeared their weapons with the juice of certain fruits. Some of the warriors carried a species of nuts which was supposed to keep weapons from touching their bodies. Other soldiers obtained concoctions of remarkable utility, for they were supposed to make the warrior invisible to the foe.

Missile weapons include throwing knives, clubs, spears for thrusting and throwing, and slings. The use of slings for throwing stones is limited to a distribution in the west, north, and northeast of Africa. Throwing knives vary very much in pattern. They are often used in open country; for example, in the eastern and western Sudan for throwing at the fetlocks of horses. Long cross-hilted swords are common in northeastern Africa but not elsewhere. Arm-daggers have a very wide distribution in northern Africa.

CRUDE FIREARMS

Since the arrival of Europeans toward the end of the 15th century, firearms have become known to African Negroes but have never been very commonly used. The usual form of firearm is the muzzle-loading gun which is charged with fragments of scrap iron obtained from European sources. The marvel is that a man can fire such a device and yet live. There is a terrific recoil, the barrel may break away from the stock, and on the whole it seems more dangerous for the warrior than for the person he aims at.

We cannot embrace the happy thought that primitive warfare has always been of a very simple kind, confined to perhaps a blood feud between two families or an occasional fracas. From Africa alone there is abundant evidence that two tribes at least,

'A PRIVATE FIGHT'

Believe it or not, screened behind these shields, two men of the Buduma tribe of the Lake Chad district, central Africa, are fiercely fighting.

the Masai of East Africa and the Zulu of South Africa, adapted their whole social structure to military training and conquest. These people were absolutely predatory, and without waiting for any excuse marched their army over hundreds of miles of territory, pillaging and capturing wherever they went. In Hall E, Case 33, may be seen some Masai shields made of ox hide. They are oval in shape and consist of wooden frames over which the hides are stretched. They bear colored designs which distinguish the clans of the warriors. In the same hall (Case 28) are Zulu shields which are long and oval, and it is said that two of these can be cut out of one ox hide.

The military organizations just mentioned were based on a sedentary social organization. In other words, there was a home life and a definite area to which the warrior returned. In both the Zulu and Masai tribes training commenced at a very early age, and men were not allowed to marry until they had attained the age of forty years and were too old for the warrior class. The story of a boy's life was one of graduation through various age-groups until at last he changed the warrior's equipment for a cloak which marked him as one of the tribal elders.

HOMES SHELTERED FROM DARTS OF THE ENEMY

At least, the Vasele tribesmen of Angola (Portuguese West Africa) do not yet have to go underground for protection against bombs from the sky—unless some civilized nation, rather than a rival tribe, happens to attack.

WOMEN IN ARMED FORCES

In Dahomey, West Africa, in the period 1890, the whole male population could be called for service when required, and in addition to men, women were employed for transporting baggage. The corps of Amazons was recruited about 1729 as a body of armed women whose chief function was to swell the ranks of men so as to make a more imposing sight. In anthropological research one becomes accustomed to finding that really "there is nothing new under the sun," and it seems that the modern organization of women into military services in many countries had a precedent more than 100 years ago in West Africa.

King Gezo (1818) improved the force of Amazons by recruiting girls and enlisting those whom he thought suitable. The ranks of the Amazons were increased by enlistment of victims who had been spared from the annual sacrifices of human beings. Female criminals and divorced women were also recruited for the Amazon corps. Males were expected to withdraw from view whenever the Amazons approached and struck a warning gong. The women used to carry jaw bones of the enemy, and these were attached to the handles of swords, also to their drums.

J. A. Skertchly, about the period 1871, was an unwilling guest of the king of Dahomey, and he witnessed state ceremonies at which the corps of Amazons was present. Skertchly was an inoffensive entomologist whose main desire was to collect butterflies, but it was his fate to witness some of the bloodiest ceremonies which Africa has produced. He saw, for example, the sacrifice of many human victims who were offered up on the anniversary of the king's birthday. Skertchly offers his opinion that the women were "impudent hussies who could not hit a hay stack at close range when they fired their blunderbusses." It seems possible, however, that the female regiment had been slipping in discipline since 1847, for at that time an earlier observer, J. Duncan, saw the marching of 600 Amazons and praised their military precision. He says that they marched to the roll of drums which were ornamented with the skulls of their enemies, and they successfully carried out a maneuver which would severely test the boys of today. They scaled a prickly thorn bush enclosure which was seventy feet wide and eight feet high.

SLAVERY AND CANNIBALISM

Warfare was, of course, connected with slavery and to some extent with cannibalism. Sometimes an expedition was organized with the main hope of securing slaves, but more commonly there was a desire to acquire cattle or other food products. The conclusion of a successful excursion was generally marked with a feast and drinking of beer. In many tribes there was a practice of eating part of a courageous enemy in order to absorb his valor and other virtues.

Cowards were probably very rare owing to the severe discipline and constant practice in warfare, but men who ran away during the fight, provided their lives were spared, went through a ceremony of carrying grinding stones on their heads. This was a custom in the Wahehi tribe for showing that men who would not fight efficiently were fit only for a woman's occupation.

The rigors of training in the Zulu army included long waterless marches, and exercises in which one army was commanded to attack the other with the zest of actual warfare. All engagements, either rehearsals or otherwise, were followed by terrible orgies of witchcraft at which the medicine man selected those likely to prove cowards on future occasions. Executions then followed.

"MEDICINE OF HATE"

The war dance has, of course, been common among military tribes. The object of the dance was to produce intense excitement and to give unity of purpose. In the Batonga army of southeastern Africa the medicine man placed concoctions into the mouth of each soldier to give him courage. The warriors were then seated with heads bowed on their knees while an old woman entered the circle and sprayed medicine on their heads. Meanwhile she cursed the enemy saying, "Kill the dogs, break their pots, and capture their chief." The commanding officer then fed his troops with a broth called the medicine of hatred.

It is not strange, perhaps, that there should have been a terrible fear of the haunting ghost of a man who had been killed in battle, but to guard against any revenge of this kind the Batonga conducted a special ceremony to remove defilement. A warrior had to use special vessels for cooking, and cuts were made between his eyebrows so a protective medicine could be rubbed into them.

So man in Africa and in many other parts of the world has organized his resources to kill or to be killed, to die and to conquer. Civilization has spread primarily by achievement of speed, coupled with great advance in mechanical invention and physical force. But there still remains the more difficult task of adjusting human beings in their social, economic, and political relationships.

MIDWEST MUSEUMS CONFERENCE SLATED HERE IN OCTOBER

The nineteenth annual meeting of the Midwest Museums Conference of the American Association of Museums will be held in Chicago during the three days, Thursday, October 24 to Saturday, October 26. The Midwest Museums Conference is composed of staff members from art, historical, and science museums, mostly from the five states of Michigan, Wisconsin, Illinois, Indiana, and Ohio. The annual meetings, which customarily are held in a different city each year, are the occasion for museum personnel to review developments in museum fields, discuss mutual problems, and observe the methods employed in various kindred institutions.

A committee representing Chicago museums, which will act as host to the Conference, is composed of Colonel Clifford C. Gregg, Director, Chicago Natural History Museum, Chairman; Dr. Howard K. Gloyd, Director, Chicago Academy of Sciences; Dr. Paul Angle, Director, the Chicago Historical Society; Mr. Daniel C. Rich, Director, the Art Institute of Chicago; Major Lenox R. Lohr, President, Museum of Science and Industry; Dr. John Wilson, Director, the Oriental Institute of the University of Chicago; Dr. F. W. Schlesinger, Director, Adler Planetarium; and Mr. Ned J. Burns, Chief, Museum Division, National Park Service. Some of the meetings will be held in this Museum.

SUNDAY LAYMAN LECTURES DOUBLED THIS SEASON

The 1946–47 season of Sunday lectures by Mr. Paul G. Dallwig represents the tenth anniversary of his feature known as the Layman Lectures. Beginning in November, Mr. Dallwig will present two lectures, on different subjects, each Sunday—one in the morning, and one in the afternoon.

The morning lectures will begin at 11:30 o'clock; the afternoon ones begin at 2:30 as in the past. The lectures approximate two hours, with intermission for refreshments.

In November, the subject of the morning lectures will be "All Aboard for the Moon," and the afternoon lectures will be on "Strange Monsters in Nature's 'March of Time.'"

Two new subjects each will be announced for the months of November, December, January, and March (February is omitted, as Mr. Dallwig will be on a road tour).

The heavy demand by the public for Mr. Dallwig's lectures, and the necessity of limiting the size of each audience make it essential to require advance reservations. Lectures are restricted to adults. Reservations will be accepted by mail or telephone (WABash 9410).

DR. SHARAT K. ROY BECOMES ACTING GEOLOGY CHIEF

Dr. Sharat K. Roy returned to the Department of Geology on July 3 after release from military service as a captain in the Army Air Forces.

Formerly Curator of Geology, he has now been appointed Acting Chief Curator of the department, taking the place of the former Chief Curator, Henry W. Nichols, who retired in his seventy-eighth year, due to ill health, at the end of 1944.

Dr. Roy received his commission and went into active Army service in August, 1942. Because of his Museum experience as a member of expeditions to Newfoundland, Labrador and Baffin Land, he first served the Army on special duties in Greenland and Baffin Land. Later, he served in India as a combat intelligence officer.

Dr. Roy has been a member of the staff of the Museum since 1925, serving first as an assistant curator and later as a divisional curator. He is a graduate of the University of Illinois, and earned his Ph.D. at the University of Chicago.

Woman Scientist from Brazil Studies at the Museum

Research on the collections of frogs and toads of Brazil in this Museum was conducted recently by Dr. Bertha Lutz, of the National Museum of Brazil, Rio de Janeiro. Dr. Bertha Lutz is continuing the work of her eminent father, Dr. Adolpho Lutz, in this field. She was one of the Brazilian delegates to the organizational conferences of the United Nations.

Botanist Joins Staff

Dr. Theodor Just, who has been appointed to the post of Associate Curator of the Department of Botany, began his duties in the Museum at the beginning of August. He comes to the Museum from the University of Notre Dame, Notre Dame, Ind., where he held the J. A. Nieuwland Research Professorship in Botany. He is widely known among his fellow scientists for his capable editorship of the *American Midland Naturalist* and *Lloydia*.

His first task at the Museum will be the preparation for printing of the late Professor C. J. Chamberlain's unfinished manuscript on *The Cycadaceae* to be published by the University of Chicago Press.

Museum at Same Location, But New Address

The Chicago Park District has changed the name of Field Drive to Lake Shore Drive, as it is a link between older sections of the latter. Consequently, the official address of the Museum now is Roosevelt Road and Lake Shore Drive.

Change in Visiting Hours

On September 3, the day after Labor Day, autumn visiting hours, 9 A.M. to 5 P.M., go into effect at the Museum, continuing until October 31.

Staff Notes

Mr. W. E. Eigsti of the taxidermy staff has resigned, effective August 1, to accept a position as director of the Hastings (Nebraska) Museum.

* * *

Mr. Floyd G. Werner of Ottawa, Illinois, has been given a temporary appointment to the Museum staff, and has been dispatched to the island of Mindanao in the Philippines to join the Museum zoological expedition working in the field there under the direction of Captain Harry Hoogstraal. Mr. Werner will devote most of his efforts to collecting insects and their allies, and other invertebrates. Majoring in biology and entomology, he earned his B.S. degree at Harvard University, and has been an associate in the division of insects at the Museum of Comparative Zoology.

* * *

Mr. Karl P. Schmidt has been appointed a member of the Continuation Committee of the Pacific Science Conference.

* * *

Miss Emma Neve has resigned from the staff of the Raymond Foundation to accept a position as director of International House at the University of Colorado.

AMBER, CLASSED AS SEMI-PRECIOUS 'STONE,' IS FOSSIL RESIN FROM PINE TREES OF 35 MILLION YEARS AGO

By HENRY W. NICHOLS
RETIRED CHIEF CURATOR, DEPARTMENT OF GEOLOGY

(Mr. Nichols retired in 1944 after a fifty-year career on the Museum staff that began in 1894, soon after the institution was founded.)

Amber has been prized from time immemorial for its delicate color, its translucency, and its soft, pleasing luster. It is classed with the semi-precious stones although it is not a stone but a fossil resin of vegetable origin. This resin exuded from now extinct species of pines which grew in Lower Oligocene time, 35 million years ago, much as the "spruce gum" chewed by country children exudes from the spruce.

Amber is soft, barely hard enough to resist scratching by the finger nail. It is brittle but tough. Its softness and toughness make it an excellent material for carving. It is heavy enough to sink in water but light enough to float in brine, which provides a ready method of distinguishing the genuine from most imitations. It is combustible like other resins, but unlike its celluloid imitation, not dangerously so. When rubbed with cloth it becomes electrified and attracts to itself light objects such as bits of straw or paper. From this property comes our word electricity, derived from the Greek name for amber, *elektron.* Unlike most gems it is not found as crystals but as nodules, sometimes as large as a man's head but usually much smaller. Some amber is clear and transparent but much of it is clouded. Although the clear amber is the more valuable, some people prefer clouded varieties.

At the time it exudes from trees, amber is soft and sticky, the hardening occurring later. Flies, other small animals, and vegetable fragments are sometimes caught in the fresh amber, and they are thus preserved, as flies are caught by fly-paper. As amber containing insects is more highly prized than ordinary amber, it is frequently counterfeited, usually by boring a hole, inserting a common insect, and either filling the hole with some gum of the same color or fusing over the opening. Besides clear and clouded ambers, there is ambroid, not easily distinguished from the other kinds, which is made by heating and compressing fragments of amber into a compact mass.

Most of the amber of commerce comes from the shores of the Baltic Sea, especially between Memel and Danzig. There it is found both on the sea bottom and cast up along the shore, and it is also mined from the underlying strata in which it was originally deposited. Smaller quantities differing in some respects from the Baltic amber are found in Sicily, Romania, Burma, and other localities.

PRESCRIBED FOR "THROAT EASE"

In modern times most amber of gem quality is made into smokers' articles such as cigar holders, as well as beads for necklaces. Its use for smokers' articles began at a time when it was believed to be a charm against inhalation with the smoke of pestilences and infections. Wearing amber beads has persisted from prehistoric times. During the Middle Ages, and before, they

CARVED AMBER
Example among exhibits in Hall 34

were worn as charms to ward off complaints of the throat, and belief in this virtue of amber has not wholly disappeared.

Another quality of amber that makes it a favorite for necklaces is that, unlike most gems, it feels warm rather than cold against the skin. An amber necklace makes such an attractive addition to the costume that it will always remain a favorite with women. Amber was formerly more highly esteemed, more extensively used, and more costly than at present. In Roman times, according to Pliny, a small statuette of a man carved in amber often cost as much as a healthy slave. It was shaped into cameos, statuettes, cups, rings, and a variety of other ornaments for which it is now but little used. It was valued as a medicine to cure many ills and, like most gems, as a charm against disease and ill fortune.

From and during prehistoric times wearing amber was considered a potent charm against disease and many kinds of ill fortune. According to some authorities this belief in the potency of amber as a charm is a survival from the time of widespread sun worship when the yellow color and general aspect of amber suggested that it might partake of the divine nature of the sun.

Early legends which accounted for the origin of amber sound fantastic to modern ears. The best known, that given in Greek mythology, is that amber is the tears of the Heliades. The Heliades were the sisters of Phaeton who after Phaeton's disastrous attempt at driving the sun's chariot were changed into poplar trees which ever since continually weep tears of amber.

Did you ever see a guinea hen weep? According to an account given by Socrates but ridiculed by Pliny who understood the true nature of the gem, the sisters of the Greek hero Meleager were, for his offenses, changed to guinea hens. Once a year they flew to India and lands beyond and there they wept tears of amber for one day. Among other absurd origins ascribed to amber by the ancients was one that it is generated by sunlight. Rays of the setting sun, striking the soil with great force, were thought to produce an unctuous sweat which when washed into the sea by the waves hardened into amber.

Imitations of amber are made from other natural resins, from the synthetic resins such as bakelite, and from celluloid and glass. Some of these may be readily recognized but some are quite deceptive. In case of doubt, drop the suspected amber first into a glass of plain water in which it will sink, then into a glass of water in which four spoonfuls of salt have been dissolved. Amber, including the pressed variety, ambroid, will float. Imitations, except copal and possibly some other natural resins, will sink.

Many varieties of amber are shown with the minerals in Hall 34, and choicer examples are in the gem collection in H. N. Higinbotham Hall (Hall 31).

Museum Librarian Honored

Mr. Carl Hintz, Librarian, has been appointed a member of the American Library Association's Board on Resources of American Libraries, for a five-year term beginning September 1. The Board consists of five members and has as its purposes: (1) To study the present resources of American libraries; (2) to suggest plans for co-ordination in the acquisition of research publications.

Southwest Zoological Expedition

Mr. Karl P. Schmidt, Chief Curator of Zoology, made an extended tour during July and August of the western and southwestern United States and northern Mexico, continuing collections he began last year in the Mexican state of Coahuila. He is also engaged in reconnaissance in preparation for future Museum explorations and collecting in this area.

SPECIAL NOTICE

All Members of the 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 the BULLETIN and all other communications may reach them promptly.

FARMING IN YUCATAN

BY ALFRED LEE ROWELL
DIORAMIST, DEPARTMENT OF ANTHROPOLOGY

The locale for the next diorama to be prepared for Hall B (New World Archaeology) is Yucatan, the Maya country. In order to see at first hand the archaeological sites, the country, and the people, in preparation for work on this diorama, the writer was sent by the Museum to Yucatan in June. In addition to the friendly, likable Indians, whose ancestors built the spectacular Maya temples, I was especially interested in present-day Maya agricultural methods.

Their methods of growing maize are basically the same today as those used by their ancestors 1,000 years ago. The real reason is that those methods are ideally suited to the land and to the climate. To prepare a patch of jungle for farming, in September the Indian farmer cuts all the brush and all trees except a few of the very largest, leaving the cuttings where they fall. After October there is practically no rain; so by February the cuttings are thoroughly dry, and are then burned off. The stumps are killed but are left standing.

In May the rains begin, and the corn is planted by punching holes in the ground and dropping in the seed. In July, the weeds are pulled. It would be impossible to plow the land, and even if it could be done, nothing would be gained by it.

The first field I saw had been planted about two days, and was the most unpromising piece of farm land I have ever seen. The soil was shallow, with many outcroppings of limestone. The surface was strewn with loose stones, and blackened stumps two to three feet high and one to six inches in diameter were standing thickly over most of the field. There were several sink holes, caused by the collapse of small underground caverns, with limestone ledges around their rims. Yet this field will produce two to four crops of corn in consecutive years; then it is allowed to grow up with jungle. No more crops will be grown on the field for at least seven years, and perhaps much longer.

Work has begun on the construction of the Maya diorama, which will incorporate many of the observations made in the field on the ancient ruined city of Chichen Itza and on the Maya Indians themselves.

Some notable examples of Chinese art, including ancient ceramics, bronzes, the figure of a zebu in cast solid silver, four clay figures of women engaged in a polo match, and a gilt bronze figurine of a recumbent rhinoceros, are displayed in Case No. 7, Stanley Field Hall.

Are you acquainted with the various small mammals to be found within the Chicago area? An introduction to them is provided by a small exhibit at the east end of Albert W. Harris Hall (Hall 18).

Biological Tissue Slides

Chicago Natural History Museum was recently the recipient of a gift of more than 1,400 microscope slides of tissues of various animals, including several sets of sections through entire embryos of turtles, salamanders, frogs, and amphisbaenids. The slides, valued at $1,500, are a gift from Dr. Rainer Zangerl, who accumulated them over a period of years in Europe and the United States.

GIFTS TO THE MUSEUM

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

Department of Anthropology:

From: Sidney A. Teller, Chicago—a medicine man's badge of office, Panama; W. N. Gillett, Chicago—an Egyptian juglet, Roman period, 1st-3rd Century, A.D.

Department of Botany:

From: C. H. Pearson & Son Hardwood Co., Inc., Brooklyn, N. Y.—4 planks and a half log; Jardim Botanico do Rio Janeiro, Rio de Janeiro, Brazil—47 herbarium specimens, Brazil; Rev. Fr. José Eugenio Leite, Nova-Friburgo, Brazil—29 herbarium specimens, Brazil; L. A. Dreyfus & Co., Rosebank, Staten Island, N. Y.—76 herbarium specimens and 8 wood specimens, Brazil; University of Texas, Austin, Tex.—162 herbarium specimens, Texas; Dr. Max E. Britton, Evanston, Ill.—56 specimens of algae, New Guinea and Schouten Islands; Dr. Fred A. Barkley, Austin, Tex.—181 cryptogams, Texas, New York, and Nuevo Leon; Harold B. Louderback, Argo, Ill.—79 cryptogams, Illinois; Donald Richards, Chicago—103 bryophytes, chiefly Java; Dr. M. A. Brannon, Gainesville, Fla.—20 specimens of algae, Florida; Robert Runyon, Brownsville, Tex.—29 specimens of algae, Texas; University of Toronto—276 mosses, Ontario; Woodstock School, Landour, Mussoorie, U. P., India—48 ferns, India.

Department of Geology:

From: Alfred Reilly, Chicago—gypsum sand, New Mexico; James H. Quinn, Chicago—a marcasite concretion, Chicago; Colin C. Sanborn, Highland Park, Ill.—foraminiferous sand, Oahu, Hawaiian Islands; Frank L. Markham, Los Angeles—a fossil pelecypod, California; Arthur Hartman, Chicago—a fossil trilobite, Illinois; Filmore Turner, Oak Park, Ill.—6 minerals, New Mexico; J. A. Sheek, Silver City, N. M.—a specimen of quartz and feldspar, New Mexico.

Department of Zoology:

From: Dr. Edward S. Ross, San Francisco—4 paratypes and 2 additional specimens of histerid beetles, Florida and Texas; Henry S. Dybas, Chicago—219 wingless phoridflies and 230 insects and allies, U. S. and Pacific Islands; Edward Ricketts, Pacific Grove, Calif.—231 fish specimens; Bryan Patterson, Chicago—136 insects and allies, Wisconsin; G. N. Rysgaard, Minneapolis—18 amphibians and a snake, Leyte and Samoa; John Jay du Bois, Turlock, Calif.—2 beetles (paratypes), California; Boardman Conover, Chicago—45 African birds, Anglo-Egyptian Sudan; Roger Conant, Philadelphia—11 turtles and 14 snakes; Karl P. Schmidt, Homewood, Ill.—16 snakes, Wisconsin; Ross Allen, Silver Springs, Fla.—38 amphibians and a snake, Florida; Dr. Julian A. Steyermark, Chicago—12 sucking lice, a leech, and a land shell, Venezuela and U. S.

Raymond Foundation:

From: Charles Albee Howe, Homewood, Ill.—82 kodachrome slides on Mexico; Chicago Color Camera Club—52 kodachrome slides on various subjects.

Library:

From: J. Harry Howard, Greenville, S. C.; Beni Charan Mahendra, Pilani, India; Maria Mitchell Association, Nantucket, Mass.; R. G. Reeves, College Station, Tex.; Willian E. Stehr, Athens, Ohio; U. S. Bureau of American Ethnology, Washington, D.C.; Mrs. Georg Vetlesen, New York; G. A. Wainwright, Khartoum, Sudan; W. H. Long, Albuquerque, N. M.; and J. Christian Bay, Boardman Conover, Arthur De Vos, Anthony Du Bos, Stanley Field, Dr. Asher Finkel, W. J. Gerhard, Col. Clifford C. Gregg, Mrs. Marion Grey, Dr. Fritz Haas, Prof. W. M. Krogman, Dr. Paul O. McGrew, H. W. Nichols, Mrs. H. W. Nichols, Eugene Ray, Karl P. Schmidt, E. N. Smith, Paul C. Standley, Dr. Alexander Spoehr, and Loren P. Woods, all of Chicago.

NEW MEMBERS

The following persons became Members of the Museum during the period from June 17 to August 5:

Corporate Members

Henry P. Isham, Hughston M. McBain, Clarence B. Randall.

Contributors

Mrs. Abby K. Babcock*

Non-Resident Life Members

Orville A. Sardeson

Associate Members

A. L. Creange, McPherson Holt, Samuel Rosenstone.

Annual Members

E. E. Baird, John W. Barriger III, John P. Blair, Paul W. Brown, James M. Carry, David S. Chesrow, H. L. Cook, John Caleb Cushing, Walter L. Darfler, Maynard Dowell, Harry H. Hagey, Jr., Romaine M. Halverstadt, Stevens H. Hammond, Mrs. Maude Dowdell Harris, Mrs. Mortimer B. Harris, Milton C. Hartman, Mrs. A. B. Hernandez, Fred S. Kahn, Miss Jessie Katz, L. L. Kelsey, C. L. Lloyd, George R. Manz, Arthur E. Maybrun, Robert W. Maynard, Miss Martha Meers, Amos C. Miller, Mrs. R. B. Mitchell, Mrs. David Olin, Alvin Oppenheimer, Miss Ollie Rayunec, Mrs. C. W. Reese, Herzl Rosenson, A. R. Seder, Paul A. Sellers, Joseph F. Sieger, William A. Singer, Mrs. S. Sidney Stein, Mrs. Alfred Stern, Herbert L. Stern, Paul Stratton, Mrs. James W. Switzer, Harold G. Warr, Thomas L. Williams, Kenneth H. Wood.

* Deceased.

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WELWITSCHIA, RAREST AFRICAN DESERT PLANT, ADDED TO EXHIBITS IN MUSEUM

By B. E. DAHLGREN
CHIEF CURATOR, DEPARTMENT OF BOTANY

One of the most remarkable of all rare plants, the Welwitschia of south West Africa, has recently been added to the Museum's botanical exhibits. Few, if any, other plants of Welwitschia have ever been seen in the United States; certainly none of representative size.

A large dried specimen has long been in the Botanical Museum in Kew, England, and some young plants have been grown from seed, without ever reaching the dimensions and appearance of mature specimens, such as those now to be seen in the Museum. The fortunate circumstances by which these were obtained and the highly appreciated services so generously rendered by the collector deserve the following record:

In 1937, Mr. J. Francis Macbride, Curator of Peruvian Botany, was occupied in Paris with his work of selecting type specimens of tropical American plants to be photographed for the Museum herbarium. There he was in daily contact with Professor Henri Humbert, chief of the Division of Phanerogamic Plants of the Museum National d'Histoire Naturelle. Learning that Professor Humbert was making preparations for a botanical collecting trip to Madagascar and that his ship would put in at various African ports en route, Mr. Macbride remembered the one West African plant on the list of special desiderata for the exhibits in Chicago.

He asked Professor Humbert if he would use the opportunity offered by a stop in an Angola port to make arrangements to have specimens and photographs sent to the Chicago Museum. Anticipating difficulty in finding anyone in a strange port to be trusted with executing such a commission, Professor Humbert offered to land in Angola and make the necessary collections and photographs before going on to Madagascar. With the aid of the Department of State in Washington, permission was obtained from the Portuguese government for Professor Humbert to collect and ship to this Museum a selection of specimens of Welwitschia—a plant which because of its scarcity and remarkable characters is accorded special government protection. Professor Humbert consequently left his ship in Benguela, capital and chief port of Angola, and made the overland trip to Mossâmedes Desert. Four or five months later the plants arrived at the Museum. Packed in a large, heavy crate, the leaves of the largest specimen, somewhat the worse for the long journey, were in part still sufficiently green to give a good idea of their color in the natural condition.

WELWITSCHIA PLANTS IN MOSSAMEDES DESERT

New habitat group in Martin A. and Carrie Ryerson Hall (Hall 29) of one of the rarest and strangest plants in the world, found only in two small areas on the coast of south West Africa.

The plants had been grubbed up with some feet of root system intact, and arrived, after months in the hold of a steamer, with much of their moisture content preserved. When, after months of further drying in the Museum, it was decided to cut one large plant at about its original ground level, much more was learned of the capacity of its fibrous trunk to hold water.

The plant was discovered in 1860, almost simultaneously in two localities about 500 miles apart in the coastal desert zone of southwestern Africa. It was first brought to Europe and called to the attention of the scientific world by Friedrich Welwitsch, an Austrian physician and naturalist who had been appointed director of the Botanical Gardens of Lisbon and Coimbra in Portugal, and was engaged during several years (1853–1861) in explorations in Angola.

Welwitsch found the strange plant growing in considerable numbers on a sandy plateau near Cabo Negro in the coastal fog belt of the Mossâmedes Desert. He is said to have been so surprised and overwhelmed by the sight of a plant of such extraordinary appearance that he fell on his knees in the hot sand to stare at it, half in fear that if touched it might vanish.

Prior to his return to Lisbon in 1861, Dr. Welwitsch reported his find in letters to two leading botanists of his time, Sir

William J. Hooker in London and Alphonse de Candolle in Geneva. Both communicated the contents of his letters to scientific societies, and extracts of the letters were published. A part of Welwitsch's description as sent to Dr. Hooker may be quoted: "A dwarf tree was particularly remarkable, which, with a diameter of stem often of four feet, never rose higher above the surface than one foot, and which, through its entire duration that not infrequently might exceed a century, always retained the two woody leaves which it threw up at the time of germination, and besides these never puts forth another. The entire plant looks like a round table a foot high, projecting over the tolerably high sandy soil; the two opposite leaves (often a fathom long by 2 to 2½ feet broad) extend on the soil, ... each of them split up into numerous ribbon-like segments."

The above passage is followed by a Latin description of the botanical characters of the plant and the proposal to call it *Tumboa*, from the vernacular *N'tumbo*. The letter ends with the suggestion that exploration of the territory to the east, and of the coastal strip to the south, might well produce other similar species.

FOUND IN SECOND AREA

This proved to be an almost prophetic suggestion, for six months later, Professor Hooker received a drawing and specimens in a very decayed state of another plant of the same kind found at Hailgamchale on the Swakop River in the Namib Desert north of Valvisch Bay in what was then Dutch Southwest Africa. The sender and discoverer was Thomas Baines, an English artist who, after three years with Livingston's Zambesi Expedition, had decided to explore the interior for himself.

Baines' description of the plant which he found in a ravine was less precise than that furnished by Welwitsch. It was published in his book *Explorations in South-west Africa* (London, 1864): "In its sandy bed we came upon a bulbous plant with four leaves, 14 to 16 inches wide and when perfect nine or ten feet long, lying in a cross upon the ground. The ends were withered and curved up and in the center was an assemblage of small stems six inches long, each bearing on smaller stems from three to four greenish-crimson substances of an elongated ova (!) and three-quarters of an inch thick, and marked with scales like a fir-cone."

The Baines specimen was at first thought to be of a second species of Tumboa, but was soon seen by Hooker to be of the same species as that of Welwitsch, and he decided to name it not Tumboa, as suggested by the discoverer, but *Welwitschia*. To this he added *mirabilis* as the species name.

After the study of the material sent by Baines, which contained ripe seeds, Dr. Hooker decided that he could answer Welwitsch's question of how this remarkable catkin- and cone-bearing dwarf tree should be classified, and placed it botanically close to the few tropical climbers that constitute the Gnetum family, and as such with the Gymnosperms or naked seed plants, such as the conifers, ginkgo, etc. With its limited geographical distribution, and lacking close relatives either living or fossil, Welwitschia occupies an isolated position. It is apparently to be regarded as a highly specialized survival of an ancient stock and as such may well be called a relict.

The accompanying illustrations give a good idea of the appearance and habitat of the plant, as it is found along a dry streambed in the Mossâmedes Desert. Its distinctive character, as compared with all other woody plants, is due primarily to the cessation of all apical growth of the stem

PROF. HUMBERT WITH WELWITSCHIA

The collector of the specimens now exhibited in this Museum. The scene is the Mossamedes Desert in Portuguese West Africa (Angola).

as soon as the first pair of foliage leaves has been produced. Thereafter growth takes place in the transverse direction resulting in increase in bulk and diameter of the plant. This is particularly evident in the expansion of the upper margin of the stem where the two strap-shaped leaves are placed opposite each other.

The base of each leaf is attached in a groove and it is within the protection of the groove that the continuous growth of the leaf takes place. In the young plant the two leaves are separated at the base by a smooth interval, but with more rapid growth of the leafbearing parts of the margin, these intervals become notches. With the further outward and upward expansion of the leaf-bearing sectors of the stem into two great woody lobes characteristic of old Welwitschia plants, the notches are converted into clefts that divide the bowl-shaped top of the plant into two halves.

LEAF GROWTH CONTINUOUS

Throughout the lifetime of the plant the growth of the leaf is continuous at the base, while a slow but steady increase in width of the leaves, also from the base, keeps pace with the increase in the woody body of the plant. The circumference of the woody part of old plants is said to be from 12 to 14 feet. The largest specimen now in the Museum approaches the lower of these figures, measuring 46 inches on its longer diameter and 38 across. The thick and somewhat woody leaves of each lobe are split into several broad and some narrow strips, the combined width of which is somewhat more than five feet.

Reproductive structures consisting of small staminate or male catkins and larger cone-like seed-bearing ones are apparently produced annually on separate plants. They are borne on repeatedly forked small branches arising from the growing zone at the base of the leaves. These branches are regularly cast off after maturity, leaving pits to mark their former position. The seeds are scattered by the wind, but can germinate only at time of rains, which accounts for the scarcity of the plants. At time of rains the seeds are likely to be transported by water and to land along the margins of the temporary streams, as is indicated by the lines of plants growing along dry streambeds.

In the absence of anything like annual rings of the stem to mark the age of the plants, the number and arrangement of the pits or scars might seem to offer a means of arriving at an estimate. However, the alignment of these is so irregular and the scars left by the older pits are so much confused, if not entirely obliterated, by the corky crust of thin bark that covers all the woody portions of the plant, even the roots, that any attempt to estimate the age by this means appears hopeless. The rate of growth is very slow, particularly in a desert where sometimes ten years pass between rains. In most perennial desert plants the root system is very long, and the main taproot of Welwitschia doubtless penetrates to an average ground water level. But when years of drought go by and even ground water fails, the plant must subsist on the liquid stored in the vascular tissue of root and stem.

In respect to a plant grown from seed in the Royal Botanic Garden at Kew, the Curator, Dr. Watson, wrote in 1916, 36 years after its planting: "It lives, but growth is very slow, so slow that a full-sized plant . . . . . might at this rate be reckoned a thousand years old."

The new exhibit is installed in the southeast corner of Martin A. and Carrie Ryerson Hall (Plant Life, Hall 29), on the second floor of the Museum. Its preparation is the work of Mr. Emil Sella, Chief Preparator, assisted by Mr. Milton Copulos and by Mr. Arthur G. Rueckert, Staff Artist, who, guided by the photographs made on the spot by Professor Humbert, painted the desert scene which serves as background.

EXPEDITION TO SOUTHWEST COMPLETES SEASON

By PAUL S. MARTIN
CHIEF CURATOR, DEPARTMENT OF ANTHROPOLOGY
(With the collaboration of LEONARD G. JOHNSON, Expedition Assistant)

The Chicago Natural History Museum 1946 Archaeological Expedition to the Southwest returned from New Mexico late in September, after the completion of excavations and research begun in early June. Under the leadership of the writer, for whom it was the twelfth season of operations in this area, it continued the work of previous expeditions.

Others in the party this year included Dr. John Rinaldo, Associate, Southwestern Archaeology, in the Museum's Department of Anthropology; Mr. Johnson (*who, as noted above, assisted Dr. Martin in the historical records of the expedition upon which this report is based*); and two other special expedition assistants—Messrs. Tod Egan and Robert Anderson.

The site dug is called the "SU" site and is located about 100 miles north of Silver City, New Mexico. The culture which was being investigated is called Mogollon (pronounced mo-go-yun) and has only recently been discovered. As will be explained below, this culture is primitive, and fairly old (about 2,000 years).

CHARCOAL IS IMPORTANT

The chief aim of this year's expedition was to recover charcoal specimens. This may not sound like a worthy goal, but it was, nevertheless. Charcoal specimens are merely burned roof beams and wooden roof supports. If we can obtain enough of such specimens, we shall feel fortunate, because it then may be possible for the experts in the Tucson, Arizona, tree-ring laboratory to date these burned beams from the SU houses.

During this last summer. we recovered 150 specimens of burned roof beams.

In addition to the burned logs, approximately 500 stone and bone tools and 15,000 potsherds (pieces of broken pottery) were brought to light. The stone and bone tools are of an early type, and the pottery is crude and without decoration.

PICK AND SHOVEL HISTORY

So much for this year's work. Following are a few salient facts about the general problem in the Southwest upon which archaeologists of this Museum and other institutions have been working for years.

Perhaps a thousand years before Columbus ever thought of searching for a new route to the Indies, the Mogollon culture of western New Mexico was born, flourished, and disappeared. An entire people was lost to history—their identity, their manner of living, everything.

It has only been in recent years that these lost pages of history have been restored by the Southwestern archaeologists—not fully restored as yet, but at least the broad outline is discernible.

PIECING CLUES TOGETHER

Dealing with a culture of probable antiquity, we are not permitted to view it in its entirety; rather, we have to work laboriously, examining each stone artifact, counting every bit of pottery, carefully excavating each pit-house, leaving nothing unturned on a site.

Constantly checking and rechecking upon each other's work, many archaeologists are steadily digging history from the soil of the Southwest.

Thus it was through such patient and diligent work on the part of a few Southwestern archaeologists that several Mogollon sites have been excavated. They are:

Bluff site—A.D. 333
SU site—A.D. 500 (tentatively dated)
Forestdale site—A.D. 600–800
Mogollon 115—A.D. 986–908
Harris site—A.D. 896–908
Starkwesther site—A.D. 898–927

Although there are still numerous problems requiring additional and more extensive investigation, we are perhaps well on our way toward filling in the gap between the Cochise culture and the later, more sophisticated cultural groups.

The Cochise culture, most ancient in the Southwest, is composed of three pre-pottery and pre-house stages and dates from a period 8000 B.C. to approximately 500 B.C.

EIGHT LOST CENTURIES

We have, therefore, a period of some 800 years still unaccounted for between the San Pedro stage of the Cochise Culture and the Mogollon Bluff site dated at A.D. 333.

Since the Bluff site has not been reported on extensively in publications, we may use the SU site for purposes of comparison with the San Pedro stage.

The SU site may be as early as the Bluff site, but until the charcoal specimens obtained in the seasons of 1939, 1941, and 1946 are dated, we shall not know.

If the dates to be obtained from the charcoal prove us right in our belief as to the antiquity of the Mogollones, further research will perhaps cement the Mogollon to the Cochise culture, thus providing a complete and continuous foundation for the later cultures and so restoring another of the missing pages of the Southwest's history.

EXPEDITION TO TRINIDAD

Early in December, Mr. Frank C. Wonder, Staff Taxidermist, will start on a four months' expedition to the island of Trinidad, British West Indies. No systematic collection of mammals has been made in Trinidad by an American museum since 1893, and few of them are represented in the collections of this Museum. Birds, reptiles and amphibians will also be collected.

PHOTO ENTRIES UNDER WAY; JUDGES APPOINTED

Entries are now being received for the Second Chicago International Exhibition of Nature Photography to be held by the Nature Camera Club of Chicago in the halls of the Museum. The deadline for entries is January 18, 1947.

The exhibition will be held February 1 to 28 inclusive. In addition to the display of photographs in Stanley Field Hall, there will be projections of color slides on the screen in one of the Museum lecture halls on Sunday afternoons, February 2, 9 and 16, at 3 o'clock, to which the general public is invited.

The judges who will select the photographs for exhibition are: Mr. Karl P. Schmidt, Chief Curator of Zoology, and Dr. Earl E. Sherff, Research Associate in Systematic Botany, both representing the Museum; Mr. Tappan Gregory, Chicago attorney, well-known for his wild animal photography at night; Mr. D. Ward Pease, prominent writer on photography; and Mr. Edward Lehman, Associate, Photographic Society of America.

Entry forms and rules may be obtained from the Museum or from Miss Louise K. Broman, 6058 S. Troy Street, Chicago 29.

FIFTH BOTANICAL EXPEDITION TO CENTRAL AMERICA

The Museum's fifth botanical expedition to Central America will be conducted during late 1946 and through the greater part of 1947 by Paul C. Standley, Curator of the Herbarium, who expects to sail from New Orleans early in November. Four previous expeditions by Mr. Standley and Assistant Curator Julian A. Steyermark explored the twenty-two departments of Guatemala, and secured material for a *Flora of Guatemala*, now in course of publication by the Museum.

The object of the present expedition is to obtain collections for a *Flora of Middle Central America*—the republics of Honduras, El Salvador, and Nicaragua. Mr. Standley expects to visit all these, working mostly on the Pacific slope.

COLLECTIONS FROM PERU

A large collection of Peruvian birds, mammals, reptiles, fishes, and shells has been received recently. Part of the collection was made by Mr. Colin Campbell Sanborn, Curator of Mammals, and included the rare *Bassaricyon* described in the July-August BULLETIN.

The other part of the shipment was a collection made by Sr. José Schunke, a local collector at Pucalpa, on the Rio Ucayali. This was a six months' accumulation of specimens which he turned over to Mr. Sanborn for shipment. It contained more than 100 mammals, 360 birds, and many reptiles, fishes, and shells.

BIRD LIFE AT BIKINI CARRIES ON, DISMISSING ATOMIC BOMBS WITH UTTER DISDAIN

By MELVIN TRAYLOR, JR.
ASSOCIATE, DIVISION OF BIRDS

IT WAS my privilege during the last spring and summer to be present at the atomic bomb tests at Bikini Atoll as project officer for the pelagic fishing survey. The purpose of the survey was to find out what would be the effect of the atomic bomb upon the larger pelagic fishes in the waters outside the atoll. We were primarily interested in the commercial fishes—yellow-fin tunas and skipjack— but our catch also included large numbers of wahoo, dolphin and the dog-toothed tuna.

INSPECTION
Major Traylor checks up on a nest of the common noddy.

The pelagic fishing survey was only one part of an oceanographic survey that the Navy was conducting to study the effect of the bomb. Scientists from the U.S. National Museum, the U.S. Fish and Wildlife Service, the U.S. Geological Survey, Woods Hole Oceanographic Institute, Scripps Institution of Oceanography and the University of Michigan were present to carry on this research, which was under the general direction of the Bureau of Ships, U.S. Navy. The basic plan was to make a thorough study of the oceanography of Bikini before the explosions, and to return after each test to learn what effect, if any, the bomb had had. A similar survey was to be conducted at Rongelap, 80 miles off.

Although my duties were primarily concerned with fish and fishing, my natural desire was to study as much as possible the bird life of the island. A general picture could be obtained by going out with the fishing boats for several days, for their best fishing grounds were in close to the reef, so that the birds on the islands and flying along the reefs could easily be seen. Although the bird life of the atoll was rich in numbers, it was very poor in species, only nine forms being resident throughout the year. All but one of these are wide ranging oceanic forms, the only exception being the reef heron.

The two most widespread forms, which were found nesting on almost all the islands of the atoll, were the common noddy and the fairy tern. The former is a large gray tern with a whitish cap, and the latter is pure white with only its jet black eye and blue-black bill for contrast. The fairy tern is probably the most beautiful bird around the islands, and certainly the most fascinating to study.

When approaching any of the islands, groups of these birds will always be seen hovering over the vegetation, or indulging in wild sweeping flight high in the air. The high flying birds are usually paired, and they manage to maintain formation through the most intricate maneuvers in a manner that would be the envy of any pilot. As soon as an intruder lands upon the island, more birds rise up from the bushes nearby, form a hovering flock above his head, and will follow him wherever he happens to wander. The terns show no particular fear of a man, only curiosity, and will hover over his head, peering at him from all angles, as long as he cares to remain. As he wanders around, new birds will rise up to meet him and the old ones drop out and return to their former perches, so that at all times a constant, but ever changing flock will be with him. The noddy terns show no such curiosity, and only when you approach their nests will they sweep over you, croaking defiance.

NESTLESS NESTING

The nesting habits of the fairy tern have always been a source of fascination to the ornithologist and the subject of much speculation. Their interest lies in the fact that no nest at all is built, and the single egg is laid upon a bare branch or upon the ground.

The ingenuity displayed by the birds in picking sites on which the egg will remain, even when the trees sway in the wind, is amazing. Many of the eggs are laid on large horizontal branches, held there only by irregularities in the bark; others are laid in little pits where dead branches have fallen off, and still others on the broken-off stubs of branches which leave only rough irregular platforms a few inches around. One of the most curious sites was a U-shaped bend in a small vine growing against an upright branch of a tree. The egg was resting in the bottom of the U, leaning against the branch, and whenever the wind was strong and the branch would sway, the vine and its curious burden would ride up and down against it. The birds are not infallible, however, and broken eggs are occasionally found, usually knocked off by the old bird when it flutters from the nest.

Although I was never fortunate enough to see a chick hatch, I have found the young with their down still damp, where only an hour or two before I had seen the egg, and even at that tender age, they had a firm grip on the branch with their feet and claws. So firm is their grip that if you jerk them off their roost you will usually tear their feet and claws. After a few days' growth, however, they become restless and wander up and down the branch while waiting for the parents to return with fish. At this stage

MESS CALL
Fairy tern brings fish dinner to chick.

they are very pugnacious, and will spread their wings and snap at your hand if you try to handle them. From the time they are hatched they are apparently fed on small fish, and a sure sign of a breeding colony is the sight of the parent birds hovering in the air, with several small fish held crosswise in their beaks. Although the parent bird in the picture has only three fish, birds have been seen with as many as six or eight, and it is still a mystery how the bird can continue to catch fish without dropping the ones already caught. In a few weeks the feathers begin to push through the down, and the young, when fledged, are a duplicate of the parent.

FLOCK BY THOUSANDS

Although not so eccentric in its habits as the fairy tern, the white capped noddy, a smaller and darker version of the common noddy, was an interesting bird to watch and study. It is more truly a colonial bird in its nesting habits, and had extensive colonies on three of the small islands at the west end of the lagoon. The trees in the centers of these islands were taller than elsewhere, up to forty or fifty feet, and the ground beneath them was free of undergrowth. The noddies nested on the smaller branches, from ten to thirty feet up, and every branch would have clusters of four or five nests out near the end.

The nests were of matted leaves and seaweed, in contrast to the common noddy nests which were made primarily of sticks, and were large and bulky. The white capped noddies fished as well as nested together, and in the early morning and late evening when the flocks were coming and going, the island would be a bedlam. When the flocks went out to fish, they would scatter widely over the ocean and single birds could be seen almost anywhere you looked. As soon, however, as a few birds started to feed, others would immediately fly in to join them, and soon flocks of a thousand or more would be massed together over a school of fish. This was an advantage to us, since they preferred to follow schools of tuna to catch the small bait that the larger fish drove to the surface, and large schools of noddies would always prove the presence of tuna (although not guaranteeing that they would bite).

One island in particular had a fascination for me because of the variety of the birds upon it. On the ground and in the low bushes around the edges the common noddy was nesting in profusion; on the branches of higher trees was a colony of the white capped noddy; high in the tops of the trees were the bulky nests of the red-footed booby, a large gull-like relative of the pelican, and everywhere were the eggs and young of the fairy tern. Here also the frigate birds would come to roost, and wait for the returning boobies to rob them of their fish. The frigate birds are the most graceful and the swiftest of the sea birds, appearing like huge swallows with long forked tails; yet they are lazy by habit and prefer to live harassing the boobies and terns, and forcing them to disgorge their catch, which the frigate bird then snatches from the air before it strikes the water.

FAIRY TERNS HOVERING OVER AN OBSERVER

CATCH FLYING FISH IN AIR

But they are capable of providing for themselves, and I often saw them hovering over a school of dolphin, and swooping down to catch flying fish in the air that the dolphin had scared up. The frigate birds were not nesting at the time we were there, but there was evidence that they had done so previously—evidence in the form of a large pile of wings, the remains from a foraging expedition of the natives. Since these birds stay in the low bushes only when they are nesting, it must have been then that the natives caught them.

Naturally, when the time came for the tests, I was very anxious to see what the effect would be upon the bird life. Unfortunately, we were at Rongelap during both tests and missed seeing the bombs themselves, but we returned in less than a week after each and were in a position to judge what permanent effects, if any, there might be. Upon our return, we were pleasantly surprised to see no visible effect upon any of the islands or their bird life, and subsequent examination showed no noticeable change in numbers. The birds were continuing with their regular household routines, and were it not for the evidence of the target ships it would be difficult to believe that the bombs had actually exploded. Although there is a possibility of a delayed effect from birds eating radioactive fish, of which there were a few in the lagoon, the bird life as a whole may be considered unaffected by the bomb.

MUSEUM BOOK SHOP IS IDEAL CHRISTMAS GIFT CENTER

Expanded space, improved facilities, and new merchandise have been the response of the Museum's Book Shop to an increasing demand for a larger selection of novelties and books pertaining to natural history.

During the summer months, a new partition was constructed which practically doubles the Shop's area. The additional space provides an entire new wall of counter and panel display.

Maintaining a wide selection of the best books covering the field of natural history has been the primary purpose of the Book Shop. Even though many of the standard reference books have been rationed, or have gone out of print entirely during the war, the number of titles has actually increased without changing the policy of selling only recommended publications. Special attention has been given to the need for more children's books. The new space has now made these additions possible.

New displays are now completed of genuine Navajo silver jewelry and of ivory carvings of the Alaskan Indians. Navajo rugs, wood carvings, beadwork and basketry are also being sold.

Visitors who rely on the Book Shop to furnish unusual Christmas gift suggestions will be pleased to find in stock a complete line of metal animal figures for the first time since the War.

THE MUSEUM WILL CLOSE ON BOTH CHRISTMAS AND NEW YEAR'S DAY.

Chicago Natural History Museum
FOUNDED BY MARSHALL FIELD, 1893
Roosevelt Road and Lake Shore Drive, Chicago
TELEPHONE: WABASH 9410

THE BULLETIN

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SHARAT K. ROY.....*Acting Chief Curator of Geology*
KARL P. SCHMIDT.....*Chief Curator of Zoology*

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

DR. SHARAT K. ROY HONORED

In recognition of his contribution to Arctic geology, a mountain on the south coast of Baffin Land has been named for Dr. Sharat K. Roy, Acting Chief Curator of Geology. This was revealed in the latest map of that area issued by the Hydrographic Office, Washington, D.C.

Mt. Sharat is located at 63° 34′ N. lat., 68° 55′ W. long., near the head of Frobisher Bay, Baffin Land. The bay, a westerly arm of Davis Strait, lying between Hudson Strait and Cumberland Sound, and long believed to be a strait connecting the Atlantic and Pacific Oceans, was discovered in 1576 by Sir Martin Frobisher, an English navigator and explorer.

Dr. Roy made his first trip to Frobisher Bay in 1927–28 as staff geologist of the Rawson-MacMillan Expedition of the Museum to Labrador and Baffin Land. On this trip he traveled extensively, studying and collecting for sixteen months. The results were published in a number of papers by Dr. Roy in the Museum's Geological Series. Since then Dr. Roy has revisited Frobisher Bay twice, and during the war his duties as a Captain in the Army Air Forces carried him to every major Arctic air base of the North Atlantic Command.

A Correction

A brief note in the September-October, BULLETIN, p. 8, said an introductory exhibit to Chicago area mammals was located at the east end of Albert W. Harris Hall (Hall 18). The correct location is at the north end of George M. Pullman Hall (Hall 13) near the east end of Hall 15.

President Field and Curator Schmidt Aid Pacific War Memorial

Mr. Stanley Field, President of the Museum, has become a Trustee of the Pacific War Memorial, and Mr. Karl P. Schmidt, Chief Curator of the Department of Zoology, has accepted membership on the scientific advisory committee for the project.

Mr. Archibald B. Roosevelt, president of the board of trustees, states the basic idea of the organization is "to commemorate in scientific advancement instead of statues and plaques the sacrifices of Americans in the Pacific area."

Staff Notes

Mr. Bryan Patterson, Curator of Paleontology, and James H. Quinn, chief preparator in paleontology, left in September for southwestern Texas to collect specimens of mammals of the Tertiary period (50,000,000 years ago). They will be in the field for several months.

* * *

In continuation of his work on fossil turtles, and to expand the collections he made last year, Dr. Rainer Zangerl, Curator of Fossil Reptiles, conducted an expedition in Alabama last summer, returning to the Museum in September. He obtained valuable additions for the Museum's collections.

* * *

Miss June Ruzicka and Miss Lorain Farmer have joined the guide-lecture staff of the James Nelson and Anna Louise Raymond Foundation.

* * *

Mr. Loren P. Woods, Assistant Curator of Fishes, has been granted a leave of one and a half to two years to accept a temporary post as Associate Curator of Fishes in the United States National Museum, Washington, D.C. He will work there with Dr. L. P. Schultz, Curator of Fishes, on the classification of some 40,000 specimens of shore fishes of the four main Marshall Islands, collected before and after the atomic bomb tests at Bikini.

* * *

Mr. Melvin A. Traylor, Jr., who early in the war enlisted in the U. S. Marines, and was commissioned successively second and first lieutenant, captain, and major, has returned to the staff of the Museum, as Associate, Birds.

In recognition of Mr. Traylor's notable gifts to the Museum, consisting principally of birds he collected at Bikini where he was a member of the official government scientific observation group during the recent atom-bomb test, and on expeditions he organized and conducted in Mexico prior to the war, the Trustees have elected him a Contributor.

* * *

Resignations of two members of the staff have been received: Mr. Rudyerd Boulton, Curator of Birds, and Mr. Bryant Mather, Assistant Curator, Mineralogy. Mr. Boulton will continue relationship with the Museum as Research Associate, Birds.

* * *

Dr. R. M. Strong has been appointed Research Associate in Anatomy in the Museum's Department of Zoology. Professor Emeritus of Anatomy in the Loyola University School of Medicine, Dr. Strong recently retired from the Loyola faculty.

NEW MEMBERS

The following persons became Members of the Museum during the period from August 6 to October 15:

Contributors

Melvin A. Traylor, Jr.

Associate Members

A. E. Bastien, J. George Forster, Frank E. Gettleman, Mrs. Samuel Hollander, Albert L. Hopkins, H. R. Hurvitz, Arthur L. Myrland, James G. Shakman, William G. Sturm, Louis A. Wagner, George Weiner.

Sustaining Members

Mrs. Ann Bigelow, Mrs. Donald R. McLennan, Sr.

Annual Members

Robert M. Arnold, Warren G. Bailey, Miss Ann R. Banks, Marvin J. Bas, Gail Borden, Rev. Jacob G. Brouwer, Garfield W. Brown, B. E. Callahan, Dr. Peter P. DeBruyn, Charles F. Duggan, Mrs. Donald W. Easter, Daniel W. Edgerly, Miss Carolyn Enid, Salvatore Ferrara, Raymond W. Frank, John H. Galgano, Mrs. Gurdon H. Hamilton, Miss Frances Harrington, Mrs. Irvin H. Hartman, Gerard E. Hausen, William S. Hennessey, Mrs. Elmer C. Hill, Russell D. Hobbs, Mrs. Bolter Holabird, F. H. Kilberry, Lyman R. Kirst, Dr. Alva A. Knight, Henry L. Kohn, Louis A. Kohn, Mrs. Walter A. Krafft, Miss Nellie M. Krotter, Clarence O. Lillyblade, Sigmund M. Lederer, A. Franklin Lee, A. J. Lindsley, Griffith Mark, Archibald B. Marx, Mrs. L. J. Medberry, Mrs. Herbert S. Mills, Jr., Dr. Alfred N. Murray, Ward A. Neff, William S. Picher, Mrs. S. C. Pirie, Jr., Mrs. Harold M. Pitman, Mrs. Henry Pope, Jr., Mrs. George E. Price, Fred L. Regnery, Dr. Lloyd K. Riggs, Mrs. Charles C. Robbins, Mrs. Joseph Rosenbaum, Earl Ross, Harry J. Saladin, Selwyn S. Schwartz, A. K. Selz, Henry B. Sincere, Floyd Slasor, J. J. Somes, Mrs. Angeline Spieth, Mrs. John W. Stanton, Miss Laura G. Stephens, David B. Stern, Jr., E. E. Stewart, North Storms, M. D. Strong, Holgar G. Swanson, Mrs. Ernest A. Teich, J. Angus Thurrott, G. H. Timmings, David M. Weil, Lawrence S. Wilbur, Edward B. Wilcox, Mrs. Harold C. Wilcox, Mrs. Arthur L. Wilcoxson, Wallace E. Wing, Mrs. James C. Worthy.

SOUTHEAST REPTILES COLLECTED; RESEARCH IN MOUNTAINS

Mr. Clifford H. Pope, Curator of Reptiles and Amphibians, recently returned from Highlands, North Carolina, where he spent July and August directing the Highlands Museum and making an investigation of the reptiles and amphibians of the southern Appalachians and the adjacent Piedmont Plateau.

He brought back more than 600 specimens collected in some thirty different places in western North Carolina, northwestern South Carolina, northeastern Georgia, and western Tennessee.

The chief subject of study was the distribution of reptiles and amphibians in the area where the Blue Ridge joins the Piedmont Plateau. Here an abrupt change from 2,000 to 3,000 feet in altitude is correlated with striking changes in the species that one finds. The most interesting animals of the region are the mountain salamanders, Mr. Pope indicates. Some species of these are found only in the forests and streams of small areas near the tops of mountain ranges at altitudes above 3,000 feet.

One revelation of the summer's work was the evident fact that the commonest local salamander of the Highlands region, Metcalfe's salamander, is without a scientific name.

It is thus evident that much remains to be done to place the classification of the salamanders of this rich fauna on a sound basis.

LITTLE KNOWN PIRARUCU, GIANT OF FRESH WATER FISHES

PIRARUCU, ONE OF THE LARGEST FRESH WATER FISHES. SPECIMEN IS 9 FEET LONG

An exhibit of one of the largest fresh water fishes in the world has been added to the Hall of Fishes (Hall O) at the Museum.

This gigantic fish, the pirarucu, is found in the Orinoco and other rivers of Guiana and in the Amazon. Knowledge of its distribution and of the size it attains is imperfect and, in fact, very scanty, according to Mr. Loren P. Woods, Assistant Curator of Fishes. The name is derived from two South American Indian words, *pira*, meaning fish, and *rucu*, red, the color of its large scales.

Pirarucu is a member of the fish family Osteoglossidae or fishes with bony tongues. Its tongue is covered with crowded rasp-like teeth. Natives collect tongues for use as graters to shred coconut meat, manioc and fleshy roots. One known specimen of the tongue is nearly seven inches long.

The Indians cut the fish's flesh into strips which, salted and dried, constitute for them the equivalent of bacon; they also prepare some of the flesh to correspond to New England dried codfish. Pirarucu is a slow swimmer, and is usually landed with harpoon or bow and arrow, almost never with hook or net. The species is being overfished and its numbers are steadily decreasing. An unverified report indicates the largest individuals grow to 15 feet in length and 400 pounds in weight.

The Museum exhibit, an enlarged model 9 feet long, made from an actual specimen of small size, was prepared by Taxidermist Leon L. Pray.

Visiting Hours Change

Museum hours, which have been 9 A. M. to 5 P. M. in the autumn, change to the winter schedule—9 A. M. to 4 P. M.—November 1 to February 28.

GIFTS TO THE MUSEUM

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

Department of Anthropology:

From: Morton K. Tuller, Chicago—an archaeological pottery specimen from cave tomb, Okinawa; Dr. C. Martin Wilbur, Alexandria, Va.—5 carved pottery heads, China.

Department of Botany:

From: Mrs. Dorothy R. Harvey, San Diego, Calif.—228 herbarium specimens, Panama; Richard D. Wood, Evanston, Ill.—78 herbarium specimens, Illinois, and 184 specimens of algae, California; Prof. Maximino Martínez, Mexico, D. F.—50 herbarium specimens, Mexico; Ronald Lambert, Chicago—70 herbarium specimens, England; Dr. Elbert L. Little, Jr., Arlington, Va.—57 herbarium specimens, Colombia; Museo Nacional, San José, Costa Rica—115 herbarium specimens, Costa Rica; Dr. V. J. Chapman, Auckland, New Zealand—13 specimens of algae, New Zealand; Dr. M. A. Brannon, Gainesville, Fla.—40 specimens of algae, Florida; William A. Daily, Indianapolis, Ind.—146 specimens of algae, Indiana; Harold B. Louderback, Argo, Ill.—212 specimens of algae, Utah and Colorado; Donald Richards, Chicago—a collection of 4,675 specimens of mosses.

Department of Geology:

From: Prof. Eliot Blackwelder, Stanford University, Calif.—a specimen of quartz flour, Arizona; Karl P. Schmidt and Robert G. Schmidt, Homewood, Ill.—8 geological specimens, Wyoming; Dr. R. H. Whitfield, Evanston, Ill.—2 geological specimens, Illinois; E. Mitchell Gunnell, Denver, Colo.—2 geological specimens, Mexico.

Department of Zoology:

From: University of Chicago, Chicago—55 microscope slides of mammalian tissues; S. G. Hanson, New York—11 lizards, Caroline Islands; Edward F. Ricketts, Pacific Grove, Calif.—68 specimens, comprising 16 species of marine fishes, Vancouver Island; Dr. G. F. Simmons, Chicago—8 mammal skins with skulls, Illinois; Sr. Alfredo de la Torre, Matanzas, Cuba—2 snakes, Cuba; Major A. B. Anderson, Anglo-Egyptian Sudan—a toad, a snake, a crocodile, 6 lizards, Anglo-Egyptian Sudan; Sr. Wolfgang Weyrauch, Lima, Peru—8 bats, Peru; Melvin A. Traylor, Jr., Chicago—66 birds, Bikini; Frank Lyman family, Lantana, Fla.—a rare sea shell, Florida; Dr. Arnold J. Nicholson, Billings, Mont.—330 bats, New Hebrides and New Caledonia; Walter L. Necker, Chicago—63 specimens of shells, Kentucky; Dr. Henry Field, Cuernavaca, Mexico—25 land shells, Mexico; Henry Van der Schalie, Ann Arbor, Mich.—154 specimens North American land and freshwater shells, United States; Mrs. Ray O. Grosjean, Angola, Ind.—a 13-lined ground squirrel, Indiana; R. P. Ehrhardt, Gambier, Ohio—a tadpole, Idaho; Mrs. Arnold A. Zimmermann, Winnetka, Ill.—a snake, Illinois; Dr. Gordon Gunter, Rockport, Tex.—a mounted turtle, Texas; Donald Huisman, Oconto, Wis.—3 garter snakes, Wisconsin; Harold Trapido, Panama City—a frog, Panama; Kevin W. Marx, St. Paul, Minn.—7 freshwater fishes, Philippine Islands; C. T. Voorhies, Tucson, Ariz.—a coral snake, Arizona; Dr. Vasco M. Tanner, Provo, Utah—21 weevils, Philippine Islands; Eugene Ray, Chicago—77 specimens of shells, Ryukyu Islands, and 3,049 insects and spiders, United States, Pacific Islands; Capt. Harry Hoogstraal, U.S. Army—9 specimens shells and crustaceans, Philippines, and 742 beetles and insects, Dutch New Guinea; Boardman Conover, Chicago—2 bats and 21 bird skins, Paraguay; J. E. Johnson, Waco, Tex.—24 snakes, Texas; Lincoln Park Zoo, Chicago—a lion cub, Africa, a hedgehog, an Inyala antelope, and a Russel's viper; Chicago Zoological Society, Brookfield, Ill.—22 birds, a monkey, a grison, and an antelope; Prof. Clarence R. Smith, Aurora, Ill.—a frog, a snake, and a long-tailed weasel, Illinois.

Library:

From: Army Air Forces Aeronautical Chart Plant, St. Louis; Birger Bohlin, Statens Etnografiska Museum, Stockholm, Sweden; Dr. Henry Field, Cuernavaca, Mexico; National Research Council, Washington, D.C.; Prof. H. T. Seiler, Zoologisches Institut, Zurich, Switzerland; and Karl P. Schmidt, Dr. Henry W. Nichols, Dr. Fritz Haas, Colin C. Sanborn, D. Dwight Davis, and Rupert L. Wenzel, all of Chicago.

TENTH ANNIVERSARY SEASON OF THE LAYMAN LECTURES

Marking his tenth anniversary as the Sunday afternoon Layman Lecturer at the Museum, Mr. Paul G. Dallwig will open his season the first Sunday in November with a schedule of double billings—two lectures each Sunday on different subjects, one in the morning and one in the afternoon.

PAUL G. DALLWIG

This double schedule will enable more people to enjoy his lectures, and early reservations are suggested because, at the conclusion of the season next April 27, Mr. Dallwig will discontinue this activity for at least one year.

The morning lectures will begin at 11:30 o'clock; the afternoon ones begin at 2:30 as in the past. The lectures approximate two hours, with intermission for refreshments. Lectures are given *every* Sunday of each month.

In **November**, the subject of the *morning* lectures will be **"All Aboard for the Moon,"** and the *afternoon* lectures will be on **"Strange Monsters in Nature's 'March of Time.'"**

In **December**, the subject in the *morning* will be **"Digging Up the Cave Man's Past,"** and the *afternoon* lectures will be on **"The Museum's 'Parade of the Races' in Bronze."**

For the balance of the season, subjects will be:

January: *Mornings,* "GEMS, JEWELS, AND 'JUNK'"; *Afternoons,* "ROMANCE OF DIAMONDS FROM MINE TO MAN."

February: *Omitted, as Mr. Dallwig will be on a road tour.*

March: *Mornings,* "THE ROMANCE OF OUR AMERICAN FORESTS"; *Afternoons,* "MIRACLES IN WOOD."

April: *Mornings,* "WHO'S WHO IN THE MUSEUM ZOO"; *Afternoons,* "THE HISTORY, MYSTERY, AND ROMANCE OF MUSEUMS."

The heavy demand by the public for Mr. Dallwig's lectures, and the necessity of limiting the size of each audience make it essential to require advance reservations. Lectures are restricted to adults. Reservations will be accepted by mail or telephone (WABash 9410).

August Koch Dead

August Koch, Chief Horticulturist of the Chicago Park District prior to his retirement Jan. 1, 1940, died September 23. For many years, he had been a contributor to the Museum's Department of Botany, and also co-operated by caring for live plant specimens the Museum received.

Navy Day Services

A memorial service for those who lost their lives in the service of the United States Navy was held in the James Simpson Theatre of the Museum in connection with the Navy Day (October 27) ceremonies of the Navy League of the United States.

LECTURE TOURS ON WEEKDAYS NOVEMBER AND DECEMBER

Tours of exhibits, under the guidance of staff lecturers, are conducted every afternoon at 2 o'clock, except Sundays and certain holidays (*none on November 28, Thanksgiving day, but Museum will be open; on Christmas day the Museum will be closed*). On Mondays, Tuesdays, Thursdays, and Saturdays, general tours are given, covering all departments. Special subjects are offered on Wednesdays and Fridays; a schedule of these follows:

November

Fri., Nov. 1—The Introduction of Man to Earth—Prehistoric Man (*June Ruzicka*).

Wed., Nov. 6—Winter in the Bird World (*Winona Hinkley*).

Fri., Nov. 8—World Breadbaskets (*Roberta Cramer*).

Wed., Nov. 13—How Animals Protect Themselves (*Lorain Farmer*).

Fri., Nov. 15—Nature's Apprentices—Agents Which Aid Nature in Pollination (*Miriam Wood*).

Wed., Nov. 20—"Mr. America"—The American Indian Before and After 1492 (*June Ruzicka*).

Fri., Nov. 22—Reading the Earth's Diary (*Winona Hinkley*).

Wed., Nov. 27—Feast Days—World-Wide Feast Customs (*Roberta Cramer*).

Fri., Nov. 29—Before the Dawn of History (*Lorain Farmer*).

December

Wed., Dec. 4—The Land of the Mummies (*June Ruzicka*).

Fri., Dec. 6—Beneath the Surface—Life Under Water (*Lorain Farmer*).

Wed., Dec. 11—When the Glacier Came to Chicago (*Winona Hinkley*).

Fri., Dec. 13—"On Stage, Everybody"—The Universal Appeal of the Theatre (*June Ruzicka*).

Wed., Dec. 18—African Animals (*Lorain Farmer*).

Fri., Dec. 20—Christmas Customs (*Roberta Cramer*).

Wed., Dec. 25—*No tour, Christmas holiday, Museum closed.*

Fri., Dec. 27—Primitive Holidays (*Roberta Cramer*).

ADULT SATURDAY LECTURES CONTINUE IN NOVEMBER

The Autumn lecture course for adults continues on Saturday afternoons through November. The lectures, accompanied by color motion pictures, begin at 2:30 P.M., and are given in the James Simpson Theatre of the Museum. Following are the dates, subjects and speakers:

November 2—HOME LIFE OF THE APACHE AND NAVAJO INDIANS
Tad Nichols

November 9—THE PHILIPPINES—THEN AND NOW
Major John D. Craig

November 16—ALBERTA'S TIMBERLINE TROPHIES
Dr. Arthur C. Twomey

November 23—YUCATAN
Robert Stanton

November 30—HERITAGE IN THE ROCKIES
Karl Maslowski

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. 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.

FIVE MORE RAYMOND PROGRAMS FOR CHILDREN ON SATURDAYS

The final five free motion picture programs for children, some accompanied with stories presented in person by men who made the movies, will be given in the autumn series on Saturday mornings during November. These entertainments are presented under the auspices of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures. The programs will be given at 10:30 A.M. in the James Simpson Theatre of the Museum.

Following is the schedule:

November 2—INDIAN LIFE IN THE PAINTED DESERT

November 9—WINGS OVER LATIN AMERICA

November 16—INDIANS AND ESKIMOS OF THE NORTHWEST COAST

November 23—OUR OWN COUNTRY

November 30—A NATURALIST'S DIARY

Chinese Scholar Here

Dr. Chéng-Chao Liu, a member of the staff of West China University, Chengtu, is now in Chicago engaged in a six-months research project in the Division of Reptiles and Amphibians at this Museum.

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