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FIELD MUSEUM OF NATURAL  
HISTORY

REPORT SERIES

VOLUME VII



CHICAGO, U. S. A.

1926-1928





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CAPTAIN MARSHALL FIELD

FIELD MUSEUM OF NATURAL HISTORY

PUBLICATION 243

REPORT SERIES

VOL. VII, No. 1

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ANNUAL REPORT OF THE  
DIRECTOR  
TO THE  
BOARD OF TRUSTEES

FOR THE YEAR 1926



CHICAGO, U. S. A.

January, 1927

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JUN 13 1927



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## ANNUAL REPORT OF THE DIRECTOR

1926

To the Trustees of Field Museum of Natural History.

I have the honor to present a report of the operations of the Museum for the year ending December 31, 1926.

The year has been especially noteworthy in the annals of the Institution for the unprecedented amount of scientific work undertaken, and for the important results obtained from these activities. These results include both the collection of rare and valuable material for the Museum itself, and contributions to the world's general fund of knowledge through discoveries made by expeditions and research work conducted by the Museum.

The extension of the scope of scientific expeditions, research work, publications and exhibits has brought about further development of the Museum as an outstanding educational establishment. Trails were blazed into various parts of the world by some sixteen expeditions during the year. A large part of this extramural activity, so essential to the Museum's proper expansion, was made possible by the generosity of Captain Marshall Field.

There has been continued evidence during the year of deepening interest in the Museum on the part of visitors and students.

President Stanley Field contributed \$50,718 towards the Building Deficit Fund, and continued his annual contribution for the maintenance of the Stanley Field Plant Reproduction Laboratories, of which he is the patron. Expenditures for the year exceeded income by \$13,059.40, and this budget deficit was absorbed by President Field.

One of the most notable purchases of the year is a valuable collection of Chinese archaic jades, which was brought together in China by A. W. Bahr. This collection was bought from Mr. Bahr for \$75,000, towards which Mrs. George L. Smith contributed \$10,000. Others who contributed funds for this purchase are Miss Kate S. Buckingham, Mrs. John J. Borland, Mr. Martin A. Ryerson, Mr. Martin C. Schwab, Mr. Julius Rosenwald, and Mr. Otto C. Doering.

One of the last important tasks performed for the Museum by the late Carl E. Akeley was the installation of his admirable Lion Spear-

ing Group, which was presented to the Institution by Mr. Richard T. Crane, Jr. Mr. Crane also defrayed the expense of the installation of this group.

A contribution of \$6,000 was made by Mr. Charles R. Crane towards the expense of publishing "The Birds of the Americas," and a further and final sum of \$6,500 for this purpose was received from Mr. Crane, bringing his total contribution for this publication to \$37,200.

Mr. Edward E. Ayer contributed \$1,000 for the purchase of additional books for the Ichthyological Library, and continued his contributions of books to the Ornithological Library. In addition he continued his gifts to the Edward E. Ayer Pewter Collection, adding thirty-four interesting objects during the year.

Mr. William J. Chalmers supplemented his contributions for the purchase of additional specimens for the William J. Chalmers Crystal Collection.

Funds which enabled the Museum to accept an invitation to place an exhibit in the Sesquicentennial International Exposition at Philadelphia, were contributed by Mr. Albert W. Harris. The exhibit was installed in a special booth in the Palace of Education at the Exposition, and presented various features of the N. W. Harris Public School Extension work of the Museum.

A further contribution of \$10,000 was made by Mr. James Simpson towards defraying the final expenses of the James Simpson-Roosevelt Central Asia Expedition of Field Museum, which was completed during the early months of the year.

The Museum is indebted to the American Friends of China for their action in appropriating one-half of their annual income from members towards the development of the Chinese Section of the Institution.

In addition to his regular annuity of \$100,000, Captain Marshall Field provided \$40,000 to defray the expenses of the Brazilian Expedition under the leadership of Mr. George K. Cherrie. Mrs. Marshall Field III and Mrs. Ernest Thompson Seton were members of this expedition, and the following members of the Museum staff participated:

Dr. B. E. Dahlgren, Acting Curator of the Department of Botany, assisted by J. R. Millar and George Petersen; Professor Henry W. Nichols, Associate Curator of Geology; and Assistant Curator Karl P. Schmidt and Assistant Colin C. Sanborn of the Department of Zoology. References to the success of the expedition, which obtained

valuable historical, geological and zoological material, are made elsewhere in this report.

In addition to the regular funds allotted for the continuance of the archaeological investigations at Esch, Mississippi, it was found advisable to appropriate an extra amount to carry on the work properly, and an increase in the appropriation for the year 1927 has been authorized for further exploration in that locality.

A gratifying manifestation of interest in the work of the Museum was displayed in the cooperation accorded by the Chicago Daily News in the sending of a zoological expedition to Abyssinia. The Chicago Daily News contributed the funds for the expenses of the expedition and sent one of its representatives with the party, whose frequent reports on its activities are being given an important amount of space in both that paper and associated newspapers in various parts of the country. This exemplification of interest on the part of a metropolitan newspaper is highly encouraging. Dr. Wilfred H. Cope is in command of this expedition, which is known as Field Museum - Chicago Daily News Expedition, and the personnel of the party, which is an important one, was very carefully selected to assure obtaining of the best results. The chief object of the expedition is the collection of representative specimens of the little known fauna of Abyssinia, which zoologically is an almost virgin field.

After painstaking research, Dr. A. L. Kroeber, who was in charge of the Second Captain Marshall Field Archaeological Expedition to Peru, has succeeded in establishing the chronological sequence of the ancient cultures of Peru. This accomplishment is extremely gratifying, for discoveries of this kind stand out as distinct contributions to the advancement of science.

Mr. Frederick H. Rawson financed an expedition to the Subarctic regions under the leadership of Commander Donald B. MacMillan. This party, known as the Rawson-MacMillan Subarctic Expedition of Field Museum, explored the coasts of Labrador, Greenland, and Baffin Land. The two vessels which carried the expedition brought back rich supplies of anthropological, geological and zoological material for the Museum, more reference to which is contained in other sections of this report.

Mr. H. Boardman Conover and Mr. Robert Everard generously volunteered to finance the Conover Everard Expedition to Tanganyika Territory, Africa, for the purpose of securing for the Museum specimens of mammals, birds and other vertebrates of eastern and central Africa. The party is composed of Messrs. Conover and

Everard, and Assistant Curator John T. Zimmer. According to reports received from the expedition, it is meeting with splendid success.

Other expeditions made during the year included one by Mr. C. J. Albrecht to the State of Washington to secure specimens of Stellar's Sea Lions; another by Mr. Albrecht to Arizona, in which he was accompanied by Artist Charles A. Corwin, to collect a group of Mule Deer; and a geological expedition by Assistant Curator Sharat K. Roy, conducted in the vicinity of Gilboa, New York, to collect remains of fossil trees of the Devonian Period, and invertebrate fossils of that region. Associate Curator Elmer S. Riggs has directed the continuation of the Captain Marshall Field Paleontological Expedition to Argentina, and the season's work has added much valuable material to the collections. Assistant Curator Ralph Linton has continued the work of the Captain Marshall Field Ethnological Expedition in Madagascar with marked success.

An agreement has been entered into with Colonel J. C. Faunthorpe of Bombay, India, whereby he is to secure certain zoological group material especially desired for the Asiatic Hall of the Museum.

A complete X-ray equipment, especially adapted for museum work, has been acquired and installed. The apparatus was presented to the Institution by President Field. This equipment affords an invaluable addition to methods of Museum research, and is now being used in important investigations. It makes possible detailed examination of specimens without dissection and consequent danger of permanent injury to the material; and it is expected to reveal important features in objects of the ancient arts, pathological conditions in mummies, and many other subjects of interest to science. In establishing this Division of Roentgenology the Museum has taken the lead in a new departure in museum practice. The Division is provided with an operating room, dark room, and complete fittings.

Additional costly photographic equipment was provided for the Division of Photography and Illustration, which will increase the productiveness and efficiency of that Division.

The second portion of the Navajo meteorite was purchased by the Museum during the year, bringing the total weight of this fall to 4,800 pounds. This is a notable fall, and is complete except for a few fragments. It is an addition of considerable importance to the total weight of meteoritic matter in the Museum.

During the spring, summer and fall, the Museum, for the second time, maintained an exhibit of native plants and flowers of the

Chicago region. The collection was located in Stanley Field Hall. This effort to develop in children of the city an interest in native flora evoked much commendation from organizations such as the Wild Flower Preservation Society, and this society has since made a gift to the Museum of funds for maintenance of a similar exhibit in 1927 and subsequent seasons.

Observations made during 1926 demonstrated that public interest in the Polyment collection, which was installed in Hall F in 1925, is growing as it becomes better known.

An innovation made during the year was the series of six chamber music concerts given by the Gordon String Quartet, in the James Simpson Theatre, under the auspices of Mrs. Elizabeth Sprague Coolidge. These proved very popular, and were attended by a total of 4,406 persons. The use of the theatre was granted also to the Chicago Chamber Music Society, Inc., for a second series of concerts on six Saturday afternoons. Attendance at the first three of these totalled 2,034; the final three were scheduled for 1927.

In recognition of the eminent service they have rendered to science, the following were elected Honorary Members of the Museum: Mr. James H. Brewster, Mr. Chauncey Kéop, and Mr. Homer E. Sargent.

In appreciation of their eminent services to the Museum, the following were elected Patrons of the Institution: Mr. Carl E. Akeley, Mr. Watson F. Blair, Mr. George K. Cherris, Mr. H. E. Conover, Mr. C. Suydam Cutting, Mr. Damian S. Ellsworth, Mr. Charles F. Knight, Professor Stephen Langdon, Mr. John J. Mitchell, and Mr. Frederick H. Rawson.

The death of Mr. Akeley, which occurred in the Belgian Congo on November 17, two days after his election as a Patron, closed a long and distinguished career of scientific effort. Mr. Akeley, it will be remembered, was chief taxidermist of the Museum from 1899 to 1909, and during that time, as also since his departure from the Museum staff, rendered conspicuous services both to this institution and to the world of science as a whole. His loss is mourned by the members of the administrative and scientific staff of the Museum.

The Museum was honored during the year by the visits of several distinguished persons, among them His Royal Highness Gustaf Adolf, Crown Prince of Sweden, who was elected an Honorary Member of the Institution, and Her Majesty, Queen Marie of Roumania.

A plan has been developed for acting in the presentation of the subject of historical geology, in connection with which a series of

twenty-eight large paintings will be executed on the walls of the Hall devoted to that branch of geology. Mr. Charles R. Knight, well known as a foremost artist in this line, has been engaged for this work. The paintings will represent typical scenes of the earth and its life during past geological periods. They were made possible by the interest in the Museum of Mr. Ernest R. Graham. In recognition of his generosity the Hall of Historical Geology will be named Ernest R. Graham Hall.

Additions made to the staff of the Museum during the year were as follows: Mr. William D. Strong, appointed Assistant Curator of North American Ethnology and Archaeology; Mr. J. Eric Thompson, of Cambridge, England, Assistant Curator of Mexican and South American Archaeology; Mr. Henry Field, Assistant Curator of Physical Anthropology; Mr. James B. McNair, Assistant Curator of Economic Botany; Mr. W. D. Hambly of London, England, Assistant Curator of African Ethnology; Mr. A. M. Bailey, Assistant in the Department of Zoology; Miss Anna R. Bolan, Roentgenologist; and Mr. Charles A. Corwin, Artist.

Mr. Cleveland P. Grant and Miss Margaret M. Cornell were added to the Raymond Division, Guide Lecture staff.

Dr. Ralph Linton, formerly Assistant Curator of North American Ethnology, has been changed in title and duties to Assistant Curator of Oceanic and Malayan Ethnology.

The temporary services of Professor Samuel J. Record, of Yale University School of Forestry, were secured for the preparation of new labels for the North American Woods Collection.

Leave of absence for ten weeks was granted to Associate Curator C. E. Hellmayr, so that he might attend the Sixth International Ornithological Congress at Copenhagen, and visit European museums for further study and comparison of types of birds.

During the Eucharistic Congress, held in Chicago June 20 to 24, a large section of the ground floor, the James Simpson Theatre, the lecture hall, and certain offices of the Museum were allotted for the use of the dignitaries of the church. The convenience of the Museum to Soldiers' Field, where masses were held, made this a real service to great numbers of churchmen. Also during the Eucharistic Congress, a collection of sacred relics from Ireland was placed on exhibition in Stanley Field Hall, and proved to be of great interest to the throngs who attended the congress.

A new method of exhibiting habitat groups of mammals with scenic backgrounds has been adopted. The cases are treated archi-





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texturally and becomes an integral part of the wall. The source of the light is not visible, being diffused through a colored glass top. This light, coming through the front of the case, serves to illuminate the hall case. Eight of these cases have been constructed in Hall 16 to accommodate the following geological Monographs and have also been installed in Hall 17 for the Lincoln Monograph.

The essential features of the illumination of these groups have been adopted also in the cases containing the "Four Seasons Deer Groups."

At the north end of Hall 16, in the second floor, is an exhibit by the geologists, on the first floor, representing the geology of a series of groups of the Illinois Basin, including the "Four Seasons of Paraguay." Interesting examples of the use of the hanging or wall case groups are obtained and construction by which the available space is utilized to the fullest advantage.

A series of cases with a total length of 120 feet was constructed using the four walls of Hall 23, containing the Edward E. Aver-Foster Collection. These cases are constructed with the light being allowed through colored glass. A new method of illumination is employed here so that the important features of each piece are placed to advantage with respect to this light, and each label can be read easily.

Other major construction work performed during the year consisted of new partitions built to divide the back halves of Halls 16 and 17, and building up of new study niches on the second floor. The latter alterations make 1,000 square feet of new wall space available for displaying various wood carvings and paintings.

A contract was entered into to supply live steam for heating certain rooms and areas in Soldiers' Field. Necessary attention has been given to the maintenance of the Museum building, both interior and exterior.

Grateful acknowledgment is made of the courtesies extended by the various transportation companies, by numerous private and pleasure driving the attention of the public to the Museum and its activities, and by the Great W. Hotel Advertising Bureau, contributing to the Museum space in the program of the Chicago Theatre.

## LECTURES AND ENTERTAINMENTS

GENERAL LECTURES.—The Forty-fifth and Forty-sixth Free Lecture Courses of Field Museum of Natural History were given in the James S. Brough Theatre on Saturday afternoons during the Spring

and Autumn months. The Museum takes this occasion to thank the scientists and explorers whose participation made these courses successful. Following are the programs for both courses:

- March 6—"Hunting Big Game in the Rocks."  
Mr. Arthur Sterry Coggeshall, Carnegie Museum, Pittsburgh.
- March 13—"Bermuda."  
Mr. Carveth Wells.
- March 20—"Our Wild Flowers and Their Haunts."  
Mr. Edward C. Avery, Buffalo.
- March 27—"Rock-dwellers of Lower California."  
Mr. Ford Ashman Carpenter, Los Angeles.
- April 3—"Tracing the Frontier of Alaska."  
Mr. Asa C. Baldwin, New York.
- April 10—"American Bird Life."  
Mr. Norman McClintock, Pittsburgh.
- April 17—Lecture postponed.
- April 24—"On the Road to Timbuktu."  
Colonel E. Alexander Powell.
- September 25—"Bird Mannerisms."  
Dr. Lucius C. Pardee, Chicago.
- October 2—"Explorations in Borneo and Nias." (Arthur B. Jones Malayan Expedition, 1923.)  
Dr. Fay-Cooper Cole, Leader of the Expedition.
- October 9—"Life Through the Ages."  
Mr. Charles R. Knight, New York.
- October 16—"The Truth about the South Seas."  
Dr. Frederick L. Washburn, University of Minnesota.
- October 23—"The James Simpson-Roosevelt Central Asia Expedition."  
Mr. George K. Cherrie.
- October 30—"With John Muir in the California Sierras."  
Mr. Frederick Monsen, Pasadena.
- November 6—"The Evening Sky."  
Dr. G. Clyde Fisher, American Museum of Natural History, New York.
- November 13—"Morocco."  
Mr. Horace Ashton, F.R.G.S.

- November 20 "Hudson's Bay and the Indians."  
Mr. Clarence Brown, American Museum of Natural History, New York.
- November 27 "Home Life among the Blackfoot Indians."  
Mr. Walter McClintock, Pittsburgh.
- December 4 "The Hiram-McMillan Subarctic Expedition of Field Museum."  
Commander Donald H. McMillan.
- December 11 "Secrets of Amazonian Jungles."  
Dr. William Montgomery McGovern, London.

The total attendance at these nineteen lectures was 22,813 individuals.

In addition to the announced lectures, the following special lectures were delivered during the year:

- January 2 "Archaeological Explorations in Peru."  
Professor A. L. Kroeber.
- January 9 "A Bird Sanctuary."  
Mr. Jessie Miner.
- January 11 "The Mountains of the Cordillera."  
Mr. Eric Silliman Latham.
- April 4 "The Development of International Commerce."  
Major General G. Sherman.
- April 17-18 "The James Simpson-Roosevelt Central Asiatic Expedition of Field Museum of Natural History."  
Colonel Theodore Roosevelt.  
Mr. Kermit Roosevelt.
- May 16 "Across the Volcanic Region of Ecuador and Down the Amazon."  
Captain G. M. Dyott.
- June 6 "Rambles in the Rockies with a Naturalist."  
Mr. P. Arthur Small.
- October 24 "The James Simpson-Roosevelt Central Asia Expedition."  
Mr. George K. Cherrac.
- October 31 "Science Remaking the World: Coal Tar Products."  
Dr. Edwin Sluskin.
- November 14 "Over the Top of the World for Field Museum."  
Mr. Kermit Roosevelt.

- November 28—"Exploring the Amazons-Orinoco Wilderness."  
Dr. Alexander Hamilton Rice.
- December 5—"The Rawson-MacMillan Subarctic Expedition."  
Commander Donald B. MacMillan.
- December 12—"The Mystery of Mount Everest."  
Mr. N. E. Odell.
- December 16—"Explorations and Excavations in the Maya Field in  
1926."  
Dr. Sylvanus Griswold Morley.

CONCERTS.—A new departure in public entertainment was made by the Museum when, through the generosity of Mrs. Elizabeth Sprague Coolidge, it inaugurated its first series of free Chamber Music Concerts given in the James Simpson Theatre on Sunday afternoons. These concerts, by the Gordon String Quartet, were well received by audiences totalling 4,406 individuals. They were given on the following dates: March 21, March 28, April 11, April 25, May 2, and May 9.

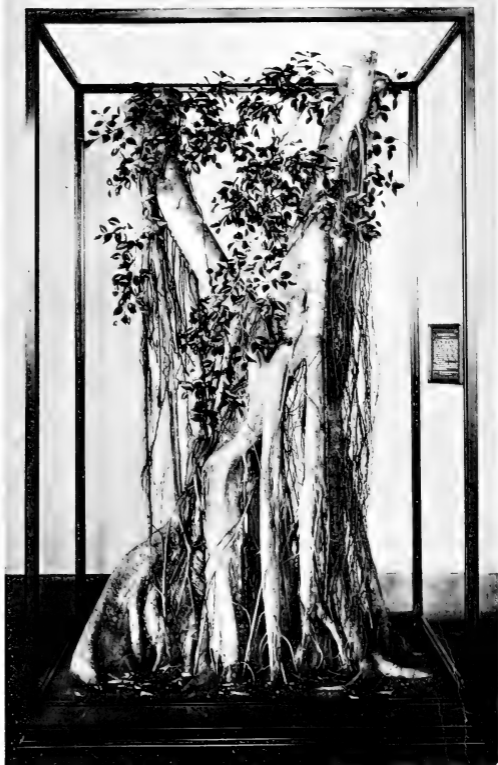
A second series of concerts given on October 17, November 7 and December 19, extended into 1927. This series was presented as a Beethoven Festival under the auspices of the Chicago Chamber Music Society.

AMERICANIZATION PROGRAMS.—The Yale University Press Chronicles of America Photoplays were, as in 1925, made the subject of a series of Americanization programs. The course was as follows:

- January 31—"Columbus."  
"Jamestown."
- February 7—"The Pilgrims."  
"The Puritans."
- February 14—"Peter Stuyvesant."  
"The Gateway to the West."
- February 21—"Wolfe and Montcalm."  
"The Eve of the Revolution."
- February 28—"The Declaration of Independence."  
"Vincennes."
- March 7—"Daniel Boone."  
"The Frontier Woman."
- March 14—"Yorktown."  
"Alexander Hamilton."

THE UNIVERSITY OF CHICAGO

PHILOSOPHY DEPARTMENT



A BANYAN-LIKE FIG TREE

Obtained from the Botanical Garden of Georgetown, British Guiana, and recently installed in the Hall of Plant Life

Stanley Field Guiana Expedition, 1922



These films were also used in three special programs given for members of Mothers' Americanization Classes of the Chicago Board of Education on February 11, July 1 and November 11. The total attendance for the series and the special programs was 11,699.

#### THE JAMES NELSON AND ANNA LOUISE RAYMOND PUBLIC SCHOOL AND CHILDREN'S LECTURES

ENTERTAINMENT FOR CHILDREN.—Classes for children were given at the James Nelson Theatre during the Spring and Summer months. The first series consisted of "The Story of America, Prehistory" with film as record history. The second series was arranged to illustrate the animal life of the world. As in previous years, Museum Studies for Children were prepared by the guide lectures and distributed as such entertainment. These courses were attended by 21,000 children. The programs were as follows:

February	11	"Continents"
		"Young Sports of America"
March	4	"Insectology"
		"The Dinosaur"
March	13	"The Flightless"
		"Australia's Wild Northland"
March	20	"The Furrows"
		"The Garden of the East"
		"A Glimpse into the Animal Kingdom"
March	27	"Peter Raymont"
		"Wing Beauty of Burma"
April	3	"The Gateway to the West"
		"Sioux National Park"
		"Flesh, Iron and Silver"
April	10	"Wolves and Mountain"
		"Flock of Prey"
		"Wings and Horns"
April	17	"The Eve of the Revolution"
		"A Naturalist's Paradise"
		"Honey"
April	24	"The Declaration of Independence"
		"Jungle Adventures," Parts 1 and 2.
May	1	"Venezuela"
		"Jungle Adventures," Parts 3 and 4.

These studies were prepared by the Director and the staff of the Chicago Museum of Natural History.

May	8—	“Daniel Boone.” “Fuel.” “Spiders.”
May	15—	“The Frontier Woman.” “Temples and Palaces of India.” “The Seven Ages of Fishing.”
May	22—	“Yorktown.” “Animal Life.” “The Silk Worm.”
May	29—	“Alexander Hamilton.” “The Spice of Life.” “The Growth of Animals.”
October	2—	“South America.”
October	9—	“Africa.”
October	16—	“Persia.”
October	23—	“India.”
October	30—	“China.”
November	6—	“Japan.”
November	13—	“East Indies.”
November	20—	“Australia.”
November	27—	“The South Sea Islands.”

In addition to those listed in the regular courses, five special entertainments were given for children. These were as follows:

January	9—	A Lecture “My Bird Friends.” Mr. Jack Miner.
February	20—	Washington’s Birthday Program.
April	29—	“Trailing African Wild Animals.”
December	4—	“Grass.”
December	11—	“Moana of the South Seas.”

**RADIO TALKS.**—Two radio talks were given by members of the Raymond Division. On August 19 Miss Fisher talked over WGN on “Bring Your Children to Field Museum,” and on November 17 Mr. C. P. Grant gave the lecture, “The Activities of Field Museum,” over station WMAQ.

**GUIDE-LECTURERS.**—As in previous years, classes from public, parochial and private schools, clubs, conventions, and other groups were given free guide-lecture service. Lectures given in the Museum exhibition halls by the guide-lecturers were of three types: (a) informal talks on announced subjects before 145 groups totalling

5,132 individuals. 10 lecturers were by special appointment for 100 groups of adults, totaling 2,115 persons. 100 special instructions on Museum exhibits correlating with their school work, given to 414 classes with a total of 13,235 children.

A number of new subjects were added to the list of extension lectures offered to the Public Schools. The complete list was as follows:

- "What We Owe to South America" for Grades 5B and 7B.
- "Fixed Fish of the World" for Grades 5A and 6B.
- "The Story of Iron and Coal," for Grades 5A, 6B, 7B, 7A, 8B, 8A.
- "Flax, Cotton and Silk" for Grades 5A, 6B, and 6A.
- "Roman Life" for Grades 6B and 8B.
- "Africa: Animals" for Grades 6A and 7A.
- "The Philippine Islands" for Grades 6A and 7A.
- "Glimpses of Chinese Life" for Grades 6A and 7A.
- "North American Indians" for Grades 5A and 7B.
- "Activities of Field Museum" for Grade 8A.
- "Forest of the Chicago Area," for General Assembly.
- "Marshland of the Chicago Area," for General Assembly.
- "Figs of the Chicago Area," for General Assembly.

During the year 186 extension lectures were given before audiences totaling 14,418 persons.

In all, 1,070 lectures, attended by a total of 160,800 individuals, were delivered by the guide-lecturers during the year.

### PUBLICATIONS

In the regular series, six publications have been issued, four of them being of the Zoological Series. In addition to a special leaflet, four numbers were added to the general leaflet series. To the Memoirs Series, inaugurated in 1925, one new number was added.

Following is a list of the publications and leaflets issued during the year:

- Pub. 205—Report Series, Vol. VI, No. 1. Annual Report of the Director for 1925. January, 1926. 163 pages, 16 photo-graphics. 1 pt.
- Pub. 206—Zoological Series, Vol. XII, No. 1. The Amphibians and Reptiles of Mona Island, West Indies. By Karl P. Schmidt. August, 1926. 39 pages, 6 plates.
- Pub. 207—Zoological Series, Vol. XII, No. 1B. Amphibians and Reptiles of the James Simpson-Roosevelt Arch-

- Expedition. By Karl P. Schmidt. August, 1926. 10 pages, 2 zincs.
- Pub. 238—Botanical Series, Vol. VI, No. I. Citrus Products, Part I. By James B. McNair. August, 1926. 212 pages, 7 halftones, 19 zincs.
- Pub. 239—Zoological Series, Vol. XVI. Catalogue of the Edward E. Ayer Ornithological Library, Part I. By John Todd Zimmer. November, 1926. 366 pages, 7 halftones, 1 colored plate.
- Pub. 240—Zoological Series, Vol. XVI. Catalogue of the Edward E. Ayer Ornithological Library. Part II. By John Todd Zimmer. November, 1926. 341 pages, 4 halftones.

#### ANTHROPOLOGY, MEMOIRS

- Vol. II, No. 1. Archaeological Explorations in Peru, Part I: Ancient Pottery from Trujillo. By A. L. Kroeber, Professor of Anthropology in the University of California. 1926. 44 pages quarto size, 4 zincs, 13 photogravures.

#### LEAFLETS

- Anthropology, No. 23. Ostrich Egg-shell Cups of Mesopotamia and the Ostrich in Ancient and Modern Times. By Berthold Laufer. 52 pages, 9 photogravures, 10 text-figures, 1 cover design. Edition 6,013.
- Anthropology, No. 24. Indian Tribes of the Chicago Region. With special reference to the Illinois and the Potawatomi. By William D. Strong. 36 pages, 8 photogravures. Edition 6,000.
- Botany, No. 12. Poison Ivy. By James B. McNair. 12 pages, 6 half-tones, 1 cover design. Edition 6,104.
- Zoology, No. 8. Mammals of the Chicago Area. By Colin C. Sanborn. 24 pages, 3 halftones, 19 zincs. Edition 6,010.
- Zoology, Special Leaflet No. 1. Lion Spearing. By Carl E. Akeley. 7 pages, 3 photogravures. Edition 5,000.

#### MISCELLANEOUS PUBLICATIONS

- Anthropology, Guide, No. 6 to the Ethnology of Polynesia and Micronesia. By Ralph Linton. 1926. 192 pages, 1 map, 59 text-figures, 14 photogravures.
- Museum Manual. 92 pages. Edition 5,000.
- General Guide. 31 pages. Edition 2,536.

RESEARCH LIBRARY IN MEDICINE, 1921-22.      23

## LIBRARY

There have been no special changes in the work of the Library, but it compares favorably with the years immediately preceding. The activities of the year were necessarily confined largely to the routine work. All material has been accessioned as received. The individual issues of periodicals and serials received were five thousand four hundred and sixty. The number of cards typewritten and filed in the various catalogues was nine thousand one hundred and sixty-four.

From the John Carter Library were received eight thousand six hundred and thirty-two added cards. These were obtained from the library as bound and unbound books and periodicals. The Union List of Serials of the Libraries of the United States, in course of publication, has issued eight sections, and the Library continues to supply its numbers to be incorporated in the published portions. A list of all periodicals possessed in the Library was supplied, by request to the Special Libraries Association, of Chicago for a proposed union list of periodicals found in Chicago libraries.

During the year five hundred and thirty-two students and assistants have made use of the general library, and thousands of bound and unbound books, periodicals, and pamphlets and eight hundred and twenty-one issues of the journal of the Departmental Libraries. Through with the growth of the catalogues five new printers were added to the card catalogs, and by means of new staff many a new book which was supplied. The total number of books and pamphlets in the library is approximately eight thousand five hundred and eighty-seven. The number of current volumes catalogued, classified, shelf-listed and added to the library was two thousand five hundred and twenty-one. These were received by gift, purchase and exchange. The books purchased were for the requirements of the staff for work in hand. The following titles indicate some of the more specialized interests of the various departments:

*Engraving*      Books on art in British Museum, 1921.

*Boards*      The museum.

*India*      The history of India: an inland chapter of Africa.

*Harvard Affiliated studies*      7 volumes.

*History*      Books, bulletins and maps with particular reference to the K. Royal and K. Royal titles.

- Hobson, The George Eumorfopoulos collection catalogue of the Chinese, Corean and Persian pottery and porcelain.
- Meek, Northern tribes of Nigeria.
- Migeod, Through British Cameroons.
- Morgan, La préhistoire orientale.
- Morse, The chronicles of the East India Company trade to China, 1635-1834, 4 volumes.
- Obermaier, Fossil man in Spain, 1925.
- Rutter, British north Borneo; an account of its history, resources and native tribes.
- Seler, Fray Bernardino de Sahagub. Einige kapitäl aus seinem geschichtswerk wortgetreu aus dem aztekischen übertragen.
- Siren, Walls and gates of Peking.
- Strange, Chinese lacquer, 1925.
- Tanner, Chinese jade, ancient and modern.
- Williamson, Social and political systems of central Polynesia, 3 volumes.
- Flore des serres, 23 volumes.
- Griffiths, Palms of British East India.
- Hooker, Handbook of New Zealand, 1867.
- Pickering, Chronological history of plants.
- Rodrigues, Sertum palmarum Brazil.
- Davidson, British fossil brachiopods, 6 volumes, 1851-1886.
- Goldschmidt, Atlas der krystallformen, v. 1-9.
- Hodkin, Glass technology.
- Jeffrey, The earth.
- Whitbeck, Economic geography of South America.
- Walcott, Mary, North American flowers, de luxe edition.
- Anderson, Zoology of Egypt.
- Hugues, Storia naturale delle scimi.
- Maydon, Semen, its heights and abysses; a record of travel and sport in Abyssinia.
- Salt, A voyage to Abyssinia, 1814.
- Swayne, Trip to Somaliland.
- Ward, Record of big game, 8th edition.

Friends of the Museum have been generous in their gifts to the Library, as in past years. In addition to the acknowledgments made at the time these gifts were received, and in the list of accessions accompanying this report, a further expression of appreciation is hereby made to all who have contributed to the collections.

The Library also acknowledges its indebtedness to the libraries from which books needed by the staff have been borrowed.

Over a period of years Mr. Edward H. Ayer has been presenting to the Ornithological Library that bears his name all the valuable illustrated works pertaining to birds as they became available, and the Library is now in possession of practically all such books, many of them in their beautiful original bindings. Several years ago Mr. Ayer intended his gifts to cover the purchase of all ornithological works of general value, and the Catalogue just issued from the Museum attests to the success achieved in finding many rare out of print works. Mr. John Todd Zimmer of the zoological staff of the Museum, who compiled it, has produced under the modest title of a catalogue, a valuable addition to our knowledge of ornithological literature. The bibliographical notes indicate marvelous patience in searching for the sources of material of the eleven hundred authors listed. During the year, more than a hundred titles were received too late to be incorporated in the catalogue. Mr. Ayer has indicated his approval of a further continuance of the search for rare desiderata that are lacking, in order to complete this invaluable library.

Among rare items presented during the year are the following:

- Aldrovandi, Ornithologiae huc est de avibus historiae libri XII. Cum septendecim linguarum copiosissimo, 3 volumes, 1599-1603.
- Barrere, Ornithologie ou description nouvelle avec Serres, levain et Rusticotti, Pyrenees montibus, 1745.
- Belanger, Voyage aux Indes-Orientales par le nord de l'Europe, 3 volumes, 1834-1846.
- Barkhausen, Deutsche fauna, v. 1. Säugetiere und Vögel, 1797.
- Forster, Les fauces insulaires dans lesquelles se voit comment on prend les oyseaux passagers, & les non passagers, 1690.
- Günther Sammlung von Tustern und eiern von Linné mit Vogel aus den völkern des 18. (V.) Herrn Göttingen Hofrath Schulze, 1772-1784.
- Handbuch der ornithologie, 1846.
- Koch, System der bairischen zoologie, v. 1, 1816, all published.
- Naumann, Naturgeschichte der land-und wasser-vogel des nördlichen Deutschlands, 4 volumes, 8 figs. in 8 figures, 1786-1817.

Naumann, *Naturgeschichte der land-und wasser-vögel des nordlichen Deutschlands*, 4 volumes, 6 sup. in 4 volumes, 1797-1817.

As far as is known, these two sets are the only complete ones in this country.

Orbigny, *Voyage dans l'Amérique méridionale*, 1835-1844. [Paulsen], *Handbuch der ornithologie*, 1846.

Poeppig, *Reise in Chile, Peru und auf dem Amazonstrome*, 1835-1836.

Poey, *Repertorio fisico-natural de la isla de Cuba*, 2 volumes, 1865-1868.

Piso, *Historiae rerum naturalium Brasiliae libri octo*, 1648.

Risso, *Histoire naturelle des principales productions de l'Europe méridionale*, 1826.

Temminck, *Manuel d'ornithologie*, 1815.

From the Captain Marshall Field Brazilian Expedition the Library has received one hundred and forty-four works of exceptional value to all the members of the expedition, as they will be immediately useful in identifying and classifying the material collected. Some of these publications have been desired by the Library for years, and could be obtained only by the personal efforts of members of the staff while in Brazil. Special acknowledgment is due to Mr. Karl P. Schmidt and Dr. B. E. Dahlgren for the efforts made to secure these publications.

From contemporary societies and institutions have been received the usual number of publications by exchange. A number also have been received from various Russian societies whose activities were in abeyance for some years and which are now re-establishing exchange relations. In addition, a number of current issues were obtained through the Society of Cultural Relations with Foreign Countries. A number of new exchange arrangements, both domestic and foreign, have been effected during the year.

#### DEPARTMENTAL CATALOGUING, INVENTORYING AND LABELING

ANTHROPOLOGY.—The work of cataloguing in the Department of Anthropology has been continued as usual during the current year, the number of catalogue cards prepared totaling 1,928. These cards are distributed geographically for the accessions during the year as follows: North American archaeology and ethnology, 132; South





THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

PHYSICS 435

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American and Mexican embassies and consulates in Argentina, Chile, Colombia, Cuba, Mexico, Peru, Uruguay, Venezuela, and the West Indies, and the American and Mexican embassies and consulates in Europe, Africa, Asia, Australia, Canada, India, and the Pacific Islands.

The following were also included: the American Commission on International Cooperation, the American Commission on International Labor Relations, the American Commission on International Trade, the American Commission on International Education, the American Commission on International Health, the American Commission on International Science, and the American Commission on International Social Work.

The total number of staff members employed by the Department in 1956 was 4,100. The total number of staff members employed by the Department in 1955 was 4,000. The total number of staff members employed by the Department in 1954 was 3,900. The total number of staff members employed by the Department in 1953 was 3,800. The total number of staff members employed by the Department in 1952 was 3,700. The total number of staff members employed by the Department in 1951 was 3,600. The total number of staff members employed by the Department in 1950 was 3,500.

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The Department also has an advisory committee of 100 members. The members of the committee are appointed by the Secretary of State. The members of the committee are: the Chairman, the Vice-Chairman, and the members of the Executive Committee. The members of the committee are: the Chairman, the Vice-Chairman, and the members of the Executive Committee.

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During the year the Department of State received 119 million dollars from the United States and 100 million dollars from other sources. The total amount received by the Department during the year was 219 million dollars. The total amount received by the Department during the year was 219 million dollars.

year for additions to the exhibits in the Hall of Plant Life, and for the palms, oils, starches, etc., in Hall 25.

GEOLOGY.—Cataloguing of the Borden collection of invertebrate fossils has been continued as opportunity offered. This work has included identification of each specimen, no entry being made until it was known to be based on a satisfactory determination. The number of specimens added in this way to the catalogue during the year was 3,052. The cataloguing of this collection to date has recorded most of the brachiopods, almost all of the blastoids and a large number of the corals and erinoids. Of invertebrate fossils and fossil plants received during the course of the year, 346 specimens were catalogued. Of these, 167 were collected by Assistant Curator Roy, 137 were obtained by exchange, 3 were purchased and 33 were gifts. A total of 3,445 specimens of fossil plants and invertebrates was thus catalogued during the year. The cataloguing of the vertebrate fossils collected by the Captain Marshall Field South American Expeditions in 1922-1923 was continued, about 1,000 specimens being entered. These included about 300 specimens of fossil cones and branches of *Araucaria*. In cataloguing these specimens, they were grouped according to locality and geological horizon. Of the collections made by Associate Curator Riggs in South America 310 specimens were catalogued. All other accessions were catalogued as received, including 40 specimens for the Chalmers collection. The total number of specimens catalogued during the year was 5,186.

To the Department photographic albums, 262 prints were added and, for the most part, labeled. The total number of these prints in the Department albums is thus increased to 5,233. Seventy topographic maps of the United States Geological Survey were added to this series, making a total of 3,063 U. S. G. S. maps. So far as possible, brief descriptive labels were made of the added maps and filed with them.

From the printer, 463 labels were received and distributed. Of these, 279 were for the amber and mineral collections, 71 for the gem collection, and 74 for exhibits in Stanley Field Hall. Ten labels were installed with the cement plant model in order to define the different units of the model. They were placed below the corresponding objects in such a manner as to identify them without interfering with the view of the model as a whole. In order to harmonize with the case, they were printed in gilt on mahogany. The number of labels written was 312, and of these, five were descriptive, being explanatory

of the contents of the boxes (specimens) should receive from the Department of the Interior, Bureau of Fish and Wildlife. The remainder have been left to the local government.

**ZOOLOGY.** Although 6,327 entries were made in the catalogue of the Department of Zoology, the majority of these were made at intervals through the various expeditions, was so large that it was not possible, year by year, to describe in some of the orders, to catalogue all of the material accumulated. The total number of regular entries was 6,327. They were divided as follows: Mammals, 1,088; Birds, 4,486; Reptiles and Amphibians, 784; Fishes, 354; Skeletons, 18; Insects, 101. Entries in the index card catalogue of mammals numbered 21.

The specimens that were labeled were mainly those received from sources other than by Museum expeditions and members of the staff of the Museum. Labels of mammals were from the University of Michigan and Marquette. Progress was made in cataloguing and labeling the various collections of birds which had been previously during the last three years. A few birds were also labeled and catalogued at the same time. In the course of working over the collection of the skulls of mammals and birds. The following table for those mammals given the numbers which should be used in their scientific names were written and included:

The year of the accession of the skulls of mammals is as follows:

		Number of skulls	Number of skulls	Number of skulls	Number of skulls
Mammals	of Anthropology	46	100, 800	2, 120	17, 611
Mammals	of Zoology	20	200, 000	2, 120	1, 000
Mammals	of Zoology	20	177, 000	1, 120	10, 000
Mammals	of Zoology	20	124, 000	1, 120	10, 000
Mammals	of Zoology	14	100, 000	1, 120	10, 000

#### ACCESSIONS

**ANTHROPOLOGY.** The total acquisitions received during the year by the Department of Anthropology amounted to 64. Of these 52 are by gift, 6 are the result of expeditions, 2 by purchase, and 4 by donation. These acquisitions were numerous parts of the following: a total of 6,171 objects, many of great value of great value.

The various acquisitions and their contents in the geographical order of the countries from which the material was received.

Continental America: The Office purchased the skull of an Eskimo girl from Greenland—a Central Eskimo with white and red

of colored glass beads, a pair of seal-skin breeches trimmed with red leather and decorated with designs cut out of colored leather strips, and two pairs of seal-skin boots with leather-appliqué designs and embroidered ornaments. This material was obtained by him when he was leader of the Crocker Land Expedition.

The collection received from the Rawson-MacMillan Subarctic Expedition, made by Commander Donald B. MacMillan in large part, is from the Greenland Eskimo with a smaller collection from the Labrador and Baffin Land Eskimo. The material from the Greenland Eskimo, chiefly of the northwest coast, contains many of the beautiful feather mats made by these people. A very large blanket of the type made for the royal family of Denmark, composed of varicolored skins of many sea-birds is especially notable. Another outstanding acquisition is a completely outfitted Greenland kayak, about 16 feet long, equipped with bone-tipped paddle, harpoon, throwing-stick, killing lance, seal-skin float, and bone rack for harpoon line. The prow, keel and cockpit of the boat are likewise made of bone. In addition to the above, the collection contains carved wooden models of natives in full costume, bone and steatite carvings of animals, models of kayaks showing their construction, models of snow-huts, clothing, utensils of daily life, and hunting equipment. The above are all made by Eskimo craftsmen and many of them are old and rare pieces. The Labrador Eskimo are represented by fur clothing, boots, basketry and utensils of daily life. Many of the Greenland and Labrador specimens are of interest, since they show the results of recent development of the people in their adoption of European ideas. The beautiful costumes of the Greenland Eskimo, with the intricately designed beadwork collars added to the native mode of dressing, are good examples of this modern tendency. Similarly, the skilful wood-carving of the Eskimo craftsmen shows a high degree of artistic merit and exactness in reproducing their models, both human and animal.

The purchase of some fifty odd specimens characteristic of the Winnebago Indians from Mr. Oliver La Mere completes the Museum collections for this tribe. Mr. La Mere is a highly intelligent Winnebago, who has himself written about his own people and has also rendered much useful assistance to ethnologists. The present collection, brought together by him during many years at Winnebago, Nebraska, is very complete and provided with good data. The most interesting feature is the war-bundle of the Thunder Clan with its varied contents. Wrapped in the old native matting are the objects

that were believed to give success in the hunt and warfare. Such leaders formerly, by leading, flying, and dancing, and the hunter assistants represent their success. A small bag made of animal or bird iron blade evensharing the left hand, decorated by the workmanship of the bundle, while a small bag and iron metal ornaments are powerful or ceremonial use. A buffalo iron ornament of "bargain" manufactured by buffalo horns and other animals hair, was formerly carried by the leader just before starting the hunt trail on the ground. An arrow, drill for fire-making, a decorated net, a decorative gold and silver were all used by ceremony, while the various traditional, iron and reptile skins and other "medicines" denote the strength and power seen in nature. This bundle was always carried on war expeditions, and once a year a feast was held in its honor. Several very interesting are the beaded ornaments, an old wooden boat bowl and iron-stacks employed in the traditional ceremonies. Various articles of clothing, buckskin and yak's hair, wooden utensils and bone-needles represent the daily life of the people. An interesting hat, carefully wrapped in square skin and red flannel, which was employed as a love fetish, completes the collection.

A very rare wooden mask with designs in colors from the Inupiat, two wooden masks from the Inupiat of Kotzebue, a pair of beaded moccasins, and a suit of deer-hair worn by men distinguished in war from the same tribe, were secured through exchange with Mr. M. G. Chandler.

Mrs. Frank K. Lyman of Marshfield, Wisconsin, presented an interesting wampum belt of the Inupiat, made of small sections of porcupine-quills which are arranged in five rows and strung on threads of native hemp with warp of beaded tin. The quill sections are partially dyed black and so arranged that they form designs with the undyed sections. It is known that this belt, which had presumably served as a war belt, was presented in 1880 to Maria Velder by her grandfather who had owned it for forty years. It must have been made about the middle of the eighteenth century.

A prehistoric Indian stone grave, consisting of eight plates with the character and proportions like petroglyphs and bowls found in it, from the Elbow Mounds near Cartersville, Georgia, was purchased from its discoverer, Professor Warren K. Moorehead of Andover, Massachusetts. It is proposed to exhibit this grave at a later date in the Hall of North American Anthropology.

A fine old red sash, decorated with geometric designs in black, from Mexico, is the gift of Mr. Homer E. Sargent.

Two shrunken heads, a male and a female, from the Jivaro, Ecuador, were presented by President Field. A collection of 122 prehistoric implements like stone axes, celts, flints, pot-sherds, and animal bones from Argentina and Bolivia was brought back by the First Captain Marshall Field Paleontological Expedition to Argentina and Bolivia.

A total of 1,023 objects was received from Professor A. L. Kroeber as the result of the Captain Marshall Field Second Archaeological Expedition to Peru. The collection consists of 353 pieces of pottery, 201 lots of pottery sherds as found in graves (many broken pieces will assemble into complete vessels), 16 clay objects like figurines, spindle-whorls, and panpipes, 4 metal pieces, 107 lots of skulls and skeletal remains, 153 textiles, 42 objects of wood, and many minor objects of stone, shell, and bone. The painted pottery is especially noteworthy, and will form the key collection for the classification of all Nazca pottery in other museums. A small ethnological collection consisting chiefly of clothing, spindles, slings, etc., was made by Professor Kroeber among the Indians of Huancayo, Province of Huancay, Peru.

An interesting collection from New Zealand of 139 prehistoric stone and bone implements like adzes, arrow-points, spear-points, drill-points, needles, fish-hooks, and flakes was obtained through exchange with the University Museum of Otago, New Zealand. Twenty-four mats of so-called New Zealand flax were ordered for the floor of the Maori Council-house in Hall F, and were obtained through the good offices of Mr. J. McDonald, Director of the Dominion Museum, Wellington, New Zealand.

A very instructive collection of fifty chipped stone implements from the extinct aborigines of Tasmania, Australia, was received in exchange with Mr. B. H. Whittle, a resident and collector of the island. On account of their primitive character, these implements, which were gathered on ancient camp sites, may be likened to the crudest productions of the earliest paleolithic stages. The Tasmanians did not haft their implements or weapons, and were ignorant of the hafted stone axe and the stone-tipped spear; they did not advance beyond the rudely chipped scraper and the primitive flaked knife. These are even devoid of symmetry, and are merely flakes of suitable material, usually chert or quartzite, and were simply held in the hand.

The Arts Club of Chicago presented the Museum with five remarkable primitive wood carvings, the figure of a bearded old man



from the French Congo. Was getting a couple dozen more together. A striped mouse, *Meriones*, of great interest, purchased by the well-known dealer of a long time ago, and two figures from New Guinea and New Zealand, *Meriones*. The second wooden figure of a male animal from the Forest Park, West Africa, was presented by Mrs. John Alden Carpenter.

The work of collecting by the French Malagasy Expedition to Madagascar has been highly successful with a total of about 1,700 specimens obtained up to September. The collections include all the ordinary forms of tools and utensils, with many rare objects and good collections of the specialties of all the tribes visited. Dr. Linton, leader of the expedition, wrote in September, "Although I hope at least to double the number of specimens before my work is finished, the collection as it now stands is by far the best Madagascar collection in existence. If the work should be terminated to-morrow, I should still feel that the expedition had been a success." About six hundred objects form a very complete collection from the Hova, the most civilized tribe of the island. The outstanding features are the textiles, especially the silk mantles (dambus), the stone lamp-stones (dambus), certain very rare wooden utensils no longer made, a complete collection of snuff-boxes showing all forms in ordinary use, a fairly complete set of wooden bowls, with full information on their use and significance, and a wooden slab which is probably one of the twelve original natural wood tablets of literature. The accounts about the town of Antananarivo proved to be by far the richest collecting field so far encountered. The natives called Antsileo, are still quite primitive and busy at many of their old industries, while the fact that they have possessed the same forms for several generations has led to a gradual accumulation of our things in cities and institutions. They lack the making, patterns, of the Hova, and generally all the material quantities by hand-to-hand commerce. The most striking is collecting from their stores and their strong houses, which give them something to sell and to give property. These were essentially costumes and a good collection of ornaments. The wooden vessels and wood articles are essentially valuable for these are no longer manufactured. The most striking pieces are an old carved bed, which is believed to be the very one made, and a very old carved wooden chest, which is further. The textiles are also fine, especially those made from wild silk and from cotton yarn. In the latter case old vegetable dyes have been employed, giving wonderful rich and beautiful colors. Some very fine old mats and baskets

were bought from Radaniel, the last of the Betsileo chiefs. A remarkable black jar, decorated with bold designs in applied strips of clay, and a cream-colored bowl, decorated with designs in red, represent the high points in their pottery making. Some jewelry was also obtained, including old silver beads of a peculiar type, massive silver neck-chains, and old coral and silver ear-rings. The material culture of the Sianaka on Lake Alaotra is much simpler than that of the Betsileo. Their artifacts are well made, but are limited to a few forms. They do some very clever carving of figures in the round. Weaving has been entirely abandoned, but they make the best mats in Madagascar. About 250 specimens were collected, the most important objects being a number of very fine mats, carved miniature paddles (formerly a badge of rank), a set of silver jewelry belonging to the family and worn only at weddings and funerals, and a fine collection of charms and sacred objects, including two sorcerer's staves. Dr. Linton reports he was lucky enough to get also a few examples of the ancient weaving in raffia and one piece of wild silk fabric different from anything seen by him elsewhere. Three small shoe-shaped jars, used by witches and medicine-men for brewing potions, are of especial interest inasmuch as they are identical with a type of pottery found in the ruins of the southwestern United States. The Sianaka collection is practically complete. A good collection of raffia cloths made by the Betsimisaraka was obtained, together with one of the crude treadle looms on which they are now woven. This type of loom is a rather recent innovation, the idea having been taken from the Arabs. The older type of loom is identical with the Hova one. Specimens of all the utensils in ordinary use were collected, also various musical instruments, a paddle, fish traps of two types, etc. From the Tsimahety, whose ancient culture is simple but is still almost intact, no weapons were obtained, for the natives feared that if such things were shown to the collector they would be seized by the government, but the collection is otherwise nearly complete. The most important native products are very strong, flexible baskets of raffia, and raffia cloths for lambas and skirts. The cloths are often mixed with cotton, either commercial or native, and are the finest seen so far. Lambas are usually in natural color, a light tan, with broad striped borders. They are traded as far as Tananarive and bring high prices. A black, graphite-coated pottery of good grade is made, and there are a few cleverly carved staves or canes. The mats of the Tsimahety are identical with those of the Sianaka, although usually somewhat coarser. They still make considerable use of charms, a fine collection of which was





DETAIL OF MODEL OF A BRICKYARD

Blue Island, Illinois

Constructed by H. W. Nichols and Valerie Legault. Gift of William Schlake

obtained, including some unique pieces. The most remarkable are the complete equipment of a native doctor, a warrior's charmer's box containing rare beads and silver cornucopias for charms, a large silver horn containing charms, a small figure into which sickness was drawn, and two charms for killing enemies. One of these, consisting of three charms wrapped up together and placed in a basket, is of the most dangerous type, and could not be kept in the owner's house, as the natives believed it would cause his death. A man who thought its owner was treating against him carried the basket where it was hidden on condition that he carry it off, and thus he did. Thus far, 1,066 objects have been received in the Museum from Madagascar.

The Chinese section was enriched by a number of valuable gifts. A unique burial clay figure representing a rhinoceros, coming down from the Wei period (A.D. 386-534) was presented by Mrs. Choung S. Howard of Chicago. A Chinese silk's cover and a brass elegantly decorated with designs derived from ancient bronze work, is the gift of Mr. Edward H. Ayer, Jr. from the Ming period (sixteenth century). A screen and lampared incense burner come from China, was presented by the Erie Club of Chicago through Mrs. John Alden Carpenter, its president. The screen, measuring 10 feet 4 inches in height and 7 feet 9 inches in width, is carved from pine and coated with a reddish gold lacquer somewhat mellowed by age. It consists of seven panels, all decorated with high reliefs of dragons soaring in clouds between the sea and the sky. The central panel depicts the imperial dragon with flaming pearl, while the other six dragons as his vassals are looking up to him. The same motive is repeated in spin work carving on the wooden base which the screen is surmounted. The back is finished with scrolls of floral designs. This screen is said to have formed the background for the imperial throne. A beautiful incense burner hanging and a pair of incense burner, tapers, were the gifts of the American Friends of China, Chicago. These two fabrics were formerly the property of the late Dr. Paul Kammak, U. S. Minister to China during the Wilson administration, who had received them from the Chinese Government in recognition of his distinguished service, and were donated to by Mrs. Nathan. The large hanging screen (7 feet by 4 feet) of imperial yellow silk, is adorned with a blue dragon on the back, surrounded by eight smaller dragons, all carved in gold thread and interspersed by clouds in blue, green, grey, and brown, while the background is formed by floral designs. The chair-covers & cushions with rows of small dragons (alternating with floral patterns) and a

remarkable for the beauty and harmony of its color scheme. Both tapestries are authentic and high-grade examples of the Kien-lung period (1736-95). An old Chinese silk fan painted with a landscape and inscribed with a poem was presented by Mr. S. H. Mori, Chicago. Mr. Linus Long of Chicago presented an ivory statuette of the Ming period (1368-1643), personifying the statesman and sage Tung-fang So. To the interest and generosity of Mrs. George T. Smith is due a remarkable collection of South Chinese beadwork consisting of 158 objects. These comprise money belts, pouches, spectacle-cases, baby caps, slippers, and various small pieces for dresses, all decorated with delicate, colored cut glass beads which are sewed onto a foundation of cloth or velvet, forming elaborate patterns of flowers, fruits, birds, animals, and human figures. It was not known heretofore that the Chinese had ever cultivated this art industry on so large a scale and with such great success.

Mr. Edward E. Ayer, with discriminating taste, added thirty-four interesting objects to his collection of pewter, twenty-seven of which are Chinese. A dish exquisitely shaped into the form of six graceful lotus-petals and exhumed from a grave, dates in the Tang period (A.D. 618-906), and is one of the most artistic pieces of the collection; the corrosion resulting in numerous earth-incrusted pits of the surface is an index of its burial underground for considerable time. A tea-jar of the eighteenth century is decorated with a scene in negative standing out from a background of punched designs. Two very fine trays of the Ming period (1368-1643) are inlaid with elaborate decorations in brass. To the same period belongs a wine-pot shaped as a carp rising above the waves which are engraved along the base. A covered dish is fitted all over with coconut shell skilfully carved in concentric zones with eight symbols of good luck, four phoenixes, dragons, carp, and lotuses in baskets. Four presentation tea-jars, Japanese workmanship of the eighteenth century, are decorated in gold, red, brown and green lacquer, the gold lacquer design spread over the covers and shoulders being suggestive of a gold brocade cloth tied with a tasseled red cord. Another jar of the same type is decorated all over with a composition of etched chrysanthemums. A hot-water pan of pewter made at Strasbourg in 1858 is a quaint survival of bygone days. A pewter medal or token issued by the Continental Congress in 1776 is presumably the only one of its kind. Its obverse shows the rising sun reflecting its rays upon a dial and accompanied by the device, "Mind your business. Continental Currency 1776." The reverse bears the legend, "American

Congress. We are also using a large quantity of illustrations, each of which is inscribed with the name of one of the numerous American States of the Union.

One of the most important possessions of the court is a very fine, preserved collection of Chinese articles, some. The Museum is indebted for this notable collection to the following contributors: Mrs. George T. Snow, Mrs. Jean J. Jordan, Mrs. Kate T. Buchanan, Mr. Martin Brown, Mr. Louis Rosenwald, Mr. Otto C. Isenring, and Mr. Martin C. Schwab. Many of these were well exhibited from groups at recent years and represent types beautiful in design, others come from famous private collections of Chinese articles and accessories from Wu Tschang, who was the most prominent collector and possessor of ancient jade, and K'ei Hui, descendant of a distinguished family of Szechuan. A very beautiful series of highly decorated ornaments of great artistic merit was discovered in 1911 together with an extraordinary set of articles known as Shouling or Human Precious. These are of unusual workmanship and exquisite quality and point to a particular period of lapidary work that has flourished in the district toward the middle of the last millennium B. C. Nearly two-thirds of the total objects constituting the collection have come from the earliest periods, the Shang and Chou dynasties (1784-247 B. C.), and consist of numerous ceremonial implements like daggers, swords, knives, axes, spear-heads, disks, rings, and talismans used in religious rites, particularly in the worship of the cosmic deities, Heaven and Earth. Several hundred small carvings in the shape of dragons, serpents, tigers, oxen, horses, birds, alligators, fishes and insects, which were interred with the dead and attached as ornaments to the grave-dolmen, are veritable gems and afford a rich store of information on primitive art, mythology, and religion. This valuable collection was brought together in China by Mr. A. W. Hall, a noted art expert who has been for many years in close contact with the foremost Chinese collectors.

In Publication 141, Dr. Lauer devoted a discussion to the pottery formerly transmitted from China and Japan to the Philippine Islands, and referred to the beautiful pottery of Ilocos and other Pacific Islands, as described in Japanese sources. It was not exactly known what this Ilocos pottery was. Mr. E. Hara, Director of the Commercial Museum of Nagoya, Japan, a lover and collector of ancient pottery, had eagerly studied this homograph and, when he visited this country recently, brought along from Japan two bits of

pottery definitely identified as Namban, which he presented to Field Museum as a mark of his appreciation. One of these, a small jug coated with a brown-black glaze, was obtained by him at Taiping, Formosa, and is believed to have been produced by some kiln in Kwang-tung or Fu-kien Province in southern China. The other piece, a slender jug with a brown iron glaze, was turned out in imitation of old Namban by Mizuno Juzan, a potter still living at Tokunabe near Nagoya, Japan.

Mr. William E. Hague of Chicago presented a very interesting statue five feet high, representing Yama, the god of death of Tibetan Lamaism. Partly of wood and in part of papier-maché, it is preserved in its original colors and is a striking example of expressive and vivid sculpture. Two Lamaist paintings are the gift of Mr. and Mrs. Fred L. Mandel, Chicago.

The collections received this year as the result of the Field Museum-Oxford University Joint Expedition to Kish consist of 315 objects, including many pottery jars, plain, glazed, and painted; many implements of stone, bone, shell, and bronze, and twenty-five skulls which were restored by Mr. Talbot Rice and Mr. L. H. Dudley Buxton, Lecturer in Physical Anthropology at the University of Oxford. The collections also include many finely wrought gold and carnelian beads, cylinder-seals of lapis lazuli, onyx, and carnelian, and fine clay statuettes of mythological figures and animals; among the last mentioned there is the bas-relief of a lion of very high artistic quality.

A small collection of paleolithic flint implements numbering approximately a hundred from quarries near Abbeville and Amiens on the Somme Gravels, France, was presented by Mr. Henry Field. These were collected and acquired by Professor Abbé Breuil and Mr. Field during an examination and study of these terraces. There are some typical Chellean *coups-de-poing* and a few excellent Levallois flakes in this lot. As these quarries are practically exhausted, collections from this area become increasingly valuable.

Thirty-five chalcolithic flint implements found at Kish, Mesopotamia, and a collection numbering approximately a hundred quartzite implements of the Chellean age from the Taivilla-Tapatanilla site which lies between Algeciras and Cadiz in Southern Spain, are likewise gifts of Mr. Henry Field. These were collected by Professor Breuil, Miss Dorothy Garrod, and Mr. Field during an expedition into the mountains to examine some of the painted caves and rock-shelters. The hardness of the material makes the results appear



made, but they nevertheless form an interesting reading matter. The finest specimen is a very large porcupine, collected by Professor Engel and Dr. (Pharmacist) by the help of a boat in Spain, and this therefore ranks as of unusual interest.

**HERBARIUM.**—More than 12,000 specimens, collected during 77 expeditions, were added to the collection of the Department of Botany during 1936, at over 2,000 miles from its type locality. Many of these were received in gifts, 1,984 by Mr. J. G. Smith, while 1,228 were secured for Museum purposes. The greater portion of these collections consists of herbarium specimens, economic material and additions to the exhibits numbering 253. The latter number does not include the collections of the Captain Marshall Field Brazilian Expedition of 1926, which have not yet been colligated.

The paper to be published this winter is a collection of 1,228 herbarium specimens, the collection of Dr. W. H. Moffet of Kansas, Illinois, called "The Botanical Expedition of the Chicago Expeditions." It bears numerous botanical specimens most liberally, the specimens given by Dr. Harper, with whom Dr. Moffet worked. The Museum, in connection with this splendid gift, a card index of the fungi of Sierra Leone, completed to 1935, which is not only bibliographical but gives also a description and often a photograph of each species. Mr. H. C. Bonke again contributed a large series of specimens, 746, which greatly enriched the Illinois herbarium and included also a number of plants from other states. At present the Museum is indebted mainly to Mr. Bonke for an active interest in the state flora and the interest of students is always at the height. The work in the field and in general is so greatly augmented. He presented also 173 specimens to be used for reference and a number of excellent photographs of native plants. Dr. W. E. Wheeler, Corvallis, Oregon, Alabama Museum of Natural History, University, Alabama, contributed by about 100 new herbarium specimens. He also presented two sets of slides & prints of 100 portraits, many of them of unusual scientific value & a welcome addition to the photographic album of the Department. A valuable collection of 101 specimens of Dalziel African plants had received from Dr. E. E. Shedd of the Chicago Herbarium, Illinois and the University of Chicago. Mr. W. C. Francis of Emory, Virginia, presented 100 specimens of plants collected from the west slope of Linnets. Fifty

J. R. Churchill of Dorchester, Massachusetts, kindly contributed 150 sheets, of northern New England species which are examples of all that an herbarium specimen should be. A gift of 127 Texas and Arizona specimens from the collector, Mr. G. Eifrig of River Forest, Illinois, also deserves special mention.

Further gifts during the year were 1 herbarium specimen, Mrs. R. Clarkson, Chicago; 4 herbarium specimens, Mr. C. Groneman, Elgin, Illinois; "silver leaves," Mr. J. A. Hynes, United States Appraisers' Office, Chicago; 1 specimen *Psoralea glandulosa*, Dr. G. Montero, Museo Nacional de Chile, Santiago; some specimens of Ephedra, Mr. L. W. Nuttall, Philipsburgh, Pennsylvania; reproduction of a mushroom, Mr. L. L. Pray, Chicago; 1 herbarium specimen, Dr. J. N. Rose, Washington, D. C.; 2 herbarium specimens, Professor R. Thaxter, Cambridge, Massachusetts; 4 herbarium specimens, Dr. Percy Wilson, New York Botanical Garden, New York City.

The cooperation of the Bureau of Plant Industry, United States Department of Agriculture has been of great importance in securing material for new exhibits of grains, and has resulted directly or indirectly in the following gifts: 23 varieties of corn grown by American Indian tribes, from O. H. Will & Company, Bismarck, North Dakota; 6 ears of Silver King corn from Mr. I. M. Holder, Laurens, Iowa; 6 ears of Hickory King corn from Mr. L. S. Mayer, State Experiment Station, Knoxville, Tennessee; 6 ears of Neal's Paymaster corn from W. H. Neal, Lebanon, Tennessee; 6 ears of Reid's Yellow Dent corn from Mr. R. Redfern, Yarmouth, Iowa; 7 ears of Oreole corn and 7 ears of Calhoun Red Cob corn from the State Agricultural Experiment Station, Baton Rouge, Louisiana; and 6 ears of White Kent corn from Mr. F. K. Crandall, State Agricultural Experiment Station, Kingston, Rhode Island.

A collection of heads of 37 varieties of wheat grown in the United States and corresponding packets of the grain have been received from the Bureau of Plant Industry. From the Bureau of Agricultural Economics have been obtained 11 trays illustrating the official grain standards of the United States. This constitutes a valuable acquisition. This exhibit, which has required a great deal of painstaking work to prepare, shows the criteria employed in grading grain (that is, the 5 classes and 17 subclasses, the factors of color and texture, the 7 damage types, the 10 types of foreign material); for oats, 10 types illustrating the color classification and grading factors. There are also included 9 classes of grain sorghums and the 3 classes and 7 grading factors for corn. Twenty heads and seed

samples of grain sorghum have been received from Mr. J. B. Sager, Jasper, Woodbury, Oklahoma. This represents a carefully selected exhibit of the most important grain sorghum. The United States Department of Agriculture sent 13 heads and seed samples of millets, thus completing and bringing up to date the exhibit of this grain with selected and well-preserved material.

Grain product gifts for the year include 30 samples representing stews in wheat milling and commercial flours and loaves from Red Star Milling Company, Wichita, Kansas; varieties of macaroni from Mr. M. J. Isaacs, Secretary, National Macaroni Manufacturing Association, Bradwood, Illinois; and a comprehensive exhibit illustrating the products of various kinds of flour presented by the Sixteen Flour Committee, Chicago.

The Pillsbury Flour Mill Company, Minneapolis, Minnesota, donated a miniature model of a vertical section of their mill, which is the largest flour mill in the world. It is of interest in that it shows the processes by which the wheat grain is broken up in flour-making.

Other accessories for the exhibit of plant food products—Hall 2—during the year include: onions and grapes from the Los Angeles Chamber of Commerce; wheat starch from Stein, Hall Manufacturing Company, Chicago; corn sugar from Corn Products Refining Company, Argo, Illinois; white mustard oil from Glidden Food Products Company, Chicago; soya bean oil from Mitsui & Company, Limited, New York City; 18 varieties of grain and seeds from Mr. H. W. Byerly, General Immigration Agent, Northern Pacific Railroad, St. Paul, Minnesota.

Some important material has been acquired for the wood collection. A section of a log of semi-dominant oak which was found buried 80 feet below the surface, during borings in the river-bed of the Mississippi, has been given by the Illinois Power & Light Corporation, Chicago, specimens of "Rakuda" wood (*Hura wrightii*) from Sarawak were donated by Mr. R. G. Kiser, Rakuda Wood Product Company, Pittsburgh, Pennsylvania. 17 panels of microscopy were given by the Micrology Association, Inc., New York City. These exceptionally fine pieces of wood are treated to display the grain and figure of various grades of micrology. A specimen of "live oak" was sent in by a member of the Museum, and a specimen of hybrid oak was given by Mr. C. E. Moore, Lebanon, Missouri.

Palm material has been increased by the following gifts: 11 species of palm fruits from Dr. B. E. Dahlgren, Acting Curator of Botany; 2 palm leaves from Garfield Park Conservatory, Chicago; 9 varieties of palm fruits and seeds from Professor S. J. Record, New Haven, Connecticut.

The accessions accredited to expeditions are as follows:

Dr. A. Weberbauer collected 546 specimens in southern Peru early in the year under the Captain Marshall Field Fund in continuation of the Peruvian botanical exploration work commenced in 1922. Further details regarding this and other accessions are given under the heading "Expeditions."

Dr. F. W. Pennell, Plant Curator, The Academy of Natural Sciences of Philadelphia, obtained 1,711 specimens under the Captain Marshall Field Fund, in Peru, Bolivia and Chile.

Mrs. Agnes Chase, Associate Agrostologist, United States Bureau of Plant Industry, Washington, D. C., collected 1,173 specimens of grasses of Brazil.

The Captain Marshall Field Brazilian Expedition contributed a large quantity of material not yet accessioned.

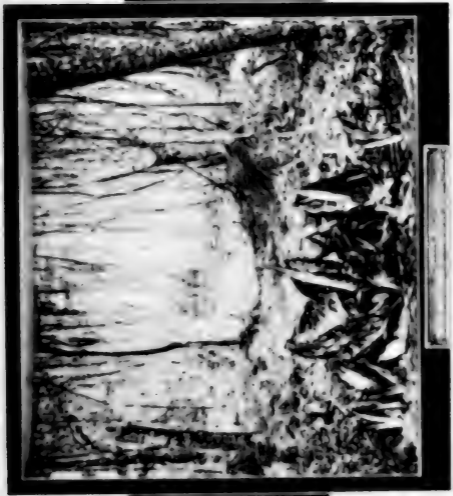
Mr. Weed, Assistant Curator of Fishes, secured 100 specimens of Greenland plants on the Rawson-MacMillan Subarctic Expedition.

It is possible to make special mention only of the larger or more important collections received in exchange during the year; for example, 500 rare or otherwise significant Newfoundland specimens from Frère Marie Victorin, University of Montreal, Canada; 500 very valuable sheets from the Muséum d'Histoire Naturelle de Paris; 566 specimens, constituting an important addition to the representation of European plants, from the National Museum of Wales, Cardiff; 167 interesting specimens of various regions from the United States National Museum; 200 Idaho plants, most desirably augmenting the collection from that state, as yet very imperfectly represented, from Dr. C. Epling, University of California, Southern Branch; 100 excellent examples of middle European flora from the Hungarian National Museum, Budapest; 100 desirable specimens from the Imperial Forestry Institute, Oxford University, England.

As usual the yearly purchases were of collections either significant because of the rarity of the plants, or their inadequate representation in the herbarium. Particular mention may be made of 600 sheets collected by Mr. José Steinbach in Bolivia, continuing his work in that country; 200 sheets from Dr. Oscar Burchard, Tenerife,

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Catary Islands the large porphyry of Lavasjos, 140000000000000 of these, passed from Mr. L. M. F. Hines of Maine, the Oregon granite from Dr. M. F. York, Salem, Ore., and from Uruguay, and to the Geological Survey. Mammals, as purchased from Mr. W. H. Dresser, of Washington, and from the Yule Mountains purchased in exchange from Mr. G. B. Smith, Portland, Maine, comprising a better series of the present collection of specimens in this group.

Crystals. Through the generous assistance of Mr. W. J. Chalcraft, six beautiful specimens of crystallized quartz were added to the natural collection. These comprise a specimen of rectangular weighing 1 penny, one of the finest known, a specimen in outline from the same local as much better preserved in the collection of John Smith, a regular dealer in crystals in diameter of half an inch and several feet, in addition, numerous specimens of new or recently described minerals. Other fine series of fossil corals, were 2 specimens of *serripurum* one polished from California, presented by Mr. William B. Fitch, geologist of Washington Territory, and by Mr. Charles Huggin, and from California and Missouri from Mr. George F. Oliver, and 30 specimens of corals and jaws of fish from the Journal National de Mineralogic Santiago, Juan J. Vera Alvarez gave 11 specimens of quartz and gneiss containing water from Oregon. A fine two feet quartz showing fossil traces probably of corals and algae, from the Litchfield collection of Orlino, New York, was presented to Mr. Hugh Green.

By exchange there were obtained from Mr. C. Weller a complete collection of the Fire-Clay, Ohio, specimens, weighing 1200 grams. There were two boxes of exchange from Mr. Perry Trumbull, three specimens of fossil cephalopods and two polychaeta from the Middle Triassic of Canada. From Mr. Alfred Meek ten specimens, many of them, *monobryon* from California, were acquired by exchange affording a valuable school and a comprehensive collection of the characteristic fossils of that period as they appear in Europe. Some fossiliferous species in brackets referred to the Museum collection, this series will be useful for comparing with American forms which may be identical. A fragment of the fossil shark, *Stratodon* received in exchange with Mr. G. B. Smith, is one of very few such specimens ever found and will probably serve to establish a new species of this rare genus.

The most important specimen acquired by purchase was that of an iron meteorite weighing 1200 pounds, found near Gardnars, Ariz.

zona. This was found about a hundred feet distant from the 3,300 pound mass obtained by the Museum in 1924 and presents characteristics which indicate that it belonged to the same fall. These two masses constitute the entire amount of the fall so far known, and its large total amount (4,800 lbs.) makes it a notable acquisition. Another specimen purchased for the meteoric collection was one weighing  $6\frac{1}{2}$  pounds, of the Queen's Mercy, Africa, fall, which took place April 30, 1925.

From expeditions some material has been received, although much that was collected during the year has not yet arrived. From the Third Asiatic Expedition, carried on in cooperation with the American Museum of Natural History, there was received a valuable collection of dinosaur eggs and fossil dinosaur and mammal skulls. Of these, six dinosaur eggs were in series in a matrix and one was of a larger species. There were also received from this Expedition a skull and a partial skeleton in matrix of the dinosaur Protoceratops. These remains were found in the vicinity of the dinosaur eggs. A fine skull and jaws of the large Asiatic titanother, *Dolichorhinus*, were also received from this Expedition. This species was much larger than the related American forms and certain features indicate that the Asiatic species was intermediate in character between those of the American Eocene and the more advanced ones of Oligocene age.

From the collections made by Assistant Curator Roy in eastern New York, 461 specimens were received. Of these 41 were invertebrate fossils of the Cambrian period, 321 were graptolites and other fossil invertebrates of Ordovician age, and 57 were fossil plants and remains of trees of Devonian origin. Among the latter were natural casts of two stumps of trunks 14 and 18 inches in diameter and many impressions of branches and rootlets of these and other trees.

From the Captain Marshall Field Brazilian Expedition, 106 specimens of gold, aluminum and manganese ores and specimens illustrating tropical weathering, all collected by Associate Curator Nichols, were received and, in addition, 136 specimens of agate, amethyst, the so-called water geodes, and varieties of granite from Uruguay.

From the Rawson-MacMillan Subarctic Expedition 579 specimens of Labrador and Greenland rocks were received. These included about 20 large specimens illustrating geological phenomena.

ZOOLOGY.—The zoological acquisitions were both valuable and quite numerous, the number of specimens accessioned being 14,697.



This number includes 2,543 mammals, 3,824 birds, 1,846 reptiles and amphibians, 3,475 fishes, 18 skeletons, 2,228 insects and 764 other invertebrates. Nearly three-fourths, that is about 10,517, of the specimens were obtained by various expeditions. Large collections prepared and shipped by expeditions still operating in Africa and South America have not yet been received.

Of the 39 mammals received by gift, the most noteworthy were the following: 6 Californian and 2 Canadian Woodrats, collected in the Yukon Territory, presented by Dr. W. A. Douglas; a Chipmunk, a Hesperomys from Sonora, Mexico, by Mr. Herbert Knicker; Mr. D. D. Stone presented 20 small rodents secured near Casa Grande, Arizona, and Mr. Frederick Russell Bennett presented a Woodchuck obtained in Italy. With the exception of these specimens, and five six mammals obtained by purchase, were from the West Indies, South America and Africa. From the various expeditions 2,504 mammals were obtained. The Javan, Siam, Congo, and Antarctic Expeditions secured 175 specimens, many of which were new to the collection. The larger species were as follows: Sumatran Red Deer, 4; Swamp Deer, 1; Axis Deer, 3; Hog Deer, 3; Sambar Deer, 1; Indian Blackbuck, 4; Thibet Stag, 4; Kashmir Stag, 4; Yunnan Antelope, 2; Guttered Gazelle, 2; Indian Gazelle, 3; Thibet Snow Deer, 11; Marsh Pine Squirrel, 8; Thibet Snow Squirrel, 2; Harems or Blue Squirrel, 1; Nigral or Indian Blue Squirrel, 4; Wild Deer, 1; Indian Deer, 2; Indian Hesperomys, 2; Long-tail Pig, 4; Long-tail Kangaroo Deer, 2; and 4 Hesperomys Snow Deer. A large collection, consisting mainly of 1,270 specimens, representing the work during 1923 of the Chinese Marshall Field Expedition in Szechuan, China, particularly in the eastern Yung and western Yungui. The most noteworthy specimens in this shipment were a new and previously unknown species of the genus that are now preserved for the Biological Survey, and a skin and skeleton of that strange and rare species, the Okapi, which possesses a large antelope but in some respects differs to the extent of the extent of the specimens obtained by the Third Asiatic Expedition, in which the Institution, in agreement with the American Museum of Natural History, the Museum received 384 mammals. The 34 studied mammals in this shipment were especially desirable in that a number of them will serve admirably in enlarging the Museum's series of mammals from China and Mongolia. The large mammals represented were: Sambar, 1; Gaur, 3; Wild Ass, 1; Sheep, 4; Deer, 4; Mountain, 3; Ross Deer, Long-tailed Antelope, 10; and Short-tailed Antelope, 11. In the new shipment

of specimens so far received from the Conover-Everard African Expedition were 82 mammals obtained in Tanganyika Territory. Among the desirable species contained in this collection are two specimens and an embryo of Abbott's Duiker, a diminutive antelope twenty-eight inches in height that is new to the collection. By means of the Captain Marshall Field Brazilian Expedition 362 mammals were received. This acquisition includes a good series of small rodents from the state of Rio de Janeiro and from Missiones; two species of the rare Mouse Opossums; a number of topotypes of Darwin's Uruguayan mammals; a Capybara, Marsh Deer and a fine Jaguar, collected by Mrs. Marshall Field; and an adult and a half grown Giant Anteater which will form a basis for a group of these odd animals. In Labrador and Greenland, the Rawson-MacMillan Subarctic Expedition obtained 52 mammals, among which were a number of small rodents, a Blue Fox and the skin and skeleton of a Walrus. On the coast of Washington, another Captain Marshall Field Expedition secured 5 Hair Seals and 11 Sea Lions, and in the Kaibab National Forest 7 specimens and accessories were obtained for a group of Mule Deer.

In the division of birds 8 specimens were received by exchange, 152 by gift, 1,941 by purchase, and 1,723 were obtained by expeditions. The most noteworthy species acquired by gift were: 4 Ducks from Illinois and Louisiana, from Mr. James M. MacKay; 14 American birds, from an anonymous donor; 2 Gray Partridges and 6 Red Grouse from England, which were collected and presented by Mr. W. J. Clegg; and a welcome donation of 83 birds of Labrador and Greenland from Mr. Rowe B. Metcalf. A crayon portrait of the noted ornithologist, Robert Ridgway, was an appropriate gift from the Ridgway Ornithological Club, Highland Park, Illinois. The acquisitions by purchase were exceptionally large and important. A collection of 1,482 birds from Argentina, a country from which the Museum formerly had only a limited number of species, was especially valuable, as was the purchase of 326 birds from Maranhão and Goyas, Brazil. Another purchase of 88 birds from Europe and Asia Minor was made in order to fill certain gaps in the collection. The ornithological results of the James Simpson-Roosevelt Asiatic Expedition were most gratifying, inasmuch as many rare specimens and numerous species new to the collection were among the 552 birds obtained in the little known countries of Kashmir and Turkestan. The 528 birds obtained in a surprisingly short time by the Captain Marshall Field Expedition to southern Brazil likewise con-

tained a number of extremely rare and desirable species. A continuation of the work of part of the same expedition resulted in the acquisition of 120 birds from Maraston, Argentina. In a shipment of specimens received from the Comoré-Evénard African Expedition, the Museum obtained 322 birds from Tanganyika Territory. In Labrador and Greenland, the Rawson-MacMillan Scientific Expedition secured 115 specimens of birds. A number of these birds were preserved in such a manner that they can readily be utilized for the exhibit of North American birds that is now being reinstalled.

A most noteworthy deposit in the Museum, of which need mention was made in the Report of the Director for 1916, was the Judge R. Magaw Hornet collection of bird eggs. This collection was begun in 1880 as a continuation of a small lot's accumulation. Since that time, as a result of more than forty years' active and diligent effort, it has grown to be the largest and most important private collection of eggs of North American birds in existence. Containing, as it does, 26,721 specimens, something over 400 completed series, and nearly 200 other partial series, it represents an expenditure of more than \$10,000 in money and a vast amount of time and effort. Many of the series are very full and complete, showing every variation of the eggs of the species. There are many full series of eggs of birds now wholly unobtainable, such as the Passenger Pigeon, Whapping Crane, and Trumpeter Swan—species either extinct or so nearly so as to make the securing of their eggs in series impossible. Other series contain fresh eggs, in size and shape, rose, etc. The work of a lifetime is the result of personal collecting in many places, exchange with the leading collectors, and purchases of from a few at a time to whole collections. It includes some of the best known and finest collections ever assembled, such as those of George Niles of Atlanta, Georgia; Philip W. Smith, Jr. of St. Louis, Missouri; W. Lee Chambers of Eagle Rock, California; J. W. Peckham of Iowa; Henry W. Hensy of Ridgeport, Connecticut; Howard B. Grant of Vermont; Francisson; F. H. Peabody of Blue Rapids, Kentucky; and others. The collection is now placed where it will be accessible to all scientists, and is under the immediate supervision of Mr. Dutton, who will continue his active interest and will add to it from time to time as opportunity offers. "Natural History," a publication of the American Museum of Natural History, New York, says that by acquiring this very notable collection, the Field Museum advances to the first rank in this particular field.

Except one lot of 38 specimens, all of the 256 reptiles and amphibians received by gift were examples of species of the United States. The largest acquisitions made in this manner are as follows: 79 specimens from Florida, donated by Dr. T. Van Hyning, Director of the Florida State Museum in Gainesville, Florida; 63 Wisconsin specimens from Mr. F. J. W. Schmidt; 19 from Louisiana from Mr. L. S. Frierson, Jr.; 15 from Indiana, collected and presented by Mr. O. Parks; a donation of 11 California specimens from Mr. A. G. Wells; and 38 from China, donated by Professor C. Ping in the University of Amoy. To render the Museum's series of North American reptiles and amphibians more complete, 233 specimens from Arkansas and Florida were purchased. By purchase, there was also acquired for the exhibit of snakes, a remarkably life-like reproduction of the Redbanded Garter Snake. By means of the several expeditions 1,348 reptiles and amphibians were obtained. Of this number 992 were collected by the Museum's expedition in Central Africa. A collection rich in species and comprising 232 specimens, among which is a series of the Paraguayan Crocodile, was made by the Captain Marshall Field Expedition in southern Brazil; and 70 desirable specimens were brought back from India and Eastern Turkestan by the James Simpson-Roosevelt Expedition.

The accessions in the division of fishes were eight in number and totaled 3,475 specimens, of which 22 were received by gift, 393 by exchange, and 3,060 by expeditions. The specimens acquired by gift were 3 game fish, namely, an Amberjack, a King Mackerel and a Barracuda, from Mr. A. T. Millet; and a fine series of aquarium fishes bred and donated by Mr. William W. Foust in Barnegat, New Jersey. By an exchange for about 100 duplicate mounted fishes, the Museum received 393 authoratively named specimens from southern South America. This acquisition will facilitate the naming of those specimens obtained by the Museum's expedition in southern Brazil. Among the 2,137 fishes collected by the Captain Marshall Field Brazilian Expedition were a number of desirable species. The most noteworthy specimens are a series of the South American Lungfish, which has long been a desideratum for the division; a wide variety of the intensely interesting armored and climbing catfishes; and a series of one of the fresh water rays of the Parana-Paraguay basin. The number of specimens received from the Rawson-MacMillan Subarctic Expedition totaled 642 specimens. These include a series of trout from Labrador and Greenland, a series of Sticklebacks from the lakes, streams and tidepools, and a number of fish skeletons from



permits. The party left for Nazca on July 20 with a Ford and truck, accompanied by three of the old workmen. The distance is 530 kilometers, which, on account of the nature of the road, is much more than that in miles. Dr. Tello's diggings at Paracas, where he recently discovered a new culture related to that of Nazca, were visited. Then the party crossed inland over the sand desert to Ica and Huayuri, and in the latter valley worked two days at an ancient town of mining-camp type. A stratification trench was cut through a refuse pile two and a half meters deep, an unusual depth in Peru. The remains proved to be uniformly "Late Ica," showing the camp to have been founded and abandoned shortly before the arrival of the Incas on the coast. The main undertaking of the expedition was a thorough archaeological survey of Nazca Valley, an area on the southern coast of Peru. The work here, including the journey, occupied the period from July 20 to October 15. A camp was established in a desert canyon, out of reach of malarial mosquitos, and about three miles from town. Excavations began July 31 at Ocongalla, in the open pampa or desert above the cultivated lands of the valley. The material proved to be very ancient, the bones being more decayed than any previously excavated in Peru, and cloth preserved only in traces. The expedition discovered, excavated, and carefully observed altogether one hundred and twenty graves which, plus material otherwise obtained, yielded an aggregate of a thousand objects. These objects proved to belong to seven distinguishable styles of pottery art. The textiles, structures, and other objects accompanying the pottery classify correspondingly. These seven styles are no local variants, but in the main represent successive periods of Nazca culture. All of them are prehistoric, and in fact, the last of the seven is that of the Incas, whom the Spaniards found in control when they discovered the country. The order of succession of the seven periods gradually became clear from indirect evidence, which is too intricate to review here, but which leaves no reasonable doubt. While a great many specimens of the fine Nazca pottery and textiles have been collected in Peru, and some of these have found their way into museums in different parts of the world, the objects of these separate styles or periods have never been distinguished, with the result that these collections could not be interpreted. The observations made by the expedition in the field made possible a definitive classification which will apply not only to the collection formed by Field Museum, but to all others. In other words, so far as the Nazca culture—one of the most important cultures of prehistoric Peru—is concerned, the Field Museum





UNUSUAL TWIN POTTERY JAR DECORATED WITH MYTHOLOGICAL MONSTERS

Excavated at Nasca, Peru, by A. L. Kroeber

Captain Marshall Field Second Archaeological Expedition to Peru, 1905



collection will be the standard or key collection for all others. The work of the expedition was greatly stimulated and materially helped in many ways by the presence on the land for a month of Dr. J. C. Tello as representative of the Peruvian Government, who joined his labors to the work of the expedition with the cooperative spirit of a true scientist. Owing to scrupulous insistence on sleeping in the open desert and on having clean water was not a daily necessity among a force ranging from six to sixteen persons, although malaria was rampant in the district and dysentery prevalent. The last part of October was utilized in packing and shipping the Naura collection. The month of November was devoted to a survey of the coast of northern Peru, from Trujillo northward. As soon as the valley of Trujillo was left behind, the country was found to be virgin soil. There has been plenty of looting by pottery hunters and collectors, but recent looting is practically absent. Cities and clusters of pyramids and other religious structures were found in abundance. This reconnaissance should serve as a basis for future work in this area, which will undoubtedly be highly productive. A collection of about two hundred good fern specimens was obtained and sent to the northern trip. This is now in Lima awaiting government inspection and shipment. Through patient and painstaking research Dr. Kroeber has succeeded in clearly establishing the chronological sequence of the ancient cultures of Peru to times prior to the Incas. It is now possible to outline a history of Peru for a thousand years and more before the discovery of America, and results like these make the two Museum expeditions to Peru stand out as distinct contributions to the advancement of science.

Excellent progress may be reported from the Captain Marshall Field Expedition to Madagascar under the leadership of Dr. Ralph Linton, Assistant Curator of Oceanic and Malayan ethnology. Dr. Linton sailed on December 16, 1925, from Marseille to Madagascar and arrived at Tananarive January 17, 1926. He went to Trianarive, capital of the island, two days later by the first train. Remaining there until April 7 through the worst of the rainy season, he proceeded south by motor bus to Antsirabe in the heart of the Hotteloo country. He left Antsirabe April 12, going farther south to Ambositra, where he remained until April 24. This region offered good opportunities for collecting, but he was forced to leave it in order to visit the north of the island during the comparatively short dry season, while work at Ambositra and farther south can be done even during the rains. Returning from Ambositra to Antsirabe,

he remained there until April 30 in order to benefit from the great weekly fair. From Antsirabe he returned to Tananarive, remaining there until May 18. On that date he went by train to Andreba, at the lower end of Lake Alaotra, and the next day by riksha to Imerimandroso at the northern end of the lake. This place he chose as his headquarters, making short trips until June 10, when he returned to Andreba. He then traveled by train to Ambaton-drazaka on the northeast coast, where an annual fair was being held. On June 13 he returned to Tamatave, and waited until July 10 for the east coast steamer "Imerina," which was one month and five days behind the scheduled date for its departure. Leaving Tamatave on July 10, he arrived at Maroantsetra in the Antongil Bay two days later, remaining there until July 21. During this time he completed his Betsimisaraka collections, which had been begun at Tamatave, and engaged bearers for the overland trip west. On July 26 he arrived at Mandritsara in the interior, having finished the first half of his journey across the island. The culture of the Tsimahety, the tribe about this locality, proved to be nearly the same as that of the Sianaka, among whom he had worked at Lake Alaotra, and therefore he curtailed his stay there, leaving on August 5. He arrived at Antsohihy, on the west coast on August 9. From there he took a cattle steamer to Majunga on August 13, arriving at the latter place two days later. In September he left Majunga for Maravoay up the Betsiboka River and Kandreo, wending his way into the wild Sakalava country. Later he plans to strike south, doing the southeast coast and reaching the west coast overland.

Of the numerous tribes inhabiting the island, the Hova in and about the capital, the Betsileo in the central south, the Sianaka on Lake Alaotra, the Betsimisaraka on the east coast, the Tsimahety and Coast Sakalava of the north were thoroughly studied. Some very valuable information was obtained from old men in the various villages of the Tsimahety in regard to their tribal origin, that dealing with the Vazimba or first inhabitants being the most important. According to them, the Vazimba were the direct ancestors of most of their tribe. They lived in caves or dugouts in the clay hills, cultivated rice and fought with the blow-gun and axe. This would indicate that their culture was of Malayan rather than African origin. Later people from across the western water, that is Africa, intruded and conquered them, introducing the bow and arrow and probably cattle. An excellent description of the old bow and arrow was

obtained, this is of considerable importance as the general idea has been developed in Madagascar and throughout the East Indies. A good deal of information was also gathered on primary forest, culture, social organization, as well as religious beliefs and customs. The natives denied true human worship, which, if true, would differentiate them from the other Malagasy. A great deal of evidence is being gathered dealing with the subject of the harraka or Laka. A native's account with reference to possibility of mummies was obtained. A mummy, Dr. Linton's best informant was suspected of having died when he was laid up with a sharp attack of fever, and the poor wretch was killed by the other natives, as they were afraid of trouble with the French Government. Some more specimens of *Spalangia* were obtained, as well as the *Spalangia* specimens. It was estimated that the insects used in the study were all native, and were common and to be used with caution. The list of specimens has been reported for Madagascar, for the *Spalangia* of a small species. At Majunga, which is quite a large civilized town, with an influx of Arab, Hindu, and European population and a well established port, Dr. Linton has been hindered somewhat in operations. A serious epidemic of plague had paralyzed all business, and most of the natives were busy in quest of money. Under these circumstances he obtained many things which otherwise are not had. He secured jewelry and six raffia prayer bags made by Mitamantelant Sakalava for their own use, which, at ordinary times they will not sell to Christians, and which most of the natives there have never even seen. Dr. Linton estimates that this jewelry is perhaps the most important collection obtained on the expedition. The Sakalava are a rich tribe, and until the beginning of the war it was their practice to have gold and silver money that came into their hands wrought into various forms. Since the drop in the value of the franc the Hindus have been buying the up for the sake of the metal, and in another couple of years it will be found all gone. Because of the plague, the natives sold many pieces that were treasured possessions. Among other things he secured two bracelets of big gold beads, two small gold necklaces of approximate 100 beads each, and one chain of gold and silver, quantities of ivory cut pieces of all work, many beautifully worked, a silver bowl, and a large number of trinkets, chains, bracelets and articles showing on the style of use. The natives also make very artistic painted pottery, a good collection of which was obtained. An account of the Madagascar collections so far as they have been required by the Museum is given under the heading "Accessions." Dr. Linton reports that the new collection

tion gathered by him points to some rather startling conclusions, and evidence is piling up that the Malay element was the first to occupy the island, although it has been universally believed that the aborigines were Negroes.

The Field Museum-Oxford University Joint Expedition has now been in its fourth consecutive year at the vast ruins of ancient Kish, first capital of the earliest known civilization of Western Asia. After completing the great palace of the plano-convex bricks in 1925, the more serious task of excavating the enormous group of mounds in central Kish was commenced. Two stage towers of the early Sumerian period and at least three temples lie beneath the great range of hills now known to the Arabs as Ingharra, and under the name Harsagkalama to the ancient Babylonians. Operations at the larger of these towers or ziggurats were started with a force of a hundred and fifty men early in the season. The temples lie west and north of this tower. One of them was partially refaced in the age of Sargon (2750 B.C.) with better brickwork than the virginal, sun-dried brick of the Sumerian structure. Nothing seems to have been done to preserve this vast pile of solid brickwork, whose proportions have been found to be larger than any other similar structure in Babylonia excepting the "Tower of Babylon." Its enormous dimensions can only be estimated, but the length of the lower buttressed wall must approach 280 feet. Interesting burials were found near this wall; from one of them were recovered a fine stone mortar and pestle, a stone bowl containing perfectly preserved skeletons of two small fishes, and other objects. In the debris near the wall was found an elegant, tall censer stand made of baked clay, 27 inches high, decorated with incised triangles. It has been restored from innumerable fragments by Mr. Ernest Mackay. Another building which was brought to light this year is a temple of Nebuchadnezzar, with walls standing 18 feet high. It is one of the best preserved in Mesopotamia. There is another large building of the period of Hammurabi (2100 B.C.) beneath it, and there are possibly earlier buildings at a still lower level. In the debris of the massive temple mound northwest of the stage tower was discovered a sculptured torso with feet and pedestal broken away and the head unfortunately lost. The statue is draped with a long embroidered mantle hung from the left shoulder and looped over the left arm, as it appears on the classical Sumerian statues of Gudea at Lagash. The right hand is folded over the left wrist—a pose unlike that of the previously known Sumerian custom of clasping the right hand with the left. On the

right shoulder is engraved an inscription in seven lines, the signs being made in strictly linear script which points to the pre-Sargonic period and to the age of the last kingdom of Kish in which Ur-Illushu (about 2550 B.C.) was the most famous ruler, while the style of the costume indicates a later period. At Jemdet Nasr, 15 miles northwest of Kish, one of the earliest known sites of Sumerian civilization was discovered. It was completely abandoned after a great conflagration before 3000 B.C., and was never re-occupied. Here, too, are distributed through five millenniums, the elegant mesolithic and post-mesolithic ware of the early Sumerian people. This technique of painting pottery was completely lost in the advanced stages of Sumero-Babylonian culture. The geometrical abstract designs are usually laid upon a buff yellow base, with a deep lustrous black and bright red paint. Many pieces are decorated with a honey-comb design in black and red, common on pottery found at Susa. It is difficult to understand why the Sumerians, and the Babylonians who succeeded them, either lost or abandoned this joyful art. Professor Langdon concludes from these discoveries that the Sumerian occupation of central Mesopotamia was long and unbroken (with a few interruptions) and that the Sumerians pushed back their civilization from the south-eastward. With the prehistoric pottery at Jemdet Nasr were found clay tablets inscribed in an extremely archaic script, occasionally reverting to the pictographic stage. These inscriptions afford a clue for dating the remains recovered from the site before the year 3100 B.C. Another important contribution to the date when this city was abandoned is supplied by the seal found with the tablets. Many of these have the very primitive form of figures engraved with simple designs of the archaic period. The subjects of the seals are small stone cylinders, hemispherical and circular engraved with early Sumerian designs. Several of the pictographic tablets bear impressions of animal seals, and are the earliest sealed documents ever discovered. The excavation of the mound at Jemdet Nasr showed that it belonged entirely to one period (about 4000-3500 B.C.) and a very large discovery there proved to be bull, not of the characteristic pre-concave horned variety, thought to be the earliest in date in Babylonia, but of a well-made rectangular horn, differing in size and shape from the later rectangular horn, which carried the plain convex horn. It is thought, therefore, that the latter, an obviously inferior type, must have been introduced by a race of invaders, and must have entirely superseded the earlier form in northern and western Mesopotamia, as there is no evidence that the two types were ever in use at the same time. The season's work was closed at the end of March.

**BOTANY.**—The Captain Marshall Field Botanical Exploration in Peru, begun in 1922, was continued during January, February and March of the year under review, in the Departments of Ayacucho and Huancavelica by Dr. A. Weberbauer. The season proved very unfavorable, however, for collecting, as the rainy period lasted longer than usual and trails were so badly washed out that in most cases they were impassable. Under these circumstances the collector had to confine his work largely to the more desert areas, where, even in favorable years, the vegetation is very sparse. Nevertheless he secured 135 numbers, mostly in duplicates of four each, some of which, when studied, will probably prove to be new to science. Many others represent species, either imperfectly known or collected but once before and hitherto unrepresented in any herbarium in this country.

The trip of Dr. F. W. Pennell, Plant Curator of The Academy of Natural Sciences of Philadelphia, to Chile, Peru and Bolivia, sponsored by the Academy, the New York Botanical Garden, Gray Herbarium and Field Museum, added 1,711 specimens to the herbarium. The majority of these are from Peru and constitute an invaluable addition to the Museum's collection of Peruvian plants, now the largest and most important in the United States.

The Botanical Expedition of Mrs. Agnes Chase, Associate Agrostologist, United States Bureau of Plant Industry, to Brazil, aided by the Captain Marshall Field Fund, conducted expressly for the field-study and collection of tropical grasses, yielded 1,173 specimens of this difficult group of plants, upon which Mrs. Chase is an authority.

An interesting collection of 100 well-prepared specimens of Greenland plants was made by Mr. A. C. Weed, Assistant Curator of Fishes, on the Rawson-MacMillan Subarctic Expedition.

The participation of the Department in the Captain Marshall Field Brazilian Expedition of 1926 resulted in a large quantity of botanical material being secured. Since the Department is not prepared to enter upon a course of general collecting in Brazil, the Acting Curator, Dr. B. E. Dahlgren, and the two assistants who accompanied the expedition, viz. Messrs. J. R. Millar and George Petersen, directed their efforts to certain specific ends, that is, to increasing the palm collection, the economic collections, and exhibits of the Department by specimens and photographs. They also particularly aimed at obtaining material and studies of plants to be reproduced for the Hall of Plant Life in the Museum. The famous Botanical Garden of

Eliz de Jesus got the largest amount of the very hardest apple material of value to the Museum, in fact more than could be adequately studied and preserved in the time allotted to that expedition. Consequently a projected journey to Porto Rico & Guadalupe was postponed till another year. The botanical collection of Porto Rico particularly rich in palms, many of genus *Acrotylax*, being the only of some of the Brazilian species of the tree *A. lugens* Houtt. van Spreng. Director of the Garden and author of the well-known *Portus Plurimum Brasiliensium*. One of the most interesting collections of specimens exists, the specimens derived from some of his plants are of special importance. Adequate collections were made of some species and general and detailed representation in the Museum herbarium, and full advantage was also taken of the material of many non-Brazilian genera in the Garden. The young thymopora unexpectedly limited to a complete manner of fruit of one of the tree fern *Polypodium Martianum* Houtt. of the first order, of which there are several fine specimens in the Garden. The tree cluster, weighing in its fresh state fully 100 pounds and measuring 8 or 9 feet in length, is now in the Museum. With its thousands of handsome gray fruits it will furnish an unusual botanical exhibit. The perfect preservation of this and the other specimens, required the construction of a drying oven in which a fire was maintained throughout the stay. The oven was built of wood, lined in part with tin and asbestos paper and heated by two or sometimes three kerosene vapor stoves. An iron plate laid on top of the stove served to distribute the heat, and a wire screen placed a foot above the hot plate divided the drying compartment above from the source of heat below, also serving to prevent inflammable debris or dried specimens from accidental contact with the hot plate.

A large collection of fruits and seeds were also secured. A quantity of these were sterilized with "cupillin" and sent through the Plant Inspection Bureau of the Federal Horticultural Board to the Garfield Park Conservatory, Chicago. This was done with the hope of ensuring the collection of living plants in the conservatory, which is not only the most important in Chicago but one of the finest in the United States. A collection was also made of the many *Cycas* in the Garden.

Among the various plants of which material was secured for representation in the exhibits in the Hall of Plant Life were the *Canava*, the *Indochinensis* *Por de Quermans*, "Lemon Flower" of Brazil, a handsome *Sarcocolla* (Choumou), *Urena* Pigeon, etc.

The Museum wishes to record its indebtedness to Dr. Pacheco Leão, the Director of the Jardim Botânico of Rio de Janeiro, and his staff for innumerable courtesies and assistance provided, and also to his Excellence, Dr. du Pin e Almeida, Minister of Agriculture. Through the courtesy and interest of the latter, the Museum secured a series of scientific publications of the various bureaus and institutions of the Brazilian Ministerio d'Agricultura, Industria e Comercio.

GEOLOGY.—Four expeditions made collections for the Department of Geology. Of these, two worked in South America, one covered some Arctic localities, and the fourth operated in the eastern part of the United States. The work in South America, performed by two Captain Marshall Field Expeditions, was conducted by Associate Curator Nichols and Associate Curator of Paleontology Riggs.

Associate Curator Nichols left Chicago early in June with the Captain Marshall Field Brazilian Expedition. After reaching Rio de Janeiro, he separated from the main body of the expedition. He then engaged in collecting geological material in Brazil, Uruguay, Chile and Bolivia until his return to the Museum the last week in December. Several hundred specimens, covering many mineral resources of South America were collected, as well as many choice minerals. In addition, 660 negatives were made, twenty-three of which introduce a new feature in depicting natural colors. In Brazil, advantage was taken of favorable conditions to make studies of the origin of laterite and of the formation of aluminum and iron ores. Observations on the geological effect of the rising of ground waters in the semi-arid regions of Brazil and in the extremely arid Atacama Desert were made, and the conclusions promise to be of scientific value.

Visits were made to some of the principal gold, manganese and iron ore districts of Minas Geraes, Brazil. The chief studies and collections were made in the gold and manganese mines. Large deposits of aluminum ores were found under conditions exceptionally favorable for the study of the origin of such ores and of the nature and origin of laterite. Certain kinds of iron ore were also studied under unusually favorable conditions. Much light was thrown on some other geological phenomena of obscure nature. The next objective was the agate fields of Uruguay, which, although they supply most of the agate for the world's markets, seem to be little known. Several days were spent at Montevideo collecting





*Salvia rosmarinifolia* L. (Lamiaceae)  
Folia, Ramulae et Fructus. Magnification 10x.

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information, and a number of valuable specimens were obtained there through the courtesy of Mr. J. G. de la Cruz, Director of the Instituto de Geología y Paleontología, and Sr. José de la Cruz. The agate beds, which are in the eastern part of the range, seemed to be less accessible than had been anticipated and the accurate information about them or their exact location could be secured. Work was also much hampered by the constant rains of an abnormal winter.

At Salto reached by rail from Montevideo, it was found that the agate beds of importance were not farther north, as known. At the latter place it was learned that the important agate beds were in the Cañon de la Cruz, nearly sixty miles away. They were finally reached by automobile over very poor roads, and extensive and collected were made. From this point, the Cañon de la Cruz produced large quantities of amethyst of gem quality and numerous specimens of this were collected. Studies in the field showed that agate in its original matrix did not exist, but the general nature of the primary deposit, from which it was derived, was established.

Upon returning to Montevideo, it was found that crossing the Andes by the Trans-Andean Railroad was impossible in account of the heavy snowfall of the severe winter, the snow being very fast deep in places. Fortunately the opportunity was given to work on more local work in Uruguay. Important stone quarries were found which large quantities of stone are exported were visited. At the granite quarries of La Paz, Uruguay, besides collecting, critical studies were made of the large striated boulder from which Agassiz is reported to have inferred a glaciation of Uruguay. An expedition to the large granite and porphyry quarries of Pirópolis yielded specimens of unusual types of calcareous tuff.

Communications with Chile by rail being finally established, the border town nearest was reached. Following there visited a number of interesting specimens of stone, including particularly the large porphyry quarries and other work. After leaving the border town, very little was spent in Santiago collecting since an extensive preliminary and secondary acquisition of almost everything desired was made to be obtained only from old collections.

Passage was then taken from Valparaiso to Copiapó, whence the iron mountain of Tofu, Chile, was reached. After a few days collecting at Tofu and on the old copper mining lands of La Huayra, the rugged gorges at Pirópolis were reached. Here collections were made which included fossils as well as the usual ores and

minerals. Potrerillos is well within the Atacama desert and from here until Bolivia was reached, full advantage was taken of the opportunity to study desert conditions and to secure specimens illustrating them. From Potrerillos to Chuquicamata the journey was by railroad. At Chuquicamata, where the largest known deposit of copper ore in the world is located, ample collections were made of the brightly colored, unique ores of the mine and a number of the rare minerals associated with them. Trips were made from here into the desert which, at this place, is unusually dry. Specimens collected included excellent examples of desert varnish, sand-blasted pebbles, salt incrustations and other desert features obtainable in equal perfection in but few places.

An expedition to the vicinity of the Indian village of Chiu-Chiu permitted studies to be made of the ruins of two pre-conquest Inca villages, and collections were made at an Inca pre-Spanish burial place. Also, photographs were taken of a series of pictographs on the walls of a canyon near the Indian village of Quebrada. At Chuquicamata a valuable series of Inca material from the burial place at Chiu-Chiu was received by gift from Mr. Herman Eggers.

On a side trip to the seashore at Tocopilla, some copper ores and other specimens were secured, as well as a few archaeological specimens from a large kitchen-midden. The nitrate establishments of the Atacama desert are nearly all shut down, but a visit was paid to the new Guggenheim nitrate plant at Coya Norte, which was preparing to produce nitrates and iodine by a new process on a very large scale. The specimens secured here were hermetically sealed in tin and it is hoped that they will be thus sufficiently protected from dampness to arrive in good condition. A few plates for color photography were secured, and as many color photographs as the number of plates obtainable permitted were taken here and later in Bolivia. It is expected that these will serve as guides to the colorist in preparing lantern slides of desert scenery.

This completed the work in Chile, and on November 4 Mr. Nichols, accompanied by Mr. Eggers as interpreter and guide, left by rail for Oruro, Bolivia, via Antofagasta. On the way, sulphur was collected at a number of places where it was being mined from volcanos, some of which are not entirely extinct. Borax from the borax lake at Cebollar and fossils from Patacamaya were also collected. At Oruro the two largest silver-tin mines of the district were visited. The expedition then left for the Caracolles tin mines on the east slope of the Andes, travelling by rail and automobile. In Cara-

valley tin ores and minerals were collected and some very fine cassiterite crystals from Atosha (which was not visited) were obtained.

In company with the manager of Caracoles, the ancient silver mining city of Potosí was visited. Here it was learned that this, the largest deposit of silver ore ever found, is almost exhausted as far as silver is concerned, although it now yields important quantities of tin.

The American tin dredge and mill at Arostita, working on stream tin, was visited and collections made there. The expedition then returned to Caracoles and was seen again in Oruro, where collections of ores and other minerals from the Potosí province in Cochabamba were secured. After packing and forwarding these specimens, Associate Curator Nathan returned home by way of La Paz, La Paz, Timpana, and Mollendo, Peru.

The work of the Capt. Manuel José Pichayocachi Expedition to Argentina, which had been suggested in 1924, was finished during the year. Early in April, Associate Curator Higinio accompanied by Robert C. Fisher of the Museum staff, sailed for Comodoro Rivadavia. After making the necessary arrangements with the Argentine officials in Buenos Aires, the party proceeded to their destination in the Province of Tucumán. The first collections were made in the vicinity of San Juan, where transition forms from the Miocene to Santa Cruz to the Pliocene were found. A variety of mollusks, members of the physadont and gemmellid families, nautilus-like nautilus, large nautilus and ammonites were found, and about a dozen specimens were collected. Having exhausted this locality, the collections were stored and the party passed westward to the locality of the Rio Corral Quemado. Here was discovered an extensive series of Pliocene formations, consisting of fine-bedded sand a layer more fertile than the last. No previous fossil collecting has been done in this valley. Through the courtesy of General Chaves a boat camp was established on the Estancia and collecting proceeded in the surrounding hills until late in November, when the commencement of the rainy season put an end to the work. Following here is a thick continuous and extensive series through a formation about three and four in thickness, crossed by a series of drift, successively and various. From these specimens were obtained in limited, and most of the fossil mollusks had to be transported on mule-back or by improvised cable strays. Lumber for the construction of packing cases was sawed to hand from drift logs. Approximately five tons of specimens were secured. The collection was completed in the field

by a representative of the Argentine National Commission, and three specimens of fossil mammals were set aside for the Argentine Government. Altogether, there were collected in this region, 181 specimens of fossil mammals, 5 of fossil birds and 2 of fossil turtles. Among the fossil mammals there were secured a mountable skeleton of the large glyptodont, *Doedicurus*, a skull and half skeleton of *Tyotherium*, and a skeleton of the ground sloth, *Pronototherium*. The latter was an animal about the size of a black bear. The acquisition of this specimen will give to the Museum the first mounted skeleton of this animal. Besides fossils, a number of recent mammals, reptiles and plants were collected by the party, and 300 negatives illustrating technical and popular phases of the work were made.

The collection was conveyed over mountain and desert trails to the nearest shipping point and thence to Buenos Aires where it will be ready for export as soon as released by the customs authorities. The expedition then transferred its work to the Pampean Formation on the southern coast of the Province of Buenos Aires.

From the Rawson-MacMillan Subarctic Expedition a large number of specimens of rocks and minerals of the regions visited and many geological photographs were obtained. Dr. James H. C. Martens, the geologist of the Expedition, was assigned to the auxiliary schooner *Sachem*. Wherever a landfall was made, he secured representative rocks and minerals. Some of the localities visited, especially in Labrador, have never been previously reported on by geologists, hence all the material obtained there was new to science. As far as possible, large specimens, suitable for Museum display were obtained. These chiefly illustrated rock structures and such geological phenomena as dikes, veins, folds and ripplemarks. Recording in detail the localities visited and specimens secured, the results were as follows:

At two localities in Maine sets of specimens representing the principal formations outcropping were collected. The most complete and interesting of these were from the vicinity of Bar Harbor.

In Nova Scotia, while little time was available for collecting, some good slabs of ripple-marked sandstone were obtained from Sydney, a specimen of conglomerate from near Baddeck, gypsum from the white cliffs at Big Harbor and glaciated pebbles from St. Peter.

Near Curling, in the Bay of Islands, Newfoundland, a little more than a day was spent and specimens were collected illustrating the development of rock cleavage and jointing, the formation of veins,

and some showing the types of materials which have been mined at the slate, limestone and quartzite quarries of the region.

Many localities in Labrador were visited between Battle Harbor on the south and Saglek Bay on the north. With the exception of some loose sands and gravels on the surface, all of the rocks examined in this area were found to be very ancient and to contain no fossils.

From these localities were collected large specimens of several varieties of gneiss which show jointing, foliation, banding and folding. Trap dikes were found at nearly every harbor, and specimens were selected to show columnar and irregular jointing and the increase in size of the mineral grains from the margin of the dike toward the center. Some of the dike specimens are of interest in showing the whole width of a dike and both contacts.

Some mineral specimens were also collected in Labrador. These included stauropse and labradorite and hypersthene from the well-known locality of Nain, serpentine and actinolite from Hopedale, and albite and potash feldspar from the vicinity of Battle Harbor.

Several localities were visited in Greenland between Sukkertoppen and Godthaab. The rocks were found to resemble those of Labrador, being mostly gneisses with trap dikes. In South Strømfjord a locality was visited which had long been known to the Eskimos. It yielded specimens of the soapstone such as is used by them for stores of fat. Specimens of talc and asbestos were also obtained.

On Disco Island specimens were collected from the Tertiary volcanic rocks which occur there. Most of them contain vesicles in cavities. A gneiss on this island was examined close at hand, and a specimen collected from the eroded surface which had very recently been cut here by the melting ice. Photographs were taken of small glaciers along South Strømfjord and Søndestrom Island, the moraine deposits showing the recent melting back of these glaciers. A few small specimens of the well-known native iron of Disco Island were obtained from the Eskimos, the most satisfactory specimen presenting any study of the deposits.

Two specimens of sand obtained from Hvostøng showed the effects of melting by waves, the sand being separated into a heavy portion, consisting largely of garnet and a light one which is nearly all quartz and feldspar. At Inukjuv Island a short stay and very unfavorable weather prevented collecting anything more than some pieces of banded gneiss which seemed to be the principal rock on Brevoort Island.

The total number of geological specimens obtained was 579, and the number of geological photographs made was 181. The photographs illustrate chiefly such features as forms of icebergs, glaciers, glaciated surfaces, wave-erosion, atmospheric weathering and bed rock geology.

Collecting of fossil plants and invertebrates was carried on by Assistant Curator Roy in the eastern part of the state of New York for two months during the summer. Especial attention was paid to the region about Gilboa, where, in connection with the construction of a large dam, unusual opportunities for procuring desirable specimens were afforded. The most important material obtained was the remains of the earliest known trees. These trees (*Eospermatopteris*) were related to seed-bearing ferns and grew to a large size. Stumps of trunks 14 to 18 inches in diameter were secured by Mr. Roy, as well as many specimens of rootlets, seeds, pinnules and branches. Specimens were also obtained of an early form related to the modern lepidodendrids or club mosses. These also grew at that time to the size of trees. The specimens secured included the remains of portions of trunks, seeds and branches. Mr. Hugh Nawn, the contractor operating at the locality, gave generous assistance toward securing desirable specimens. Neighboring localities, for example, Ryesdorf Hill, Troy, Kenwood, Glenmont, Clarkesville, Stuyvesant, Schodak Landing, Greenfield, Hoyt's Quarry, Middlegrove, Rock Fall City, Snake Hill and Granville yielded specimens of invertebrate fossils of earlier periods, in addition to other valuable material. At Granville, important specimens were obtained in the form of remains of the earliest known Discomedusans (Jelly-fishes). These specimens, which occur only in this locality, are regarded as the compressed bodies of lobed jelly-fishes, the lobes varying in number from 4 to 7. They occur in rocks of Middle Cambrian age and are thus among the earliest forms of life known. Four excellent specimens were obtained through the kind assistance of Mr. Gomer B. Williams. Other specimens of the Cambrian age procured included some of the large fossil sponge *Cryptozoon*, a number of trilobites and various brachiopods and mollusks. From the Ordovician shales at Glenmont, large numbers of well-preserved graptolites were collected. Other localities afforded Ordovician trilobites.

The Museum artist, Mr. C. A. Corwin, spent eight days at Meteor Crater, Arizona, making color and topographical studies of that peculiar area. As is well known, this is a crater-like depression in an Arizona plain, where several hundred meteorites, all belonging



to one fall, have been found. It is supposed that the crater, a mile in diameter and 600 feet deep, was made by the impact of a very large meteorite belonging to this fall. Six studies, each 20 x 30 inches in size, were made by Mr. Corwin, showing contrasted portions of the crater. It is intended to use these studies in an enlarged form to make a representative picture of the area. In addition the Farmer collected 100 special specimens of the volcanic minerals characteristic of the area. These included the special "stone line" found in the crater, specimens of the wall rock, and other minerals. Twelve photographs of the formations were also made by him. The photo of that of a mass of the lavas, numerous pebbles (approximately of Navajo Arizona size) washed by the gullies during the summer, and fall details obtained regarding the construction of the bed. Photographs of the above of 100 were taken and the materials shipped to the Museum.

**Excursion.**—During the year an excursion was made to the field study of the mammals of the Department of Zoology and two other geological expeditions, in the collecting of biological specimens. The purpose is to determine specimens of all the species of animals which the western United States contributes today. Animals including Colorado, Colorado River, Oregon, California, Arizona, Idaho, New Mexico, Texas, Territory and the vicinity of the eastern base of the Rocky Mountains. The results of the expeditions were both most satisfactory, and there is every indication that those still in the field will identify by the means of adding new and rare species to the Museum's collection.

One of the important expeditions of the year was the summer Mexican Field Brazilian Expedition. The zoological portion of this expedition consisted of Mr. George B. Cherris as leader, Mr. Marshall Form, Mrs. Grace Thompson Seton, Mr. Currier, and Messrs. Earl F. Smith and Colin C. Searson of the Museum staff. Leaving New York on June 18, 1926, the party arrived at Rio de Janeiro July 5. The first excursion was to the Fazenda Prata, near Thomazopolis, State of Rio de Janeiro, on the head of the Organ Mountains. The vicinity of this camp had only been visited and examined the and its general characteristics of the mammalian fauna of the region was pointed.

Leaving Thomazopolis, the expedition passed through Rio and São Paulo, passing over the great plain of the Amazon. Reached

de Butantan, where the most comprehensive studies of snake venom and the treatment of snake bite are being made under the direction of Dr. Vital Brazil, the founder of the Institute. From São Paulo the party went to Bauru in the heart of the State of São Paulo and, after collecting birds for two days, they began their trip by rail to the Paraguay River. Thanks to the facilities provided by the railway, the "Noroeste de Brazil," in the form of a private car and attached baggage-car, it was possible to make short halts for collecting at various places en route. A very productive stop of two days was made at Piraputanga, Matto Grosso, where the railroad passes a range of hills and follows the Rio Aquidauna.

At Porto Esperanca on the Paraguay River, after a rail journey of 1,400 kilometers, the party took the river steamer for Corumbá, the important distributing center of this part of Brazil. Here a steam launch was engaged for the trip to Descalvados, the ranch and packing plant of the Brazil Land and Packing Company, where Mr. Cherrie had hunted with President Roosevelt in 1914. Mr. Jack Ramsey offered them the hospitality of the ranch and supplied ox-carts and horses for the hunting trip to the west, which consumed eight days. This trip was extremely interesting, passing through characteristic open grass-lands with islands of forest and marsh, where deer, jaguar and giant anteaters, as well as other game, were abundant. Near their second camp on this trip, Mrs. Field shot a fine jaguar. Two species of deer and two giant anteaters were also obtained in this region. Many interesting and desirable birds were in addition secured.

On August 11 they returned to Corumbá. The launch trip on the upper Paraguay was highly interesting. A number of capybara, a rodent about the size of a half grown pig, shot by Mrs. Field and Mr. Sanborn, and a fine series of the Paraguayan jacare, the local relative of the crocodile, were obtained. The bird life of the vast Paraguayan marsh was found to be remarkably rich and varied in number of individuals as well as species, and representative forms were collected along the route.

On returning to Corumbá, Mrs. Seton left the party to return to the United States via Chile and the west coast of South America in accordance with her original plan. The remaining members then spent ten days at Urucum, a locality south of Corumbá where a bold range of manganese-bearing mountains rises to 3,000 feet above the surrounding level plain. This place proved an especially good locality for bird collecting. In the shafts of the abandoned manganese

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COLUMBIAN GROUND SQUIRREL

In the systematic exhibit of Rodents

Taxidermy by Leon L. Fray

About one-third natural size

note at an altitude of 2,700 feet, Mr. Sabinos secured a large series of bats.

Mr. Chernic, Mrs. Field and Mr. Taylor left Corumbá, August 22, to return by rail to São Paulo and sail for the United States on September 1. Messrs. Sabinos, Schmidt and an assistant, Mr. S. J. Garson, remained in Corumbá to repack the baggage and collections, afterwards taking the river steamer to Assisima, Paraguary, August 26.

From Assisima, the steaming consisted of the remaining part of the trip to Foz de Iguaçu, Misiones Province, Argentine Republic, where they took a steamer on the Grand Paraná for Iguazu Falls. En route they witnessed the treatment of Mr. Carlos H. Brown at Iguazu and collect on the mountains at Yacumbá where, within ten miles of Foz de Iguaçu and Iguazu Falls, Messrs. Sabinos and Garson stopped, while Mr. Schmidt visited Iguazu Falls and Puerto Bertoni, rejoining the others at their camp at Caraguatay. The second week in Misiones was spent in camp on the Rio Paraná, a small affluent of the Paraná, where bats and quadrupeds were of interest, but mammals and reptiles scarce.

Leaving Caraguatay September 22, the party divided at Foz de Iguaçu and Mr. Sabinos proceeded direct to Montevideo to arrange for the entry of the equipment which Mr. Schmidt brought down by the river steamer to Buenos Aires, and then shipped to Montevideo. At Buenos Aires, Mr. Schmidt was later joined by Mr. Sabinos, and together they went to Montevideo where they were occupied for ten days in repacking the collections for shipment to the United States and in making preparations for work in Uruguay. As a continuation of the work of this expedition, Mr. Sabinos was authorized to make an extensive survey of the vertebrates of Uruguay. He is, therefore, continuing the field work in that country with favorable results. A recent report indicates that he has already collected about 100 bats and mammals, 400 reptiles and amphibians, and over 300 fishes.

Mr. Schmidt left Montevideo, October 26, returning to the United States via Chile and the west coast. In Santiago, Chile, he studied specimens at the National Museum, where every facility was offered him by the Director, Dr. Eduardo Mearns. Collecting excursions were made far north and south in the neighborhood of Santiago, and the opportunity was utilized to obtain a number of scarce Chilean publications which have long been desired by the Museum Library.

The number of specimens obtained by the Captain Marshall Field Brazilian Expedition is 4,333. It includes: Mammals, 362; birds, 648; reptiles and amphibians, 282; fishes, 2,137; insects, 846; other invertebrates, 58.

A Museum expedition that assures the acquisition of many desirable mammals, birds and other vertebrates of eastern and central Africa, is the Conover-Everard African Expedition. This was financed and undertaken by Mr. H. B. Conover, an associate in the Museum's division of birds, and Mr. R. H. Everard of Detroit. They were accompanied by Mr. John T. Zimmer, assistant curator of birds, who has had much experience in collecting in the Philippine Islands, New Guinea and South America. The expedition sailed from New York early in April, going first to London for additional equipment and then, via Paris, to Marseilles, where they embarked for Dar-es-Salaam on the coast of Tanganyika Territory. Using Dar-es-Salaam as a shipping point, on June 4 they went up the coast by steamer to Tanga, from which port a railroad extends inland toward Mount Kilimanjaro. By means of the railroad up to Mombo and then by automobile, the party finally established a camp in the hills beyond Magamba at an elevation of 5,200 feet.

The animal life at Magamba was found to be quite different from that of the lowlands. In this region Abbott's Duiker, a pigmy antelope, was supposed to be at home and, as it is a rare animal not represented in the Museum, great effort was made to collect it. With the aid of a local chief, about a hundred natives were assembled and requested to make a number of cleared lines up the mountain side. In three days four or five "drives" were made, the members of the expedition being stationed along each of the clearings while the natives drove through the thick forest, blowing horns and making other noise. The first day's drive was unsuccessful, but on the second day Mr. Zimmer secured an adult doe, and on the third day Mr. Conover obtained a nearly grown male.

At Magamba the party stayed until June 29 and then made excursions and camps in various directions, finally reaching Mnazi, near the Kenya border at an altitude of 1,600 feet. Leaving Mnazi, July 18, they returned some distance for additional supplies and, chartering two motor lorries, they went southward across the country to the central railroad at Mrogoro. After waiting here several days for a train, they went back to Dar-es-Salaam to repack and ship their collection. The specimens, results of their first trip, in the

shipment received by the Museum, consisted of 86 mammals, among which were four antelopes and one cheetah, and 222 birds.

On their second trip into the interior, they went by rail from Dar-es-Salaam to Kilossa. In a region about a hundred miles south of there, they collected and traveled for two months, moving from place to place afoot, by bicycles, canoes and autos. At Matamoras, where they camped near a deserted village at the edge of a large open plain, game was abundant but limited in number of species. Here Mr. Zimmer collected a female and three males of a handsome antelope, locally called the "Padu." Returning to Kilossa, October 22, they proceeded to pack their collections for shipment and make preparations for the next step of their journey. The second shipment of specimens, which has not yet been received, is reported to contain 117 mammals, 197 birds, and 140 reptiles and fishes.

According to plans, this expedition was to leave Kilossa and go to Kigoma, the western railroad terminal on Lake Tanganyika, take a steamer across the lake to Albertville, and then travel by rail and boat to promising collecting grounds along the Luanda River in the eastern part of the Belgian Congo. After securing a series of the vertebrates in the Belgian Congo, they planned to return to Kigoma and continue their zoological explorations in the upper Nile basin.

Although the Rawson-MacMillan Saharatic Expedition was conducted in the interest of the Museum as a whole and not primarily in behalf of the Department of Zoology, nevertheless it was the means of adding many new and desirable specimens of vertebrate and invertebrate animals to the Museum's collections. The leader of the expedition, which was made possible through the generosity of Mr. Frederick H. Rawson, was Commander Donald B. MacMillan, the noted Arctic explorer. The expedition was accompanied by Mr. Alfred C. Wood, assistant curator of fishes, and Mr. Astley Hume, first taxidermist, of the Museum staff.

The expedition sailed from Wiscasset, Maine, June 19, in Commander MacMillan's auxiliary schooner "Towhee," accompanied by Commander Rowe E. Meade's auxiliary schooner "Sulphur." Along the coast of Maine stops were made at various points, the last being Bar Harbor. On June 25, they arrived at Sydney, Nova Scotia, from there sailing to Curling near the head of Bay Island, Newfoundland.

Battle Harbor, their first port in Labrador, was reached July 3, and there a delay of three days was caused by ice and weather conditions. While sailing northward in the more open waters near

the barren rocky coast, eleven stops of varying length were made in Labrador. On July 20, they arrived at Cape Mugford where, the conditions appearing favorable, they changed their course, passed through the ice pack off the coast of Labrador and in a few hours, were in the open waters and headed for Greenland.

The first landing place in Greenland was at a little bay south of Sukkertoppen. Sailing northward, they visited Sukkertoppen, Akpamiut, South Strömfiord and Simuitak. About noon of August 1 they arrived at Godhavn, Disko Island, the farthest point north reached by the expedition, and on the following day they began to sail homeward. On their return trip, along the west coast of Greenland, they stopped at Egedesminde, Holstenborg and Sukkertoppen, but at the last mentioned place only long enough to load oil before sailing for Baffin Land.

Reaching Baffin Land in a fog, they anchored in a little harbor behind Cape Haven and as soon as they were able to locate their position, August 15, they sailed for Labrador. A number of ports were again visited along the coast of Labrador as well as in Nova Scotia and Maine, and on September 1, twelve weeks after they started northward, the expedition returned to Wiscasset, Maine.

On this expedition collecting was done, whenever possible, in all of the harbors visited. In this work the members of the passenger crew gave much valuable and appreciated assistance. Those who were fond of shooting obtained a sufficient number of birds in many ports in Labrador and Greenland to keep Mr. Hine constantly busy skinning and making color sketches. Wherever trips ashore could be made, collecting was done in streams, ponds and tide pools. When in port, hand lines were nearly always used over the sides of the boat. In Labrador trout was found in all of the streams flowing into the sea. It was of much interest to discover fishes living in many landlocked ponds high up on the islands along the coast of Labrador. As some of these ponds apparently freeze solid in winter, the question arises as to how the small species of fish manage to survive.

The 1,811 zoological specimens obtained by this expedition include: mammals, 52; birds, 158; bird eggs, 28; fishes, 642; insects, 260; and invertebrates other than insects, 671. The acquisition of this collection is of particular value in that the Museum had previously very few specimens from Labrador and Greenland. As would be expected, a large proportion of the birds obtained are water birds, many of which are urgently needed for the proper re-installation of the exhibit of North American birds now under



was that of the birds that it comprises sections of the Common Nighthawk, a species formerly not in the Museum's collection. The total brought back by the expedition amounts to a limited number of species, and the specimens and skins collected could not be the result of the knowledge of the birds of the country.

The First Mammal Report, by David A. Silliman, Esquire, which started in Africa in September, 1896, is a contribution to the collecting of a mammalian fauna of the continent with special vertebrates listed in the accompanying table. It is a list of 44 species. Some of the birds listed are the *Alcedinoides* named in recent years that might have been in the Museum's collection. Other African birds, *Thalassidroma* *capensis* and the *Elanus* named here.

This expedition is headed by the Chicago Zoölogist, whose representatives on the party are Mr. John Stone, well known zoölogist, and Mr. Wilfred H. Cressel, Curator of Zoölogy, in charge, and Mr. Alfred M. Peck, manager and taxidermist. The other members of the party are Mr. Louis Agassiz Foster, of Cornell University, natural painter of birds, and Mr. Silliman's wife, who was a member of the James Smith-Hoodson African Expedition, as ethnologist.

This opportunity is taken to acknowledge the excellent accommodations and courtesy extended by officials of the Central Steamship Company to members of the expedition, during the first stage of the journey.

The expedition sailed from New York for London, September 7. In Paris they were joined by Mr. Stone, and on September 28 they embarked at Marseilles for Djibouti, where they landed five days later. From Djibouti, which is in French Somaliland, a three days' trip by rail took them to Addis Ababa, the capital of Abyssinia. Being well supplied with official letters of introduction and recommendation, their reception by the government officials, including the Ras Tafari, Prince Regent in behalf of the aged Emperor, was most cordial and valuable assistance was freely given to them. The preparations for their first trip into the interior were thereby greatly facilitated.

The Aerial country, two to three hundred miles south of Addis Ababa, was the first region in which they found to secure some of the desired large mammals, and they were not disappointed. In a brief communication, dated November 14, which the Museum received late in December, they reported that they had already secured a

beautiful group of the Mountain Nyala—three males and two females—a number of smaller antelopes, and a general collection of about 500 mammals and birds. The Mountain Nyala, which was obtained so quickly after they reached their destination, is a large, handsome antelope. This animal is so rare and difficult to obtain that it is represented only in the British Museum. With such a successful beginning, large and valuable returns from the Abyssinian Expedition are assured.

An account of the movements and successful termination of the James Simpson-Roosevelt Asiatic Expedition was given in the Director's Report for 1925. Before returning to America however, Colonel Theodore Roosevelt and Mr. Kermit Roosevelt, accompanied by their wives, made several successful hunting trips in the central and upper provinces of India. On these trips they secured for the Museum more than thirty large mammals, including Swamp Deer, 5; Blackbuck, 4; Nilghai or Indian Blue Bull, 4; Hog Deer, 3; Spotted Deer, 2; Indian Boar, 2; Indian Gazelle, 2; Leopard, 1; Tiger, 4; Cheetah, 1; and Rhinoceros, 2.

The total number of specimens secured by the Asiatic expedition is 1,017. Of this number 230 are mammals; 654 birds and bird eggs; 70 reptiles and amphibians; and 63 insects. This important acquisition contains an excellent representation of the large mammals of Asia, and among the birds are many rare and desirable species. A report on the reptiles and amphibians of this expedition has been prepared by Assistant Curator Schmidt and issued in the Museum's Zoological Series, Publication 237. The birds and mammals will be reported on in a similar manner. Two of the most interesting mammals collected by the Roosevelts are, without question, the Marco Polo Sheep and the Ibex. A group of each of these animals is now being prepared for exhibition with accessories and a background showing the nature of their bleak natural home.

The zoological explorations of the Captain Marshall Field Central African Expedition were continued during a part of the year under the direction of Assistant Curator Heller and Dr. Hilda Hempl Heller. The latter returned to America via Nairobi and Mombasa in July, but Mr. Heller remained in the field several months longer, sailing from Dar-es-Salaam, on the coast of Tanganyika Territory, in the latter part of October. The specimens received represent the work of the expedition in 1925, and total 2,313 in number, of which 1,270 are mammals and mammal skulls; 8 birds; 992 reptiles and amphibians; 32 fishes; and 11 invertebrates. As mentioned under

the heading "Lithomeres," the most valuable specimens received from this expedition are the entire lot returned of a gaff and an okepi. A shipment of 20 boxes containing the results of the expedition's work in 1920 has not yet arrived at the Museum.

The expeditions of the United States Explorers, in which the Museum is represented with the United States Museum of Natural History, were temporarily discontinued on account of the civil conflicts in China and Mongolia. As soon as it becomes possible safe to go again into the interior of those countries, Dr. Roy Chalmers Johnson, the leader of the expedition, hopes to renew the work which has already produced results of great interest and value. The specimens received from this expedition, amount of 784 mammals, of which 69 are large dentate mammals, such as gophers, wild swine, etc., and 549 fishes.

An expedition under the auspices of Captain Marshall Field, was made by Mr. C. J. Ellsworth, mammal taxidermist, to the States of Washington and Arizona, to collect specimens and mammals for groups of the Steller Sea Lion, Harbor Seal, and the Mule Deer. In Arizona he was joined by Mr. C. A. Curran, the staff artist, who made careful studies of all the backgrounds.

At La Push, State of Washington, Mr. Ellsworth succeeded in getting all of the specimens and mammals needed for two seal groups. La Push, which is the home of the Quillayute Indians, is located on a point of land furthest west in the United States. Near there, on Jagged Hill, seven miles off the shore, are found three sea lions living under government protection. This little island covering an area of only about two acres, nevertheless is the home of about 500 sea lions, and thus it always has been as far back as the Indians can remember. The Steller Sea Lion, is the largest of all seals, measuring sometimes 12 feet in length and weighing as much as 2,100 pounds. A family group of seven specimens of these animals was collected. The Harbor Seal, which was also obtained, is found on the rocky and kelp-covered rocks along the coast at low tide. A group of five of these animals was likewise collected. For permission to secure these seals the Museum is indebted to Dr. E. W. Nelson, Chief of the United States Biological Service.

Having successfully completed his work in the State of Washington, Mr. Ellsworth went, via San Francisco and Los Angeles, to the Kaibab National Forest in northern Arizona, where he was joined by Mr. Curran in his camp at Big Butte 200 miles from the nearest railroad. At the time of their visit, the Kaibab National Forest was

clothed in an autumn garb of vivid colors. In such an environment thousands of Mule Deer live under government protection. While Mr. Albrecht collected and took care of the seven specimens required, Mr. Corwin made careful studies of the region so that when the animals are mounted they can be placed in a setting characteristic of their natural habitat. For permits and assistance rendered in various ways to Messrs. Albrecht and Corwin in Arizona and Utah, the Museum extends its thanks to the following gentlemen: Mr. D. E. Pettis, State Game Warden of Arizona and Acting District Forester of Ogden, Utah; Mr. A. E. Lewis, Deputy Game Warden; Mr. Carl Haycock, Forest Ranger; and Mr. William Angus of Los Angeles, California.

The following list indicates the various expeditions in the field during the year:

LOCALITY	COLLECTORS	MATERIAL
KISH, MESOPOTAMIA . . . . .	Stephen Langdon Ernest Mackay	Archaeological Collections.
PERU . . . . .	A. L. Kroeber W. E. Schenk J. C. Tello	Archaeological Collections.
MADAGASCAR . . . . .	Ralph Linton	Ethnological Collections.
PERUVIAN ANDES . . . . .	A. Weberbauer	Herbarium and Economic Specimens.
RIO DE JANEIRO, BRAZIL . . . . .	B. E. Dahlgren J. R. Millar George Peterson	Botanical Collections.
ARGENTINA . . . . .	Elmer S. Riggs Robert C. Thorne	Paleontological Collections.
STATE OF NEW YORK . . . . .	Sharat K. Roy	Paleontological Collections.
BRAZIL, PERU, ARGENTINA, CHILE, BOLIVIA, URUGUAY . . . . .	H. W. Nichols	Geological and Archaeological Collections.
KASHMIR, TURKESTAN, THIAN SHAN MOUNTAINS, PAMIRS . . . . .	Theodore Roosevelt, Jr. Kermit Roosevelt George K. Cherrie Suydam Cutting	Zoological Specimens.
BRAZIL, ARGENTINA, PARAGUAY, URUGUAY, CHILE . . . . .	George K. Cherrie Evelyn Marshall Field Grace Thompson Seton K. P. Schmidt C. C. Sanborn Curzon Taylor	Zoological Collections.



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Anthropology—Specimens	W. H. Ungewald Alfred M. Hensley Louis Augustus Twetten James F. Smith Jane Dixon	Mammals, birds and other vertebrates
Anthropology—Specimens	D. B. MacMillan J. H. C. Masters A. C. Wood Ashley Hare	Anthropological specimens, geological and zoological material
Zoological—Specimens	H. B. Cropper Robert T. Liverat John T. Gummer	Zoological Specimens
Zoological—Specimens	Edmund Heller Hilda H. Heller	Mammals, reptiles
Grant in Honor of Washington	Clarence J. Albrecht	Securing material for seal groups
Scientific Plant and Mammal—ARIZONA	Clarence J. Albrecht Charles A. Corwin	Securing specimens and making studies and notes for mammal group

Leaves of expense incurred first direct care.

## INSTALLATION, RE-ARRANGEMENT AND PERMANENT IMPROVEMENT

ANTHROPOLOGY.—The activity of the Department of Anthropology during the year under review was largely centered on the installation of new material obtained by recent expeditions. Three new halls were completed and a total of seventy-seven exhibition cases installed, distributed as follows:

Anthropology of Kist	2
Malay, Java, Borneo—Arthur B. Jones Collection	28
China	5
Polynesian Indians	2
California Indians	2
South American Archaeology	19
Edward E. Ayer Pewter Collection	14
Total	77

Several changes were made in the exhibits in Stanley Field Hall. The Egyptian statue of the architect Senmut shown last year in Case 6 was transferred to Case 11 of the Egyptian collection, and a selection of the antiquities from Kist received in 1924 has been displayed in the former case. These include a large pottery bronze

with geometric designs scratched in the base by means of a comb, from the "A" Cemetery at Ingharra; a handled pottery jar with a woman's face and breast in high relief, and other pottery vases, all of the Sumerian period; a glazed pottery bowl and a bottle of the twelfth century B.C.; human and animal clay figurines; an alabaster vase; three restored ostrich egg-shell cups; a carved bone figure; bone picks; bronze implements divested of their malignant patina by means of the electro-chemical process referred to in last year's Report (p. 442); glass bottles and seals, clay seals, pendants of stone and mother-of-pearl, cylinder seals; and necklaces of carnelian, lapis lazuli, rock-crystal and shell. In Case 12 of Stanley Field Hall are shown thirty-one enlarged photographs illustrating the activity of the expedition during the season 1925-26. These photographs were taken on the spot by Assistant Curator Henry Field and Mr. Ernest Mackay. Each picture is provided with an explanatory caption. Two carved wooden figures and a guitar from Africa, presented by the Arts Club of Chicago, as well as a carved wooden figure presented by Mrs. John Alden Carpenter, were added to Case 11 as further examples of the artistic achievements of the Negro.

In commemoration and honor of the Eucharistic Congress which convened in Chicago from June 20 to June 23 several special exhibits were arranged. Two cases containing reproductions of antiquities, chiefly ecclesiastical, of ancient Ireland were temporarily placed in Stanley Field Hall and attracted many thousands of visitors. The painting of a Chinese Madonna with Child of the early seventeenth century, obtained by the Blackstone Expedition to China in 1908, formed the center of an exhibit illustrating the early history of Christianity in China. In the same case were also displayed a facsimile of the famous Nestorian inscription of A.D. 781, which records the introduction of Nestorian Christianity into China under the Tang dynasty in A.D. 635; a rubbing of the tomb inscription in Latin and Chinese of Matteo Ricci (1552-1610), the first Jesuit priest who came to China, and several portraits of him. The painting of the Madonna was widely discussed in the press and made the subject of an article by the Rev. Albert Muntzsch, S.J., of St. Louis University, in *The Fortnightly Review* (October 1, 1926) with reference to Dr. Laufer's former researches into this subject.

The Potawatomi collection obtained last year by Mr. M. G. Chandler under the auspices of Mr. Julius and Mrs. Augusta N. Rosenwald has been installed in three standard cases. A man's costume and three woman's dresses are displayed on manikins.



Articles of clothing, weapons, personal objects, household equipment, bags, moccasins, and paraphernalia are preserved in separate colored screens. These items were largely made known to Henry Miller and Anna Louise Johnson that fall of 1925, during the process of the Ogilvie and Winnelago, and make an excellent contribution to the history of the Indians formerly inhabiting the Chicago region.

Hall 4 containing the collection known as the Chicago Indians is in process of reorganization. The present arrangement by Henry Miller subsequent to their removal to the new building for the summer of 1926 these collections were somewhat haphazardly preserved and arranged, while a great deal of material concerned in storage could not be shown. The collection was moved but retained and arranged in order the subject of basketry. While the latter is of great interest it should not be hidden in a vault of 5000 square feet of unoccupied life. Moreover, the old alignment of material is in accord with respect the cultural or the geographic relationships of the tribes represented. The new arrangement, which has been partially completed under the direction of Assistant Curator Thomas W. Phillips, is in conformity with both of these factors, and aims at showing first, the present-day characteristics of each tribe rather than emphasizing particular features or products of some village. In addition to improvements in the arrangement of cases, six cases have been thoroughly repainted, six light-colored screens representing, from east to west, the Yuma, Modoc, Mono, Washo, Northern Paiute, Mandu, Wintun, and Pima. Thus the exhibits start from the southeastern corner of the State of California with the Yuma and Modoc, who resemble the earliest peoples of the Southwest in their agriculture and pottery-making, and proceed to the north showing the mode of life of the eastern Californians who are related in culture to the wandering people of the Great Basin. The exhibits include the costumes, religious paraphernalia, weapons, hunting and food-gathering equipment of the above groups. Especially notable in the Washo exhibit is the complete hunter's outfit made of moccasins and decorated with children's ornaments. Two types of personal culture particularly used in northern California and the Southwest, but in particular characteristic of present. The Modoc exhibit illustrates in detail the manner in which timber was made from the mountain areas that formed the staple food of the group's California. Two features especially interesting, the Pima collection—the extreme basketry said to be the finest in existence, and the varied utilitarian pursuits of native life which are pictured in detail. The clipping of

obsidian tools, the complete process of arrow-making, the preparation of native currency from clam-shells and magnesite, as well as the method of obtaining fire, are all demonstrated. Within the coming year it is planned to complete the arrangement of the remainder of the Californian Indian collections in the same manner, so that the visitor to the hall will be able to visualize, in their correct geographic sequence, the varied native cultures of the State. On the south side of the hall will be shown those California tribes that formed part of the Northwest Coast culture area—the Tolowa, Yurok, Karok and Hupa, characterized by their wood, shell and horn carvings, and by elaborate ceremonies in which a display of wealth played a large part. To objectify this latter phase of their life, a group of Yurok “white-deer skin” dancers in full ceremonial regalia has been planned. At the other end of the hall will be illustrated the utilitarian and ceremonial artifacts of the Miwok and Yokut tribes of south-central California. These groups are intermediate in culture between the northern and southern tribes in the State, and might well be called typical native Californians. The crude pottery made by the last group is particularly interesting, for it represents the northwestern limit of the potter’s art among the American Indians.

Hall 7 containing the Stanley McCormick Collection will likewise be reorganized according to a similar plan. In their final shape, the exhibits in this hall are designed to convey an adequate picture of the culture developments in the Southwest of the United States, in prehistoric and historic times from the Basket makers to the Cliff-dwellers and Pueblos. For the present the cases in this hall have been rearranged to conform as far as possible with this new plan. In the central aisle, running from east to west, are shown models of Arizona Pueblos, the life-size figures of a Hopi bride and a Hopi rabbit-hunter, and two pairs of dancers in full regalia. Following the group of the Hopi home on the south side of the hall are displayed the utensils, and textile and ceramic products of this people. Along the north side are arranged eight of the Hopi altars that are so all-important in Hopi religious life for the production of rain. Thus the western half of the hall conveys a vivid impression of the life-cycle of the Hopi in their work, play, and ritual. The southeast section of the hall, at present given over to supernumerary Hopi altars, will be devoted later on to Southwest archaeology, which is in the main characterized by pottery. The central aisle of this section will be occupied by models of the various Pueblos, commencing with

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LIFE-SIZE GROUP OF MANILA HEMP WEAVERS

Bagobo, Mindanao, Philippines

Set up in Hall II Robert F. Taft Museum of Natural History

wooden types and coming with those of the same type. The northernmost portion of the hall will contain ethnological, textile and ceramic collections from the present-day Pueblos in Arizona and New Mexico.

The Robert F. Cummings Philippine collection was transferred in December from Hall 9 to Hall B, the uppermost hall on the ground floor. Hall 9 has now been devoted to the ethnology and archaeology of South America. The ethnological collection previously shown in Hall 9. A considerable amount of the archaeological material now placed on exhibit had been stored since the opening of the new building, because of lack of space in Hall 9 which comprised Mexico, Central and South America. This unfortunate condition, whereby the very fine collection of Inca pottery, the beautiful portrait-vases from northern Peru, and excellent material from Chile, Colombia, and La Plata Island were not accessible to the public, has now been remedied. Nineteen cases have been newly installed or reinstalled for this hall by Assistant Curator Thompson. Much of this material, now exhibited for the first time, is composed of Dr. A. L. Kroeber's very fine collection made in Peru last year on the Captain Marshall Field First Archaeological Expedition to Peru, particularly the hitherto unknown culture named Sub-Nazca, as well as part of the collection made by Dr. J. Allen Mason during the Captain Marshall Field Expedition to Colombia in 1924. Nearly all of the Ecuador collection is now exhibited for the first time. A number of cases previously installed have been carefully gone over, and the material lifted and reinstalled on light-colored screens. Ancient leather-work is displayed, framed under glass, on the northernmost wall of the hall. The Museum's Archaeological collection from South America now compares favorably with any other collection from this area in the country. Peru, Colombia, Argentina, and Chile are particularly well represented. The archaeological collections (Cases 12-36) are arranged in geographical order ranging from Colombia as the northernmost area to Chile as the most southern area. An attempt has been made to follow the same principle of arrangement in the ethnological collections, but this work is not yet complete.

Cases in Hall 5, now devoted entirely to Mexico and Central America, have been rearranged so that the exhibits progress from northern Mexico southward to Panama.

The installation of the Arthur B. Jones Collection in Hall G has been completed this year, twenty-eight cases having been added to

those installed during the previous year. The new exhibits include the ethnology of the Malay Peninsula, the Menangkabau of Sumatra, and the peoples of Java, Madura, Borneo, and Formosa. One of the group cases for this hall was likewise completed, showing a Menangkabau bride and groom dressed with all paraphernalia for the day of their wedding. The faces, hands and feet of the two figures were modeled by Mr. John G. Prasuhn in the Modeling Section of the Department. Good progress has been made on a miniature Menangkabau village group for which Mr. Charles A. Corwin has painted an effectual and colorful background.

A life-size group of Bagobo weavers, consisting of five figures cast and modeled in the Museum, was completed this year and housed in a specially built-in case located at the east end between Halls G and H; in this manner access to this case is afforded from two sides. The Bagobo inhabit the Davao Gulf on the island of Mindanao in the Philippines, and are experts at making textiles from Manila hemp (*Musa textilis*). The various stages in this process are picturesquely illustrated by this group, from the initial preparation of the fibres and the spinning and dyeing of the threads to the weaving of the cloth on a hand loom and its polishing by means of a shell.

Floor mats specially ordered in New Zealand and the handiwork of Maoris have been placed in the Maori council house (Hall F), which is thus complete. A sketch map of the South Seas, on which the particular island or locality represented in the exhibit is underscored in red ink, has been placed in every case of the same hall, and large maps of the South Pacific have been distributed on the walls of this hall as well as of Joseph N. Field Hall.

As foreshadowed in last year's Report, the Edward E. Ayer Collection of Pewter was entirely reinstalled this year in a very efficient and satisfactory manner. Special wall-cases were built in Room 23 in the northeast corner of the second floor, and these are illuminated by encased top-lights concealed under ground glass, insuring an even diffusion of light over the exhibits. A light blue rep has been chosen for mounting the background and shelves, and the latter are so arranged that the objects placed on them are directly and fully exposed to the light. The material is grouped in 16 sections as follows: Sections 1-8, China; 1-2 (on west wall), Lamps and candlesticks; 3 (on north wall), Vases, figures, and altar sets; 4, Pewter engraved and inlaid with designs in brass; 5, Set of pewter objects used as a wedding gift and dower; 6, Bowls, dishes, and tea-pots; 7, Ancient tea-pots with knobs, handles and spouts of jade;

8, Wine-pots and vessels decorated with oyster-shell; 9, on east wall, Trays, tea-pots, and tea-jars from Japan; 10, on east wall, Porcelain of United States and England; 11, on south wall, Tuffware, cups, saucers, dishes, bowls, dishes and bottles from England; 12, Plates, trays, jugs, flasks, pitchers from France, Italy, and Sweden; 13, Communion plates, tea-pots, taster's, and gold cups from Austria, Bohemia, and Holland; 14, Mill, containers, water flasks, tumbler, and gold cups from Germany; 15, Cast-iron, trays, pitchers, bowls, coffee-pots, tea-pots, tumbler, and spoons from Germany; 16, Communion plates and other plates from the same country.

In conformity with the plan to devote the East and West Galleries exclusively to China and Tibet, exhibits from Africa, India, Korea, and Siberia, including the Ainu, were removed from Hall 32 (West Gallery) and temporarily arranged in Hall E on the ground floor, so that the public may have access to them. In the two Galleries the windows were covered over and the wall spaces thus gained painted and gilded. There were added two additional exhibits: one a display of bronze sculpture and medals. The play of Orosio Tadomasa (Hall 1) has been abandoned, the various divisions of which it consisted having been assigned to the various halls to which the exhibits geographically belong. The Singapore music will now be found in Hall E; the Javanese puppet-show, orchestra, and actors' costumes, in Hall G. The Chinese and Tibetan theatro-drama have been transferred to the south end of Hall 32. The religious drama showing the ten purgatories has been installed in a built-in case in this hall. Five cases were added to the Chinese exhibits. One of these illustrates music and musical instruments, and is shown together with the exhibits of theatro-drama. A noteworthy feature of this case is a complete series of pigeon-whistles with the names of their makers engraved on them. These whistles are fastened to the tail-feathers of pigeons, the instruments used in one flock being all tuned differently; when the flock of birds is on the wing, the wind striking the whistles sets them vibrating and thus produces a melodious open-air concert. Photographs of pigeons with the whistles attached, taken in Peking, and a mounted pigeon thus equipped accompany the exhibit. Other additions are a case containing ten bronze drums; three extraordinary and unique half life-size porcelaine figures representing a scene of the Tang dynasty, supported by two ladies-in-waiting, the undecorated design of the dresses being exquisitely painted in colors; and a wall-case of ancient glass

including many colored beads and ornaments of the Tang period (A.D. 618-906). Warfare and weapons of China are illustrated in another case by self-loading repeating crossbows, clay bullet crossbows, a series of eight old bows for testing the strength of candidates for military appointments, blow-pipe and spring-guns, sounding arrows, jingals, and the suit of armor of a Manchu prince, the single parts of the armor and accoutrements being spread out for analytic study, while suits as actually worn are shown in an adjoining case. Many improvements have been made in rearranging the exhibits in the two Gallery Halls, but as the installation is not yet complete and much material remains to be placed on exhibition, the ultimate classification and grouping of cases must be left for the future.

Re-arrangements were made in three cases of H. N. Higinbotham Hall, containing the gem collection.

Skulls and skeletal material were unpacked from the cartons which had served as containers for transportation from the old into the new building, and were thoroughly cleaned. The material was checked, sorted and properly arranged in trays and labeled by the Assistant Curator. It is now placed in the new cabinets built in Room 35 last year.

Cliff-dwellers' models in Hall 7 and all casts of Maya sculptures in Hall 8 were repaired and retouched by Modeler Prasuhn. As previously stated, the group of Bagobo weavers and the life-size figures of the Menangkabau bride and groom were completed by him.

During the course of the year thirteen portfolios were made for the safe-keeping of the acquired Egyptian fabrics. Eleven frames were made for Chinese paintings, rugs and tapestries, and one frame for Peruvian feather-work. Four Chinese and three Egyptian painted frescoes were properly treated, laid in cement and placed in frames under glass. By means of the electro-chemical process, 45 bronze implements were treated for malignant patina; 286 objects were restored or repaired: 96 from Africa, 76 from Kish, 41 from China, 43 from Java and Borneo, and 30 from Peru; and 6,057 numbers were marked on 4,323 objects. Sixteen exhibition cases were poisoned, and material stored in the Poison Room was taken care of in the usual manner.

**BOTANY.**—The exhibit of native plants, as maintained during the summer of 1924 (omitted in 1925) was reinstated in Stanley



Field Hall. The exhibit was similar to the earlier one described in the Annual Report, 1924, p. 313, with illustrations opposite p. 280. This effort to present in the study of our own products and especially to build in city children an appreciation of our country's contribution a great deal of information previously being well-known had come from organizations such as the Wild Flower Preservation Society. It is hoped that it will be possible to make the exhibit an annual feature.

In the Hall of Plant Life more descriptive additions have been made with the installation of new material and rearrangement of plants completed during the year in the Summer Field Plant Introduction Laboratory. The systematic arrangement of the year is to give an idea, so far as can be shown, of a taxonomy of the entire range of plant life and structure. At present the best material is displayed of plants from many parts of the world, mostly eastern and tropical as well as local temperate ones. The additions made during the past year may be considered typical of the policy pursued in respect to the selection of material for these exhibits. Whenever a well-known local species furnishes the most satisfactory illustration of the characters or appearance of a family or group of plants to be represented, a local species is presented, as in the case of pines, geranium or yucca-bearing trees and in the willows and oaks. Where a plant family has both local and exotic representatives, something of both may be shown, as in the case of the oaks where the common white variety of Indiana is associated with a larger sub-tropical species which furnishes the tan fruit and two other forms of oak from Canada and Trinidad respectively. Similarly in the case of lilacs, the local white *Trochium* and common Woodlily are shown in conjunction with the exotic New, the *Dianthus*, gum from the Dragon's-blood Tree, etc. Where on the other hand, there is need for a choice between a native and an exotic plant the preference is given to the most representative one. Thus, among the hellebores the tropical Sand Flower is considered to represent the kind better than the native *Stella* both generally known as "Wild ginger," even though the Wild ginger be better known to local botanists. In the umbellifer family the rose, for reasons of its economic importance, is preferred for exhibition rather than the native *Irigoienia* or oak, especially as the latter is more fully displayed among the trees in the great hall.

The grape family has, in this manner been illustrated by a representation of the eastern *Vitis* grape which reaches its western

limit at the Michigan dunes. As the parent stock, from which has been derived the Concord and other American cultivated grapes, it furnishes, at least in this section of the United States, the most interesting illustration of botanical characters of its group. In the course of time there will be added some typical clusters of a few other wild grapes and of some of the principal cultivated ones.

The oaks have been represented by an acorn-bearing branch of the Bur-oak accompanied by a small flowering twig, as well as models showing on a larger scale the structure of the male and female flowers of this oak. In the same case are shown a selection of dried acorns, European and American chestnuts and a small branch of the chinquapin, the entire display representing the chestnut oak-family as fully as space and material permit at present.

For the geraniums, a local wild geranium has been added to the case containing sorrel and the bilimbi branch. A beginning has been made on the barberry family with a reproduction of some May-apple plants in fruit.

Through the cooperation of the Los Angeles Chamber of Commerce, excellent material of the olive was provided, both preserved and fresh, which made it possible to reproduce with a minimum of difficulty a typical fruiting olive branch. The case devoted to the mallows has been reinstalled with the addition of two new models of plants, both of some economic importance, namely, a flowering and fruiting Okra plant and a fruiting stem of the "West Indian Sorrel," the latter of which is interesting for its persistent and brilliantly colored calyx.

A reproduction of a leaf and flowering stem of the Madagascar orchid commonly known as the "Star of Bethlehem" (*Macroplectrum*) has been produced for the orchid case, thus adding another different type of orchid flower to those on display. The exhibit of Aroids has been augmented by the addition of a fruiting stem of the Ceriman (*Philodendron*) with its large, perforated, deeply cleft leaves and curious habit of peeling its fruiting spikes at maturity, recalling that of the Panama hat palms.

A cluster of Nagal dates has been added to the palm fruits in Hall 29. To the case of Proteas, hitherto insufficiently represented by the American Grevillea, and the so-called Australian oak, there has been added a flowering branch of the handsome "Boer's Honey Pot" (*Protea cynaroides*).

The mushroom collection has been augmented by the addition of a fine model of a *Clavaria*. Also a clump of a bright orange-colored

Clitocybe, the work of Mr. Pray of the Museum staff, by whom it was presented, was added to the collection. Mr. Pray has under way several other models of mushrooms which within the course of time, help to fill the need for a fuller display of the local fleshy fungi.

Two plant families have always been extensively represented in the exhibits of the department, viz. the grasses and the palms. As long as a systematic botanical department of plants existed, and maintained in the exhibition halls no collections were discontinued. With the rearrangement of the economic plant material on another basis, it became necessary to split the exhibits of the grass family, placing the grains, starches, etc., with the food-products in Hall 25, while much of the rest was placed with the fibers and paper-making material in Hall 28.

In the case of the palm family, where most of the material was of a general botanical rather than special economic interest, a different procedure seemed to be indicated. Therefore the palm exhibits have been kept together and reinstalled with large additions resulting from the Stanley First Guinea Expedition and others. With the addition, and in part substitution, by still further material of interest obtained during the Captain Marshall Fossil Brazilian Exposition of 1926, the Museum's exhibit of palms becomes extensive and unique. It consists in a large part of very perfectly preserved dried plant material, even complete clusters of flowers and fruits, some of the latter weighing upwards of 100 pounds in their dried condition. Most of the chief genera are already represented. Supplemented by numerous photographs and by herbarium material, it gives promise of becoming a collection of considerable importance.

The reinstallation of the economic botanical exhibits in Hall 25 has continued. Attention was given especially to the sugars, starches, edible oils and the small grains. An improvement in the method of display has been made by the removal of all bottles and jars, also the trays, the contents of which cannot be seen properly above the level of the eye. The products, particularly the most perishable ones, those subject to change from oxidation, decomposition or insect injury, have been permanently sealed in glass tubes of a suitable diameter varying somewhat with the products. These tubes set vertically, each properly supported in its own tiled block, provide a high degree of visibility as well as protection for the contents. This method also facilitates the arrangement of the material in any manner desired in a vertical case, for example, in the form of a flow-

sheet, which was not possible with the linear series of trays and bottles on shelves. In the case of closely related products, or products from the same source, their arrangement with reference to each other or in relation to their production or manufacture, adds greatly to the intelligibility and interest of their display.

The steps in the manufacture of cane sugar are shown in one-half of a standard case, the process being represented by 23 samples arranged more or less in the form of a flow-sheet. The by-products, alcohol, rum, vinegar and paper from the bagasse, are also shown. The main label briefly summarizes the process, and a world distribution map, appropriately colored, shows the chief localities where sugar cane is cultivated.

The beet sugar process is shown in the half-case adjoining the cane sugar. Beginning with the sugar beet, the process, somewhat different from that of cane sugar, is portrayed in 21 steps arranged as in the preceding exhibit.

In one-half of another case have been displayed various grades of sugar from the world's markets together with a variety of sugars in their original native packages. The collecting of these samples has extended over many years and countries including Java, the Philippines, Peru, Mexico, Egypt, etc. In the other half of the same case specimens of all the known sugars of importance, viz. cane, beet, maple, corn, grape, etc., have been placed for comparison. In addition there are displayed such rare sugars as levulose and mannose, some of which are seldom seen outside the laboratory.

In another case have been installed a series of samples of the edible vegetable oils, also sealed in glass tubes and associated with a specimen showing the botanical source of each. From this exhibit it may be seen that there are about 15 edible oils of vegetable origin in use in the United States.

The starches have been treated in a similar manner, the seven principal commercial starches being displayed conspicuously in large tubes, while some twenty other starches, of more or less importance in their respective localities, are less prominent in smaller quantities in smaller tubes.

During the course of the year, products made from corn, now occupying an entire case, were reinstalled and brought up to date. These include corn oil, gluten, starch and various derivatives and preparations from starch such as envelope gum, corn sugar, alcohol and corn whiskey. As in the case of the sugar-making exhibit, the products are sealed in tubes arranged in the form of a flow-sheet.

A general label describes the process, and a diagram of an enlarged corn kernel shows the percentages of the various products. In the center of the corn-producing area of the United States such a corn products exhibit should be of interest to many visitors. A beginning has been made on the exhibit covering the small grains and their products; the process of milling, etc.

The herbarium work, apart from the listing and arrangement of current accessions, has included some further progress in the study of the Peruvian collections by botanists at other institutions, as recorded in two previous Annual Reports. The study of the *Micrascaceae*, first undertaken by Mr. E. P. Killip, United States National Museum, has been transferred at his request, to Dr. M. Burnett of the Botanical Garden and Museum of Berlin. Mr. L. B. Smith of the Gray Herbarium is determining the *Bromelaceae*. Mr. G. E. Merrill of Rockland, Maine, has reported on the lichens collected by Dr. C. S. Brown and Mr. R. S. Williams of the New York Botanical Garden, studied the mosses. These specialists indicated a number of new species and Mr. Williams prepared a paper on his group which is being published by the Museum. A short paper by Mr. J. F. Macbride, dealing for the most part with the Peruvian flowering plants, including a review of the South American species of *Fernandus*, had also been prepared for publication.

Dr. Paul C. Standley of the United States National Museum has contributed determinations for the majority of the Guatemal collections of Yucatán, (cf. Annual Report of the Director for 1925, p. 44), but the preparation of sets for exchange had not yet been completed.

Loans made or returned during the year, apart from Peruvian material that brought up to date the organizations of respective groups in the herbarium, included the following:

Two-hundred thirty specimens of *Helmintos* to Mr. E. E. Watson, East Lansing, Michigan; 1,500 sheets of *Symphoricarpon* to Dr. F. W. Pennell, The Academy of Natural Sciences, Philadelphia; 841 specimens of *Ranunculaceae* and allies to Dr. Elmer W. Johnson, Ann Arbor, Michigan; 98 Papers to Dr. W. F. Fernald, Urbana, Illinois; 37 specimens of *Eriodes* to Dr. B. John Palmer, Washington.

Notable among the visitors to the herbarium who remained to study was Dr. Brian Park of Mansel, Connecticut, Oxford, Ohio, the distinguished lichenist, who worked over the entire collection of lichens, making any necessary changes in determinations.

GEOLOGY.—Two cases were temporarily installed in Stanley Field Hall, and two of a more permanent nature were also placed there. To make room for these, the exhibit of mineral colors was dismantled and removed, as well as the exhibit of South American fossils in a floor case which was discontinued. One of the new exhibits installed illustrates the evolution of the modern horse. A series of skulls and limb bones of the successive members of the horse family, from the little *Eohippus* of Eocene age, to the modern *Equus* is shown in this case. The increase in size of the developing types, the growing complexity of the teeth, and the advancing predominance of the middle toe of these animals in the course of evolution, are all illustrated by specimens. In addition, a model, one-fifth of natural size, is shown of each type.

In the other geological wall-case installed in this hall, a comparative representation is made of fossil and modern plants and animals. Altogether, 56 specimens are shown in this exhibit, of which 30 are in the fossil state, 22 are modern forms, and 4 are models of modern forms. So far as possible, each fossil form has its nearest identical modern form placed beside it. The most ancient fossil form is also used so far as possible. There are also illustrated some of the types such as Trilobites and Eurypterids which have become entirely extinct and thus have no modern representatives. The dwindling of forms, such as that of the plants known as "horse tails" (*Equisetae*) and club mosses (*Lycopods*) during the passage of time is illustrated, as is also what are known as "immortal" types, of which the genera *Lingula* and *Pleurotomaria* are examples. These have remained unchanged through millions of years.

Geological cases temporarily installed in the hall included one containing dinosaur eggs and skulls, and photographs illustrating the field work of the Third Asiatic Expedition. Another one included specimens of agates, amethysts, geodes and various crystallized minerals from South America collected by Associate Curator Nichols on the Captain Marshall Field Brazilian Expedition of 1926.

In Hall 34, minerals to the extent of 40 specimens presented by Mr. W. J. Chalmers were installed in their appropriate places in the systematic and crystal collections. In connection with this installation, the crystal collection was reinstalled after thorough cleaning of the cases.

Two cases of concretions in this hall were also reinstalled in order to introduce some new material and give a more systematic arrange-

ment. The large iron automatic lawm *Hyman*, *Armore*, obtained during the year, was installed in a study—now annexed to the larger one of the same fall.

In Huntington Hall, pyramidal systems were constructed for two of the trap-takes and the wheel traps of the Chicago Plant, Niagara Falls, However, *Armore* and Pratt's law were installed on them. The technical position gives the reason for the method of installation, causing them to be more profitably expressed than they were as previously presented.

The model of a large machine breakdown, which was begun last year, was completed and placed on exhibition in Hall III. The model is a reproduction, on a scale of 1/16, feet to the inch, of Yard No. 27 of the Illinois Brick Company at Blue Island, Illinois.

In front and to the right of the model are shown the clay pit-front which the clay for the bricks is obtained. The bricks are made in the group of buildings near the center, and are burned in kilns at the long sheds at the rear. On the right a large stream, several miles wide, which dig the clay and hauls it into pits, to be moved by locomotives to the miller leading to the upper floor of the building near the center. The cars are represented pulled by cable to the top of the building, where there are two unloading machines which empty their contents into hoppers, through which the clay falls to the machines on the lower floor.

The clay is shown loaded by the staff road process, being forced through rectangular dies at the end of a hollow cylinder. Forced through the dies, it is caught on a moving belt on which it lies in the form of a long, uncurved rib of the cross section of a brick. As it passes with the belt it is cut to brick length by wire cutters mounted on a shaft. From the cutter another belt takes the fully-shaped bricks and carries them the length of a long room. Men are illustrated taking the bricks from the moving belt and piling them in an open work pattern on small cars.

The cars of green bricks are then run to the dryers, which are two low buildings shown behind and on either side of the machines. One of the dryers is represented with the roof removed to show the interior. After drying, the dried, unglazed bricks are shown run on larger cars to the long kiln sheds at the rear.

In these sheds is shown a special form of overhead crane which takes each pile of brick from its car and places it in its proper position in the larger piles called *stays*, in which the bricks are burned.

As already mentioned, the kilns are shown in the long sheds at the rear of the model. Five kilns in various stages of erection or demolition are shown. There are also shown freight cars loading bricks for removal, oil tanks in which oil for burning the bricks is stored, a water tower, office building, machine shop and various other accessory features which form a part of the equipment of the working plant. The latter include models of 100 trucks, 2 locomotives and 50 workmen.

The construction of the model was the work of Valerie Legault, Preparator in the Department of Geology. The skill and accuracy of his work are highly commendable. The drawings and plans according to which the model was built were made by Associate Curator Nichols. President William Schlake of the Illinois Brick Company presented the case in which the model is exhibited, and gave free access to the plant for studying its features and use of all drawings and plans which might be of assistance. Superintendent Lambert and Foreman Aregood of the Plant also freely furnished information and assistance during the construction of the model.

Two cases were removed from Hall 36 in order to make room for a model illustrating diamond mining which is in course of construction. The contents of the case of by-products of coal in the same hall were removed, carefully cleaned, renovated and then reinstalled.

In the Hall of Historical Geology, Hall 38, a number of vertebrate fossils have been installed, these being chiefly specimens from South America collected by the Captain Marshall Field Paleontological Expedition in 1922-3. These specimens were placed on exhibition as fast as they were prepared. They include a skull and jaws of the large fossil sloth, *Scelidodon*, and a skull and jaws of the extinct South American horse, *Equus andium*. To the large *Glyptodon* carapace, previously exhibited, were added skull and jaws, and tail and limbs, thus completing the exhibit.

Of the specimens received from the Third Asiatic Expedition, seven dinosaur eggs, a skull of the dinosaur, *Protoceratops*, and a skull and other bones of the same species in matrix, together with photographs illustrating the occurrence of the fossils, were installed in a separate case. This exhibit was for a time placed in Stanley Field Hall and later removed to Hall 38. The skull and jaws of the large titanotherid, *Dolichorhinus*, also received from this Expedition, were installed adjoining the American representatives of this group, in Hall 38, as was also a cast of the skull of the great extinct Asiatic carnivore, *Andrewsarchus*. The case containing fossil crinoids and



models of dinosaurs exhibited for a time in Stanley Field Hall was later removed, with its contents, to Hall 38. Two large casts, one of the Glyptodon and one of the skull and tusks of Stegoson were removed from the hall.

The fossil plant cones and branches, and fossil invertebrates from Argentina, previously exhibited in Stanley Field Hall, were also placed in their stratigraphic order in Hall 38.

Work in the laboratory of Vertebrate Paleontology during the year was largely devoted to preparation of material collected in South America by the Captain Marshall Field Paleontological Expeditions of 1923-4. Specimens of this collection prepared for exhibition during the year were the following:—Of the Glyptodon, a carriage of which was previously mounted; a skull and lower jaws, tail sheath, two tibiae and fibulae, two ulnae-radii, one front foot, and nine caudal vertebrae; one ulna-radius and one front foot modeled from these; of the great sloth, *Scelidodon*: a skull and lower jaws, a foreleg and foot and a series of preserved cartilages; of the South American hippo, *Epiplatys*: a skull and lower jaws; of *Fundulus*: a forefoot; of *Mammuthus*: two ulnae-radii, one pelvis and one foot; of *Borhyaena*: two skulls and a part of lower jaws; of *Chalicotherium*: one skull; of *Nesodon*: ulna, radius and foot bones—most important of all, of the South American *Mastodon*: A skull and lower jaws and tusks, the latter five feet in length.

Three life-size figures illustrating typical Brazilian diamond mines were modeled by Mr. Prasad of the Department of Anthropology for the Department of Geology. These figures were based in part on papers from life and on details shown in photographs made by the Chamber of Geology in the Bahia, Brazil, diamond fields in 1923. The figures are in form a part of a group illustrating typical methods of diamond mining in Brazil.

In the chemical laboratory the work of restoring minerals from kish by electrical treatment was continued by Associate Curator Nichols up to the time of his departure for South America. He restored six or seven grams and the work was afterwards continued by Mr. Prasad. Results of the operations continue to be satisfactory. A treatise on the methods employed has been partially prepared by Mr. Nichols for publication by the Museum.

Six microtomes, four iron and two steel, were sent to the United States National Museum for sectioning, and a number of sections were made. Later, some of these were studied in the Museum laboratory.

ZOOLOGY.—The new installations in the Department of Zoology were fewer in number and less noteworthy than were the reinstallations, completed or still under way. Other important changes were made that added much to the interest and educational value of the exhibits.

A notable reinstallation was inaugurated in Hall 16, which contains the groups of North American mammals, whereby all of the four-sided cases will be replaced by built-in cases with but one or two sides of glass and curved backgrounds on which scenes of the habitats of the specimens exhibited can be painted. The adoption of this new type of case for groups will result in the elimination of objectionable glass reflections, in a considerable saving in exhibition area, and permit of a much more effective representation of the natural environment of the animals. On each side of the eastern end of the hall, three of the new style cases were built; the four end cases will have glass on two sides, while the two middle ones will have but one glass side each. In one of the two larger middle cases, a long delayed group of American Elk will soon be installed, the background for it having been painted by Mr. C. A. Corwin. The other cases are to accommodate some of the groups now on exhibition and others yet to be completed.

Two spaces on each side of the eastern end of Hall 16 were unsuitable for exhibits, therefore they were enclosed and made into excellent two-view group cases. In one, the group of Stone's Mountain Sheep was reinstalled with the addition of an appropriate background painted by Mr. Corwin. Some changes were also made in the groundwork and grouping of the animals. By means of this reinstallation the group has been made more attractive and a better representation is given of the animals' natural surroundings. In the other new case, opposite the Mountain Sheep, a new and pleasing group of five Rocky Mountain Goats, mounted by Mr. Julius Friesser and Mr. A. G. Rueckert, of the Museum staff, was installed. The background and the rock accessories depict accurately the high, bleak home of these animals.

For the inauguration of a hall of Asiatic mammal groups, two one-view, built-in cases were constructed in the east end of Hall 17, which in the meantime, contains exhibits of skeletons. A group of Marco Polo Sheep and a group of Ibex will be the first to be installed in the new hall. These are probably the two most interesting animals collected by the James Simpson-Roosevelt Asiatic Expedition. The background for the *Ovis poli* group has been painted by Mr.

Corwin, and some work by the same artist has also been done on the background for the Ilex group.

The reinstallation of the exhibits in Hall 16 required the removal of most of the groups to make room for the new cases. It also necessitated the packing of the background wall containing the noted Tennessee groups of the Virginia or Whitehall type, the work of the late Carl F. Adams. These were packed simply against the wall in such way that groups of the Tennessee set became separated. They were further damaged by covering them with a few curved boards in order to conceal the lights. To render the lighting still more effective, the cases were painted at the top. This work, as well as other changes and additions in the hall, made these cases inaccessible to the public for a number of months. The groups, however, are being cleaned, and in a few weeks they will again be exhibited.

To the exhibit of paintings prepared in four-hundred-dollar bills in Hall 14 a phenomenal pair of North American subjects was added. The early scene is executed on an artificial groundwork base, instead of the polished mahogany base formerly used, the presentation is therefore more natural and pleasing. Yet the scene was never available for treatment in the old style, even as one of the best.

The group of excellent reproductions of the American Chronicle in the west end of Hall 19 was transferred to a distant hall and now on the opposite side, and here was placed a background painted by Mr. Corwin. Not only does the addition of the background make the group more attractive, but it helps greatly to indicate the scope of the country in which these old-fashioned scenes were done.

Noteworthy as an appropriate addition to the Museum's exhibits were the three Illinois Green group of Illinois scenes depicting a town, installed in the west end of Stanley Ford Hall. These groups which, with their base, were presented to the Museum by Mr. Richard T. Crane, Jr., are appropriate in that the Illinois paintings were executed upon mahogany and green, representing the skilled and artistic work of the late Carl F. Adams, that the other institutions of painting. In order to indicate their actual growth, a special catalog paper and three photographs, entitled "Law Printing," was written by Mr. Tracy and printed by the Museum.

Much interest having been shown by the public as the result of the Captain Marshall Field Buffalo Expedition, a temporary exhibit was made in Stanley Ford Hall of some of the most attractive

birds, mammals (including the skin of the Jaguar shot by Mrs. Field), reptiles and insects. In the north end of the same hall a model of the new Chicago Zoological Park, near Riverside, Illinois, was placed on exhibition and attracted much attention.

Considerable progress was made on exhibition work of a preparatory nature on mammals, birds, fishes and insects. Several mammals also have been completed and are ready for installation. These include a group of *Cobus* Antelope and a cellulose-acetate reproduction of a Hippopotamus.

The reference collections have been improved in various ways. While being catalogued, many birds were identified and distributed wherever room was available. To relieve the crowded condition of the reference collections of birds and mammals, four two-section, large metal storage cases with sliding doors were purchased. In the division of osteology 2,037 skulls and skeletons were cleaned. Crates and cartons of osteological material to the number of 54 were unpacked, their contents placed in individual boxes, labeled, indexed and then distributed.

#### THE N. W. HARRIS PUBLIC SCHOOL EXTENSION

At the close of the year, 965 cases were available for loaning to the schools of Chicago. Of this total, 57 were prepared during the period under review. In addition to these cases there are a number in various stages of completion, as well as several that had to be repaired and others in which the installation required attention. During the school-year 1926-1927, scheduled loans of cases are being made to 371 schools, an increase of 18 schools over the previous year's schedule. In carrying out the plan of loaning two cases to each school for a period of two school-weeks 742 are in daily use. The list of schools, etc. to which cases are being loaned include: 326 elementary schools; 3 junior high; 13 senior high; 3 technical high; 8 continuation schools; 1 normal; 1 parental; 1 reform school for boys; 3 private schools; 3 Catholic schools; 4 branches of Y. M. C. A.; 1 orphan asylum; 2 community centers; 1 boy's club; and 1 branch of the public library. In order to deliver these cases to the various institutions, etc. by means of two trucks, the city is divided into two sections.

Interest in the cases and a desire for their use is not only increasing in the field for which they were originally intended—viz. the public schools of Chicago—but beyond the city as shown by the steadily growing number of requests to have them delivered regularly. As



PLANT SPECIMENS

PLANT SPECIMENS

PLANT SPECIMENS

ERRATUM:--Plate XII, Ancient Mesopotamian Wheat, description should read "These *charred* kernels" instead of "cleaned kernels."

in previous years, requests for the loan of cases were received from sources other than schools, and fulfilled, including the following: 11 cases loaned to the Chicago Art Institute, for use in the juvenile classes, 12 cases exhibited at the annual show of the Wild Flower Preservation Society of America; 10 cases of bird subjects, put on exhibition in the book section of Marshall Field & Company, in order to stimulate interest in books on birds. At the request of the Secretary, Bureau of Parks, Playgrounds and Beaches, of the City of Chicago, 24 cases were placed on exhibition at the McCormick Place. These were attractively installed and proved of considerable interest to a great number of visitors to the fair. At the suggestion of its president, 4 cases were loaned for two weeks to the Nashville Art Association with the object of fostering interest in the natural history museum there. The Director of the New York State Museum at Albany requested the loan of four cases for demonstrating before legislative committees, etc., the desirability of renting and emphasizing the work of the museum in this respect, with the schools of the State of New York.

Mr. A. W. Harris generously provided funds to enable the Museum to accept an invitation, to exhibit a number of cases of the Harris Extension at the Sesqui-centennial Exposition, for which purpose 22 cases were selected. Those chosen not only represented structural types in use, but also a wide diversity of subjects of natural history and economics that have been and are being studied in the schools of Chicago. Labels were prominently displayed on the cases, and there were also distributed and mailed to teachers and educational institutions in Pennsylvania and neighboring states, 20,000 illustrated pamphlets describing the foundation of the Department and the system it follows in preparing and loaning cases.

### ART RESEARCH CLASSES

The classes in research from the School of the Art Institute of Chicago visited the Museum daily. Statistics prove that the enrollment is increasing annually. The aid given by Field Museum and the Art Institute, whereby museum material is used direct for class work, is now beginning to be followed up by other institutions. The work of the class is rewarded in proving highly educational and it is considered a new move in the educational field.

The large portfolio in research, compiled by Mr. Williams is regarded as the only book of its kind published in the United States. There has been a considerable demand however, for a cheaper book on the same subject. To meet this call a smaller book, containing

46 plates, 10 of which are colored, was compiled by the same author, and it is suitable for use in junior and senior high schools.

A motion picture film, showing the study of art research in the Museum, has been released in the Pathé Review, and sanctioned by the New York office of Pathé, this picture will be shown throughout the United States.

### PUBLICITY

GENERAL.—During the last few years the scope of the Publicity work has been enlarged to include the aims and functions of the Museum, in order to create a closer relationship between the public and the Institution. To ensure this, international as well as national and local mediums were used. The greatest emphasis, however, was laid upon local efforts. The principal aim of the work is to instil an interest and a desire on the part of the citizens of Chicago and visitors to the city to visit the Institution.

Not only were attempts made to attract the public to the Museum through arousing an interest in its exhibits and activities, but especial efforts were made to acquaint the stranger to the city with the ways to reach the Museum. Various advertising mediums were generously placed at the disposal of the Museum without charge, and this opportunity is taken to extend the gratitude of the Institution to the donors of the space.

PRESS PUBLICITY.—An average of three news stories, many supplemented with illustrations, appeared each week in the Chicago daily newspapers. These articles ranged in length from items of fifty or sixty words to half or full column stories, or in some cases full page feature articles dealing with the more important activities of the Museum. It may be conservatively estimated that the accomplishments of the Institution were brought to the attention of the entire reading public of the United States and Canada, as well as the readers of the leading foreign newspapers, during the year under review.

National and international news and pictorial agencies which distributed information pertaining to the Museum during 1926 included the following: Associated Press, United News, United Press Associations, Newspaper Enterprise Association, North American Newspaper Alliance, Western Newspaper Union, International News Service, Universal Service, Consolidated Press, Central Press Association, Underwood & Underwood, International Newsreel, Pacific and Atlantic, Acme, Wide World Photos, and Kadel and Her-



best. Through comparison with foreign news agencies Field Museum news of educational and general interest was given publicity abroad by leading European and American news bureaus, including Exchange Telegraph, Central News, Reuters, Agence France, Rosta, British United Press, Nippon, Dainipon, and Havas, as well as other agencies operating in various parts of the world.

Throughout the year leading popular magazines, as exemplified by the *Comstockian* and *Liberty*, as well as scientific magazines, gave a great deal of space and commendation to the general activities of the Museum.

**ADVERTISING.** As in the previous year, the Chicago Rapid Transit Company kindly displayed in the various elevated stations a series of six colored posters depicting Museum exhibits. The same company and the Illinois Central Railroad also displayed placards announcing the lecture courses delivered during the spring and autumn. Overhead posters, advertising the Museum, were placed by the Chicago Surface Lines at their own expense, and displayed in the street cars. Through the courtesy of the Inland Advertising Company, the Illinois Central Railroad continued to devote advertising space in its suburban trains to the Museum.

Posters were distributed to libraries, schools and other institutions to advertise the spring and autumn lecture courses for adults. Similar are hundreds of posters advertising children's programs.

Through the continued courtesy of the Chicago W. Riley Advertising Agency, the Museum utilized a part of each program used by the agency, posters whose program are mentioned by the Institute. The officials of the Advertising Agency showed their continued interest in the Museum by offering a page advertisement in their program which during the 1926 season of that Agency carried more the space being secured through the interest of President Ford.

**INQUIRY PROGRAM.**—Of this kind had and to be visited of 575 inquiries during the year, many being made during the first and second of the year, by the Museum. With each inquiry was included a circular containing brief information concerning the matter referred to the public by the Institute. Through cards and letters also sent of wide distribution through the mailing of paid cards, commercial cards and railroad notices. The Chicago Rapid Transit Company kindly placed in all trains advertising the Museum by the elevated lines for distribution to the general public.

## DIVISION OF PRINTING

The increasing usefulness of the Division of Printing was again indicated by the numerous demands made upon it for work. Although 3,665 more exhibition labels and over 182,000 more impressions of a general character were printed than in the previous year, nevertheless it was not possible to give all the work prompt attention. The following publications were printed and bound during the period under review:

Regular Publication Series.....	12,426	copies
Leaflet Series.....	29,127	"
Memoirs Series.....	1,521	"
Museum Manual.....	5,000	"
General Guide.....	2,536	"
Descriptive Booklet for Membership.....	6,000	"
Anthropology, Guide No. 6 to the Ethnology of Polynesian and Micronesian Islands.....	5,000	"
Rules and Regulations for Expeditions.....	200	"
Publication Price List.....	300	"
Geographic Society Year Book.....	2,060	"
Pictorial Post Card Albums.....	10,109	"
Reproductions of Antiquities of Ancient Ireland.....	3,000	"
Total.....	77,279	copies

The number of labels and other impressions follows:

	Exhibition Labels	Other Impressions
Anthropology.....	3,923	4,300
Botany.....	2,458	8,275
Geology.....	1,187	3,653
Zoology.....	2,059	16,985
Harris Extension.....	317	24,370
General.....	.....	596,449
Geographic Society of Chicago.....	.....	59,400
Total.....	9,944	713,432

The size of the Museum's regular publications necessitated the use of plates that did not always do justice to the objects illustrated. Therefore, a quarto series, measuring 9" x 12" and entitled Anthropological Memoirs, was inaugurated. This quarto publication not only makes it possible to illustrate large specimens to good advantage, but the larger and wider margins make it much more legible and pleasing.

No additions to the equipment were made during the year.





AMERICAN CROCODILE

Captain Marshall Field Central American Expedition

Photographed by Lucien J. Waller. Plate mounted by A. S. Rehn.

## DIVISION OF PHOTOGRAPHY, ROENTGENOLOGY AND ILLUSTRATION

**PHOTOGRAPHY.**—The total number of lantern slides, negatives, and prints made by the Division during the year amounted to 13,656. The following tabulation is a summary of the work performed:

	Number of Lantern Slides Made	Number of Negatives Made	Number of Prints Made	Number of Illustrations Received for Field Expeditions
Anthropology	5	555	2,621	6
Biology		91	731	120
Geology		121	1,149	00
Zoology	57	185	1,447	372
Harris Expedition		40	146	
Publicity		358	906	42
Public Schools	1,194			
General	8	89	1,251	...
Gift	3		928	...
Sale			675	...
Photogravures		214	275	...
<b>Totals</b>	<b>1,267</b>	<b>1,653</b>	<b>10,087</b>	<b>648</b>

**ROENTGENOLOGY.**—An important installation made during the year is the completely equipped x-ray laboratory, marking a new departure in museum practice. President Field personally financed the equipment of the laboratory, which has been developed as a division of roentgenology in charge of Miss Anna Reginalda Bohan.

So far as is known Field Museum is the only institution of its kind to be equipped with a complete x-ray service.

The object of this new division is to aid in the examination, classification and differentiation of natural history specimens. The scope of the work will extend to all the departments of the Museum.

**PHOTOGRAVURE.**—The number of photogravures made during the year exceeded the total for 1925 by 218,636. The following indicates the work of the division during the year:

	Number of Issues
Report of the Director	77,000
Leaflet Illustrations	105,000
Picture Post Card Album	90,000
Post Cards of Field Museum	15,000
Membership Handings	1,000
Miniature Cards	30,000
Retinal Cards	150,000
<b>Total</b>	<b>770,000</b>

ARTIST.—The following is a resumé of the work executed by this division during the period under review:

Drawings made.....	274
Lantern slides colored.....	619
Photographs retouched.....	54
Negatives blocked.....	98
Maps drawn.....	9
Miscellaneous items made.....	13
Total.....	1,067

### ATTENDANCE

During the year the Museum was visited by 930,571 persons, which is approximately 207,621 more than the figure for 1925. From the statistics it may be inferred that the past year has been the most successful—as regards attendance—in the history of the Institution. The fact that more people have visited the Museum during the last five years, than in the seventeen years when it was located in Jackson Park, proves beyond doubt the advantage of the new location over the old site. This increased interest in the Museum serves as an impetus and inspiration to members of the staff to increase and perfect the means of disseminating knowledge. An analysis of the admissions is made elsewhere in this report.

Herewith are also submitted financial statements, lists of accessions, names of members, etc.

D. C. DAVIES, Director.

## ATTENDANCE STATISTICS AND DOOR RECEIPTS

FROM JANUARY 1, 1926, TO DECEMBER 31, 1926

Total Attendance	930,571
Paid Attendance	136,741
Free Admissions on Pay Days	
Students	165,811
School Builders	4,000
Teachers	1,416
Members	1,208
Special agreement Eucharistic Congress, June, 1926	20,190
Admissions on Free Days	
Thursdays 50	87,715
Saturdays 10	194,111
Sundays 40	405,201
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Highest Attendance on any day June 26, 1926	54,924
Lowest Attendance on any day March 31, 1926	106
Highest Paid Attendance June 22, 1926	7,420
Average Daily Admissions (365 days)	2,549
Average Paid Admissions (290 days)	464
Number of trunks sold	1,300
Number of Articles cleared	21,144
Number of Picture Postal Cards sold	16,904
Sale of Publications, Leaflets, Handbooks and Photographs	\$3,201.80

## GENERAL FUND

## STATEMENT OF CASH RECEIPTS AND DISBURSEMENTS

AT DECEMBER 31, 1926

Balance, December 31, 1925.....	\$15,895.47
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## RECEIPTS

Income—Endowment, General, Miscellaneous and door receipts.....	\$ 309,396.71	
South Park Commissioners.....	177,432.05	
Sundry Receipts.....	12,631.21	
Memberships.....	77,905.00	
Contributions.....	329,931.18	
Sales of Securities.....	691,648.86	\$1,598,945.01
		<hr/>
		\$1,614,840.48

## DISBURSEMENTS

Operating Expenses.....	\$ 461,558.91	
Expeditions.....	120,540.01	
Collections Purchased.....	113,521.77	
Furniture and Fixtures.....	12,024.60	
Securities Purchased.....	855,217.05	
Annuities on Contingent Gifts.....	39,665.00	
		<hr/>
	\$1,602,527.34	
Transferred to Sinking Fund.....	12,900.00	\$1,615,427.34
		<hr/>
Overdraft, December 31, 1926.....		\$ 586.86



## THE N. W. HARRIS PUBLIC SCHOOL EXTENSION

## STATEMENT OF INCOME AND EXPENSES FOR THE YEAR 1926

INCOME		
Interest and Dividends on Investments . . . . .	\$21,188 61	
Amount transferred from Reserve Fund	1,204 80	
	<u>22,393 41</u>	\$22,413 41
EXPENSES		
Operating Expenses		\$22,466 96
Overdraft: December 31, 1926 . . . . .		\$53 55

## STANLEY FIELD PLANT REPRODUCTION FUND

## STATEMENT OF INCOME AND EXPENSES FOR THE YEAR 1926

Balance, December 31, 1925	\$ 927 66
Contributions by Stanley Field during 1926	10,190 66
	<u>\$11,118 32</u>
Operating Expenses, 1926	10,587 57
Balance, December 31, 1926	\$ 530 75

## ACCESSIONS

## DEPARTMENT OF ANTHROPOLOGY

- ADVENTURERS' CLUB OF CHICAGO.**  
50 objects: wood carvings, carved stones, bone needles, tapa and skulls—Easter Island (gift).
- AMERICAN FRIENDS OF CHINA, Chicago.**  
2 objects: 1 brocaded imperial tapestry and 1 imperial chair-cover of tapestry weave—China (gift).
- ARTS CLUB OF CHICAGO.**  
5 objects: 1 wooden figure of man, French Congo; 1 wooden female figure and 1 stringed musical instrument, Sudan; 1 wooden figure, New Caledonia; 1 wooden figure, New Zealand (gift).  
1 carved and lacquered wooden dragon screen, 10 feet, 4½ inches high, 7 feet, 9 inches wide—Peking, China (gift).
- AYER, EDWARD E., Chicago.**  
1 old pewter jar with punched designs—China (gift).  
3 pewter objects: 1 lotus dish, Tang period; 1 decorated tea-pot, 18th century, and 1 tea-pot—China and Japan (gift).  
10 objects of pewter: 1 tray, 3 boxes, 1 tea-pot, 1 vase, 1 censer in shape of dragon, 2 pairs of candlesticks, 1 single candlestick—China (gift).  
2 pewter objects: 1 cash-box, 1 pair of candlesticks—Swatow and Canton, Kwang-tung Province, China (gift).  
2 pewter objects: 1 wine-pot in shape of carp, 1 tray with designs inlaid in brass—China (gift).  
2 pewter objects: 1 dish fitted with carved coconut shell and 1 lacquered tea-jar—China and Japan (gift).  
4 objects: 3 pieces of pewter and carved coconut shell, and 1 tailor's iron of brass—China (gift).  
1 pewter bed-warmer—Strasbourg, France (gift).
- 1 pewter medal "Continental Currency 1776"—United States (gift).  
1 pewter tray inlaid with designs in brass, Ming period—China (gift).  
5 pewter objects: 1 tray and 3 tea-jars with designs in colored lacquer, 1 tea-jar with engraved designs—Japan (gift).  
2 pewter tea-pots inlaid with designs in brass—China (gift).
- BAHR, A. W., New York City.**  
1 ink drawing of pig, mounted on silk in form of a scroll—China (gift).
- BORLAND, MRS. CHAUNCEY B., Chicago.**  
1 ancient mortuary clay figure representing a rhinoceros—Ho-nan Province, China (gift).
- BROWN, W. DUVAL, Rio de Janeiro, Brazil.**  
1 ornament of strung seeds with marble tube in center—Tara-cua, Brazil (gift).
- BURR, RICHARD, Chicago.**  
1 tapa beater—Hawaii, Polynesia (gift).
- CARPENTER, MRS. JOHN ALDEN, Chicago.**  
1 carved wooden figure of woman—West Africa (gift).
- CHANDLER, M. G., Chicago.**  
5 objects: 1 Iroquois woollen sash, and 2 woollen sashes, 1 roach of deer hair, and 1 pair of beaded moccasins of the Potawatomi—Iroquois and Potawatomi, New York and Kansas (exchange).
- EGAN, W. C., Egandale, Highland Park, Illinois.**  
11 objects: 4 skullcaps of hazel-root basketry—Klamath, Oregon; 1 bow and 6 arrows—Africa (gift).
- FIELD, HENRY, Chicago.**  
About 100 prehistoric flint and quartzite implements—Bobadilla, Spain (gift).



- Suwa, Fiji, and 1 basket, Korea—New Guinea, Fiji, and Korea (gift).
- LINDEGREN, MR. AND MRS. C. C.**, Rhinelander, Wisconsin.  
14 flint arrowheads and flakes—Beebe White County, Arkansas (gift).
- LONG, LINUS**, Chicago.  
1 ivory figure with ivory base, of Tung-fang So, Ming period (1368-1643)—China (gift).
- MACMILLAN, COMMANDER D. B.**, leader of Crocker Land Expedition, Freeport, Maine.  
4 specimens: 1 fur-lined beaded jacket, 1 pair of sealskin breeches, and 2 pairs of sealskin boots, being complete suit of Eskimo girl—Greenland (gift).
- MANDEL, MR. AND MRS. FRED L.**, Chicago.  
2 inscribed Lamaist paintings—Tibet (gift).
- MARR, JOHN C.**, Oaklawn, Illinois.  
2 flint arrowheads—Farm near Joliet, Will County, Illinois (gift).
- MORI, S. H.**, Chicago.  
1 old silk fan painted with landscape—China (gift).
- NARJAL, HERMAN W.**, Chicago.  
1 fur coat—Eskimo, Point Barrow, Alaska (gift).
- OPENSHAW, REV. H. J.**, Chengtu, China.  
2 objects: 1 rubbing of Chinese inscription of Han period from Lu-shan, Ya-chou fu, Szechuan, and 1 collection of handwritten compositions on silk—China (gift).
- OTAGO UNIVERSITY MUSEUM**, Dunedin, New Zealand.  
139 objects: prehistoric implements of stone and bone, adzes, arrow-points, fish-hooks, drill-points, needles, spear-points, and flakes—Otago, New Zealand (exchange).
- PLAUTZ, HENRY F.**, Oconomowoc, Wisconsin.  
1 quartzite scraper—Oconomowoc, Waukesha County, Wisconsin (gift).
- RINEHART, WILLIAM G.**, Batesville, Arkansas.  
3 objects: 2 prehistoric grooved stone hammers and 1 prehistoric rubbing stone—Ionia, Michigan, and Batesville, Arkansas (gift).
- SARGENT, HOMER E.**, Pasadena, California.  
1 red and black serape—Mexico.
- SHETRONE, H. C.**, Columbus, Ohio.  
1 small sample of woven fabric—Seip Mound No. 2, Bainbridge, Ross County, Ohio (gift).
- SMITH, MRS. GEORGE T.**, Chicago.  
158 objects: 101 money belts, 24 pouches, 4 cases of spectacles, 3 caps, 3 pairs of slippers, 23 small pieces, all of colored beadwork—China (gift).
- SMITH, MRS. GEORGE T., MRS. JOHN J. BORLAND, MISS K. S. BUCKINGHAM, MARTIN A. RYERSON, JULIUS ROSENWALD, OTTO C. DOERING, AND MARTIN C. SCHWAB**, Chicago.  
656 archaic jades—China (gift).
- STROBEL, MRS. CHARLES**, Chicago.  
1 suit of armor, 17th century—Japan (gift).
- TURNER, CHARLES J.**, Chicago.  
9 objects: 1 tomahawk pipe, 1 tobacco case with bead and quill work, 2 knife sheaths, 1 war club, 2 pairs of moccasins, 2 dolls—Sioux, Standing Rock Agency, North Dakota (gift).
- UPHAM, MRS. FRANK R.**, Marshfield, Wisconsin.  
2 objects: 1 wampum belt—Mohawk Valley, Keddersbury, New York; 1 knife and chopstick in sheath—China (gift).
- VAN SCHAACK, PETER**, Chicago.  
1 pair of sealskin shoes—Lapp, Hammerfest, Norway (gift).
- WHITTLE, B. H.**, Hobart, Tasmania, Australia.  
50 chipped stone implements gathered from old camp-sites—Barnards Creek, Mt. Leslie, etc., Tasmania, Australia (exchange).



LIBRARY  
OF THE  
UNIVERSITY OF ILLINOIS

**WILLIAMS, MR. AND MRS. J. EDDY**, Great Lakes, Illinois.  
14 objects: 1 model of house, 1

1 bottle of medicinal compound,  
1 small bottle of medicinal oil,  
1 box of small specimens, 120  
1 box of medicinal oil, 1 gift.

DEPARTMENT OF BOTANY

**ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA**, Philadelphia, Pennsylvania.

**FIELD MUSEUM OF NATURAL HISTORY**

Received by Mrs. Agnes Cooper,  
Chicago, March 1, 1907 from  
Mrs. Agnes Cooper, 1907.

175 herbarium specimens.  
Collected by H. F. Schlegel, A.  
S. Fernald, Charles F. G. Fernald,  
Frederick Van Dyke,  
12 herbarium specimens.

Collected by E. J. Englemann, Captain  
Marshall Field Brazilian Ex-  
pedition, 1845.

95 herbarium specimens and natu-  
ralia specimens, 48 photo-  
graphs.

Collected by J. F. Macbride, Field  
Museum Expedition to Illinois  
and Indiana, 1891.

186 herbarium specimens.  
Collected by H. W. Young, Captain  
Marshall Field Brazilian Ex-  
pedition, 1845.

1 herbarium specimen.  
18 photographs of part of.  
Collected by H. W. Young, Captain  
Marshall Field Expedition to  
Para, Brazil and China, 1845.

171 herbarium specimens.  
Collected by A. C. Wood, Harvard  
Museum, Brazilian Expedition,  
1845.

126 herbarium specimens.  
Collected by A. Wood, Captain  
Marshall Field Expedition,  
Para, 1845.

135 herbarium specimens,  
411 duplicate specimens,  
Shaw's Field Laboratory.  
14 models and reproductions of  
plants.

1978 herbarium specimens,  
61 economic specimens.

**GARFIELD PARK CONSERVATORY**, Chicago.  
2 economic specimens, palm leaves  
-gift.

**GLIDDEN FOOD PRODUCTS COMPANY**, Chicago.  
1 economic specimen, white mus-  
sard seed - gift.

1 herbarium specimen, exchange.  
**AGRICULTURAL EXPERIMENT STATION**, Baton Rouge, Louisiana.

2 economic specimens, 14 sets of  
cuttings - gift.

**BENNY, H. J.**, Chicago.  
146 herbarium specimens, gift.  
271 duplicate specimens, gift.

**BYRLE, E. W.**, Federal Inspector,  
National, St. Paul, Minnesota.  
18 economic specimens, various  
kinds of seeds - gift.

**CHUBB HILL, J. B.**, Instructor,  
Massachusetts.  
126 herbarium specimens, gift.

**CLARKSON, MISS B.**, Chicago.  
1 herbarium specimen, gift.

**CORN PRODUCTS REFINING COMPANY**, Argos, Illinois.  
1 economic specimen, cut sugar  
"beetroot" - gift.

**CRANFALL, F. E.**, Agricultural Ex-  
periment Station, Kingston,  
New York.  
2 economic specimens, leaves of rice  
- gift.

**DAHLGREN, FR. E. F.**, Chicago.  
11 specimens, palm leaves and seeds  
- gift.

**DONNA, M. J.**, Secretary National  
Manufacturing Association,  
Chicago, Illinois.  
21 economic specimens, various  
kinds - gift.

**EDDY, G.**, Forest Ranger, Illinois.  
121 herbarium specimens, gift.

**ERLING, C.**, University of Califor-  
nia, University Branch, Los An-  
geles, California.  
200 herbarium specimens, gift.

**EDDY, G.**, Forest Ranger, Illinois.  
121 herbarium specimens, gift.

**ERLING, C.**, University of Califor-  
nia, University Branch, Los An-  
geles, California.  
200 herbarium specimens, gift.

110 FIELD MUSEUM OF NATURAL HISTORY—REPORTS, VOL. VII.

- GRONEMAN, C., Elgin, Illinois.  
4 herbarium specimens (gift).
- HALDER, I. M., Laurens, Iowa.  
1 economic specimen, 6 ears of corn (gift).
- HAMMERMILL PAPER COMPANY, Erie, Pennsylvania.  
13 economic specimens, paper making exhibit (gift).
- HUNGARIAN NATIONAL MUSEUM, Budapest, Hungary.  
100 herbarium specimens (exchange).
- HYNES, J. A., U. S. Appraiser's Office, Chicago.  
1 specimen, "silver leaves" (gift).
- ILLINOIS POWER AND LIGHT CORPORATION, Chicago.  
1 economic specimen, log (gift).
- IMPERIAL FORESTRY INSTITUTE, University of Oxford, England.  
100 herbarium specimens (exchange).
- KANN, R. G., Rakuda Wood Products Company, Pittsburgh, Pennsylvania.  
4 wood specimens (gift).
- LOS ANGELES CHAMBER OF COMMERCE, Chicago Headquarters.  
12 economic specimens, grapes, olives and honey (gift).
- MAYER, L. S., State Experiment Station, Knoxville, Tennessee.  
1 economic specimen, 6 ears of corn (gift).
- "A MEMBER," Field Museum, Chicago.  
1 specimen, lace bark (gift).
- MITSUI AND COMPANY, LTD., New York City.  
1 economic specimen, soya bean oil (gift).
- MOFFATT, DR. W. S., Wheaton, Illinois.  
1,228 herbarium specimens (gift).
- MONTERO, G., Museo Nacional de Chile, Santiago, Chile.  
1 herbarium specimen (gift).
- MOORE, G. E., Lebanon, Missouri.  
1 herbarium specimen (gift).
- MUSÉUM D'HISTOIRE NATURELLE DE PARIS, Paris, France.  
500 herbarium specimens (exchange).
- NATIONAL MUSEUM OF WALES, Cardiff, Wales.  
566 herbarium specimens (exchange).
- NEAL, H. W., Lebanon, Tennessee.  
1 economic specimen, 6 ears of corn (gift).
- NUTTALL, L. W., Philipsburgh, Pennsylvania.  
1 economic specimen, ephedra (gift).
- PEATTIE, D. C., Rosslyn, Virginia.  
50 herbarium specimens (gift).
- PHILLIPS, O. F., Chairman Board of Review, Bureau of Agricultural Economics, Chicago.  
11 Trays of official grain standards, U. S. A. (gift).
- PILLSBURY FLOUR MILLS COMPANY, Minneapolis Minnesota.  
1 flour mill model (gift).
- PRAY, L. L., Chicago.  
1 reproduction of a mushroom (gift).
- RECORD, S. J., New Haven, Connecticut.  
9 economic specimens, palm seeds (gift).
- REDFERN, R., Yarmouth, Iowa.  
1 economic specimen, 6 ears of corn (gift).
- RED STAR MILLING COMPANY, Wichita, Kansas.  
50 economic specimens, wheat milling (gift).
- ROSE, J. N., Washington, D. C.  
1 herbarium specimen (gift).
- SAWYER BISCUIT COMPANY, Chicago.  
1 economic specimen, cracker exhibit (gift).
- SHERFF, E. E., Chicago.  
50 herbarium specimens (gift).
- SIEGLINGER, J. B., Woodward, Oklahoma.  
10 economic specimens, heads and seeds of sorghum (gift).



**STEIN HALL MANUFACTURING COMPANY** Chicago  
 1 entomological specimens, mounted, gill.

**THAYER E.** Cambridge, Mass.  
 2 herbarium specimens, gill.

**UNITED STATES DEPARTMENT OF AGRICULTURE**, Washington, D. C.  
 1 entomological specimens, various kinds of wheat grains and heads, gill.  
 267 herbarium specimens (exchange).

**VICTORIN PIERRE MARIE**, University of Montreal, Canada  
 267 herbarium specimens (exchange).

**WHEELER, H. J.**, University, Alabama  
 22 herbarium specimens, gill.

**WILL, O. H. & COMPANY**, Des Moines, North Dakota  
 22 entomological specimens, gill, gill.

**WILSON, P.**, New York Botanical Garden, New York City  
 4 herbarium specimens, gill.

DEPARTMENT OF GEOLOGY

**ABRAHAM, FRANCIS M.**, Chicago  
 1 specimen agate, small, gill.

**ABRENS, E. FERD.**, Minneapolis, Minn.  
 21 specimens, some green and quartz, thin, 75 gill, gill.

**AVERY, JOHN C.**, New York  
 1 specimen, small, color, 10 gill.

**BANK, J. W.**, New York City  
 1 small piece of mineral, for specimen, gill.

**BENNETT, GEORGE F.**, Boston, Mass.  
 100 lbs. of heavy bed of granite, 100 gill.

**BENNETT, J.**, Chicago  
 1 specimen, small, 10 gill.

**BUTLER, JAMES**, Chicago  
 2 specimens, small, 10 gill.

**CHAMBER, WILLIAM J.**, Chicago  
 40 specimens, small, 10 gill.

**CONNELLY, MARY ELIZABETH**, New York  
 1 specimen, small, 10 gill.

**COST, CHARLES E.**, Chicago  
 2 specimens, small, 10 gill.

**CRAIG, B. J.**, Los Angeles, California  
 7 specimens, limestone concretions, Colorado, gill.

**DE LUCA, DR. A.**, Chicago  
 2 specimens, rock, crystal, 10 gill.

**DE KEE, J.**, Chicago  
 1 specimen of rock, 10 gill.

**FELIPONE, DR. FLORENTINO**, Montevideo, Uruguay  
 1 Fern of Glyptolite, -Colonia, Uruguay, gill.

FIELD MUSEUM OF NATURAL HISTORY.

1 specimen, small, 10 gill.

1 specimen, small, 10 gill.

1 specimen, small, 10 gill.

1 specimen, small, 10 gill.

100 specimens, small, green and invertebrates, New York State. Collected by A. C. Wood (Hawson-Marché, Insular, Española, 1911).

- 6 specimens fossil fish—South Strömfiord, Greenland.  
 Collected by Third Asiatic Expedition of American Museum of Natural History and Field Museum of Natural History.  
 Nest of 6 Dinosaur eggs—Gobi Desert, Mongolia.  
 Skull of Protoceratops—Gobi Desert, Mongolia.  
 Large Dinosaur egg—Gobi Desert, Mongolia.  
 Skull and jaws of Titanotherium—Murun, Mongolia.
- Purchases:**  
 1 specimen stone meteorite—East Griqualand, South Africa.  
 1 specimen iron meteorite—near Navajo, Arizona.  
 1 specimen vari-colored agate—Uruguay.  
 Group of sand-calcite crystals—Washabaugh, South Dakota.
- GAINES, E. P., Chicago.**  
 1 specimen calamite stem—Pocahontas Coal Field, West Virginia (gift).
- HANSON, N. EVERETT.**  
 1 specimen sand concretion—Turtle Lake, North Dakota (gift).
- HARSTAD, A. J., Wolf Creek, Montana.**  
 5 specimens orthoclase—Wolf Creek, Montana (gift).  
 1 specimen chalcopyrite—Wolf Creek, Montana (gift).
- JACOBS, O. B., Chicago.**  
 1 specimen fossil leaf—Mazon Creek, Illinois (gift).  
 1 specimen fin-spine of fossil shark—Le Grand, Iowa (exchange).
- JAMES, BARRIE PIERCE, La Porte, Indiana.**  
 Part of skeleton of Phytosaur (Belodon)—St. John's, Arizona (gift).
- JONIKAR, STANLEY, Chicago.**  
 4 specimens marcasite—Chicago (gift).
- KORAL, STANLEY, Union Pier, Michigan.**  
 2 specimens clay concretions—Union Pier, Michigan (gift).
- MCCREA, W. S. AND JAMES, W. R., Chicago.**  
 1 specimen, body of duck preserved as adipocere—Snicarte, Illinois (gift).
- MINNECI, CHRIST S., Chicago.**  
 Part of jaw and tooth of Mastodon—Bowling Green, Florida (gift).  
 3 specimens fish teeth—Bowling Green, Florida (gift).
- MORRISON, WILLIAM, Toronto, Canada.**  
 1 specimen sodalite—Bancroft, Ontario, (gift)
- MÜLLER, ALFRED, Friedrichshagen, Germany.**  
 108 specimens invertebrate fossils.  
 1 specimen fossil vertebra of fish.  
 2 specimens fossil raindrops and moulds of salt crystals (exchange).
- NAWN, HUGH, State of New York.**  
 2 slabs showing fossil mollusk tracks—Gilboa, New York (gift).
- O'BRIEN, GEORGE F., Cedar Rapids, Iowa.**  
 1 specimen tungsten ore (concentrates)—Ozark Mine, Silver Mountain, Missouri (gift).  
 1 specimen scheelite concentrates—Bishop, California (gift).
- PATEE, FRED, Casper, Wyoming.**  
 1 specimen garnet enclosed in matrix—Casper Mountain, Wyoming (gift).
- PITTS, W. B., Sunnyvale, California.**  
 3 specimens chrysoprase (1 cut)—near Porterville, California (gift).  
 2 specimens quartz—Willard, Utah (gift).
- RICHARDS BRICK COMPANY, Edwardsville, Illinois.**  
 2 briquettes—Edwardsville, Illinois (gift).
- RINEHART, W. G., Batesville, Arkansas.**  
 1 specimen manganese concretion in limestone.  
 8 specimens fossil shark's teeth  
 10 specimens brachiopods.  
 12 specimens manganese ore.  
 1 specimen copper ore.  
 4 specimens rock weathering—Batesville, Arkansas (gift).

**SENGHAAS HENRY**, Chicago.  
20 specimens minerals and some  
specimens—Chicago (gift).

**SMILEY CONNIE**, Illinois, U.S.A.  
1 specimen tungsten ore concentrate—  
Miss. Nevada (gift).

1 lot tungsten ore concentrate—  
Illinois, California (gift).

**SHEPHERD CHARLES A.**, Illinois.  
1 mammoth tooth—Illinois (gift).

**SOCIEDAD NACIONAL DE MIN-  
ERAS**, Santiago, Chile.  
20 specimens minerals and ores—  
Chile (gift).

**STANDARD OIL COMPANY (IN-  
DIANA)**, Chicago.  
1 specimen separator oil (gift).

**MULLIVAN A. H.**, St. Louis, Mis-  
souri.  
1 specimen silica sand—Pacific  
Massachusetts (gift).

**SWANE, C. RICHARD**, Chicago.  
2 specimens concretions and min-  
erals—various localities (gift).

**TRAIN, PERCY**, Lower Rochester,  
Nevada.

15 specimens ophthalopods—Ameri-  
can Canyon, Nevada (ex-  
change).

1 specimen polynoid—American  
Canyon, Nevada (exchange).

**TRISTAN, J. F.**, San Jose, Costa  
Rica.

4 specimens vertebrae—Costa  
Rica (gift).

1 specimen crystallized hematite—  
Costa Rica (gift).

**VALCK, MRS. ANTOINETTE**, Chi-  
cago.

1 specimen marcasite concretion  
(gift).

**VEECK, G. A., INC.**, New York City.

12 photographs illustrating the  
Agate Industry in Idar—Idar,  
Germany (gift).

**WALLER, DR. S. M.**, Granada, Hon-  
duras.

3 molar teeth of Mastodon sp.—  
Granada, Honduras (gift).

**WENDLER, C.**, Geneva, Switzerland.

1 specimen meteorite—Bur Ghel-  
ui, Italian Somaliland, Africa  
(exchange).

DEPARTMENT OF ZOOLOGY

**ANONYMOUS**  
14 bird nests—Indiana, Illinois,  
Michigan (gift).

**APPLEBAUM A.**, Chicago.  
1 snake—Central America (gift).  
1 spider—Honduras? (gift).

**BENSON, HAROLD**, Stanley, Wis-  
consin.  
2 grass snake eggs—Bateman Wis-  
consin (gift).

**BOSWELL, O. F.**, Iota Mines, Iowa.  
20 butterflies—Japan and For-  
mosa (exchange).  
4 moths—Iota Mines, Iowa (ex-  
change).

**BRADLEY, H. E.**, Chicago.  
1 centurion—Sumatra (gift).

**BRYANT, OWEN**, Banff, Alberta.  
2 birds—Banff, Alberta (gift).

**BUTLER, A. L.**, Hersham, England.  
1 humming bird—Eastern Equa-  
dor (exchange).

**CARNEGIE MUSEUM**, Pittsburgh,  
Pennsylvania.  
393 fishes—Brazil, Bolivia and Ar-  
gentina (exchange).

**CASCARD, B.**, Chicago.  
1 butterfly—Black Oak, Indiana  
(gift).

**CLERG, W. G.**, Delamere, England.  
6 red grouse—North Wales (gift).  
2 gray partridges—Kenture, Eng-  
land (gift).

**COALE, H. K.**, Highland Park, Illi-  
nois.

1 wood rat—California (gift).

2 poster graphs—La Puerta Val-  
ley, California (gift).

- 5 pigeons—Various localities (gift).  
 2 cowbirds—Chile (gift).  
 1 loon, 1 Chinese teal (gift).  
 1 lizard—Pasadena, California, (gift).
- COLTON, A. S., Chicago.**  
 1 beetle—Chicago (gift).
- CONOVER, H. B., Chicago.**  
 1 least weasel—Cherry County, Nebraska (gift).  
 1 horned grebe—Poplar Branch, North Carolina (gift).
- CRANE, RICHARD T., JR., Chicago.**  
 3 bronze groups, with mahogany bases, of African Natives Spear-ing Lions (gift).
- DAWSON, CHARLES W., Muskogee, Oklahoma.**  
 1 Chesapeake terrapin—Muskogee, Oklahoma (gift).  
 1 Cumberland terrapin shell—Illinois River, Oklahoma (gift).
- DEASON, DR. W. J., Chicago.**  
 6 caribou, 2 Canadian woodchucks—Yukon Territory (gift).
- DUNLAP, MRS. F. L., Chicago.**  
 1 great bird of paradise (gift).
- EIFRIG, PROF. C. W. G., River Forest, Illinois.**  
 1 cicada—Bishop, Texas (gift).
- FELGER, JESSE L., Pheba, Mississippi.**  
 1 snake—Pheba, Mississippi (gift).
- FIELD MUSEUM OF NATURAL HISTORY.**  
 Collected by C. J. Albrecht (Captain Marshall Field Pacific Coast Expedition):  
 1 gull, 1 oystercatcher, 2 cormorants—Clallam County, Washington.  
 5 hair seals, 11 sea lions—La Push, Washington.  
 7 mule deer—Kaibab National Forest, Arizona.
- Collected by G. K. Cherrie, Mrs. Marshall Field, K. P. Schmidt, C. C. Sanborn and C. Taylor (Captain Marshall Field Brazilian Expedition):  
 362 mammals, 648 birds, 282 reptiles and amphibians, 2,137 fishes, 903 invertebrates—Argentina, Brazil and Paraguay.
- Collected by H. B. Conover, Robert H. Everard and John T. Zimmer (Conover-Everard African Expedition):  
 83 mammals, 322 birds—Tanganyika Territory.
- Collected by Edmund Heller and Dr. H. H. Heller (Captain Marshall Field Central African Expedition):  
 1,170 mammals, 8 birds, 996 reptiles and amphibians, 32 fishes and 11 invertebrates—Central Africa.
- Collected by E. Liljeblad:  
 4 butterflies, 1 moth—Edgebrook, Illinois.
- Collected by Elmer S. Riggs (Captain Marshall Field Paleontological Expedition):  
 18 mammal skulls, 1 rhea skull and 1 king vulture skull—Santa Cruz, Argentina.
- Collected by Col. Theodore Roosevelt, Kermit Roosevelt and George K. Cherrie (James Simpson-Roosevelt Asiatic Expedition):  
 225 mammals, 552 birds, 70 reptiles and amphibians and 77 invertebrates—India and Chinese and Russian Turkestan.
- Collected by A. C. Weed and Ashley Hine (Rawson-MacMillan Subarctic Expedition):  
 52 mammal skins and skulls, 158 birds, 28 birds' eggs, 625 fishes and 931 invertebrates—Maine, Nova Scotia, Newfoundland, Labrador and Greenland.
- Collected by Third Asiatic Expedition (American Museum of Natural History):  
 394 mammals, 249 fishes—China and Mongolia.
- Collected by A. B. Wolcott and Earl G. Wright (N. W. Harris Public School Extension of Field Museum of Natural History):  
 6 insects—Hessville, Indiana.  
 1 red-tailed hawk—Delavan, Wisconsin.
- Purchases:  
 1,482 birds—Argentina.  
 1 snowy owl—Edmonton, Alberta.  
 9 frogs, 1 turtle—Gainesville, Florida.  
 88 birds—Germany, Hungary, Spain and Asia Minor.

1 insect—Faintly identified.  
 20 beetles—14 common, 6 insects of large and small numbers, Arkansas.  
 4 birds—Insects of birds.  
 1 specimen of insect, great water bug.  
 2 birds—Insects of birds.  
 24 birds—July, August and fall.  
 20 specimens, 100 eggs—Maine, Michigan and Virginia.  
 2 specimens—Maine.  
 1 pair of parasites—New Orleans.  
 4 birds—Large Illinois, N. Illinois.  
 20 specimens—North Carolina, Alaska and West Virginia.

**FISHER, T. J., Chicago.**  
 1 insect—Green River, Utah gift.

**FORDE, ELM., Chicago, Illinois.**  
 1 great water bug.

**FOUNT, WILLIAM W., Chicago, New Jersey.**  
 19 birds, 1 insect—Chicago, New Jersey gift.

**FREEDMAN, L. S., St. Louis, Iowa.**  
 19 birds—Great Lakes gift.

**FRIEDMAN, J., Chicago.**  
 4 Angora cat hair—Chicago gift.

**GENHAM, WILLIAM J., Chicago, Kansas—Barnes, Indiana gift.**

**GOBY, W. V., Chicago.**  
 1 insect—Chicago gift.

**GRANT, H., Park Ridge, Illinois.**  
 1 specimen—Park Ridge, Illinois gift.

**HAMMOND, F., Wisconsin, Illinois.**  
 1 dead beetle—Wisconsin, Illinois gift.

**HALLGREN, DR. AND MRS. C. H., Chicago.**  
 128 specimens, 4 eggs—Chicago, Wisconsin and Texas gift.

**HARRIS, GEORGE A., Chicago.**  
 1 dragonfly—Chicago gift.

**HINE, ALBERT, Chicago.**  
 10 birds and two insects—Illinois gift.  
 2 birds (exchange).

**HUNGERFORD, DR. H. M., Lawrence, Kansas.**  
 6 water bugs—Haskell County, Texas gift.

**JONES, DR. M. H. MITCHELL, Wausau, Wisconsin.**  
 1 painted grouse—Wausau, Wisconsin gift.

**KING, JAMES B., Star City, Indiana.**  
 1 specimen—Star City, Indiana gift.

**KOMLE, DR. WALTER, Ann Arbor, Michigan.**  
 2 birds—Greenland gift.

**KULVIN, DR. HARRY H., Chicago.**  
 1 red bat—Chicago gift.

**LANE, E. J., Chicago.**  
 2 insects—Ohio and Illinois gift.

**LYON, WILLIAM I., Waukegan, Illinois.**  
 2 bird-lice, 1 house fly—Waukegan, Illinois gift.

**MACKAY, JAMES M., Chicago.**  
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 2 mallards—Browning, Illinois gift.

**MARSHALL, BYRON, Imboden, Arkansas.**  
 24 beetles—Imboden, Arkansas (exchange).

**MARN, E. J. F., Evanston, Illinois.**  
 2 beetles—Beach, Illinois gift.

**METCALF, ROWE B., Wisconsin, Michigan.**  
 85 birds, 2 birds' eggs—Indiana and Greenland gift.

**MEYER, BERNARD, Wisconsin, Illinois.**  
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**MILLET, A. F., Chicago.**  
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**MONTEIRO, ROBERTA AND L. H., Itapetuma, Brazil.**  
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 2 turtles—Okmulgee, Oklahoma (exchange).  
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- Unione Zoologica Italiana, Rome.  
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 Wegell, H., Bering gift.  
 Young, Earl, Bering.

ALABAMA

Anthropological Society, Montgomery.  
 Geological Survey, University.

CALIFORNIA:

Agricultural Experiment Station, Berkeley.  
 Board of Fish and Game Commissioners, Sacramento.  
 California Academy of Sciences, San Francisco.  
 Clapper, Ornithological Club, Hollywood.  
 Department of Agriculture, Sacramento.  
 Natural History Museum, San Diego.  
 Pomona College, Claremont.  
 San Diego Society of Natural History.  
 Scripps Institution of Biological Research, La Jolla.  
 Southern California Academy of Sciences, Los Angeles.  
 Southwest Museum, Los Angeles.  
 Stanford University.  
 State Mining Bureau, Sacramento.  
 University of California, Berkeley.

COLORADO

Agricultural Experiment Station, Fort Collins.  
 Bureau of Mines, Denver.  
 Colorado College, Colorado Springs.  
 Colorado Museum of Natural History, Denver.  
 State Agricultural College, Fort Collins.  
 State Historical and Natural History Society, Denver.

CONNECTICUT

Agricultural Experiment Station, New Haven.  
 Connecticut Academy of Arts and Sciences, New Haven.  
 Yarners Association, New Haven.  
 Hartford Public Library.  
 Quaternary Research Laboratory, New Haven.

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- State Board of Fisheries and Game,  
Hartford.  
State Geological and Natural History Survey, Hartford.  
Storrs Agricultural Experiment Station.  
Yale University, New Haven.
- FLORIDA:**  
State Geological Survey, Tallahassee.
- GEORGIA:**  
Geological Survey, Atlanta.
- HAWAII:**  
Agricultural Experiment Station, Honolulu.  
Bernice Pauahi Bishop Museum, Honolulu.  
Board of Commissioners of Agriculture and Forestry, Honolulu.  
Hawaiian Entomological Society, Honolulu.  
Hawaiian Historical Society, Honolulu.  
Hawaiian Sugar Planters' Association, Honolulu.  
University of Hawaii, Honolulu.
- IDAHO:**  
Mining Industry, Boise.  
Idaho University, Moscow.  
State Historical Society of Idaho, Boise.
- ILLINOIS:**  
Agricultural Experiment Station, Urbana.  
Art Institute of Chicago.  
Audubon Society, Chicago.  
Board of Education, Chicago.  
Chicago Historical Society.  
Chicago Public Library.  
Department of Public Works and Building, Chicago.  
Division of Natural History Survey, Urbana.  
Forestry Service, Urbana.  
Geographic Society, Chicago.  
Hardwood Record, Chicago (gift).  
Izaak Walton League of America, Chicago (gift).  
John Crerar Library, Chicago.  
Newberry Library, Chicago.  
Northwestern University, Evanston.  
Open Court Publishing Company, Chicago.  
State Academy of Science, Springfield.  
State Board of Agriculture, Springfield.  
State Geological Survey, Springfield.
- State Historical Library, Springfield.  
State Water Survey, Springfield.  
University of Chicago.  
University of Illinois, Urbana.
- INDIANA:**  
Academy of Science, Indianapolis.  
Department of Conservation, Indianapolis.  
Indiana University, Bloomington.  
John Herron Art Institute, Indianapolis.  
Purdue University, Lafayette.  
State Board of Forestry, Indianapolis.  
University of Notre Dame.
- IOWA:**  
Academy of Science, Des Moines.  
Historical, Memorial and Art Department, Des Moines.  
Iowa Geological Survey, Des Moines.  
Iowa Horticultural Society, Des Moines.  
Iowa State College, Ames.  
University of Iowa, Iowa City.
- KANSAS:**  
Agricultural Experiment Station, Manhattan.  
State Board of Agriculture, Topeka.  
State Geological Survey, Lawrence.  
State Historical Society, Topeka.  
University of Kansas, Lawrence.
- KENTUCKY:**  
Agricultural Experiment Station, Louisville.  
Kentucky Geological Survey, Frankfort.
- LOUISIANA:**  
Agricultural Experiment Station, Baton Rouge.  
Department of Conservation, Baton Rouge.  
Isaac Delgado Museum, New Orleans.
- MAINE:**  
Agricultural Experiment Station, Orono.  
Bowdoin College, Brunswick.  
Portland Public Library.
- MARYLAND:**  
Agricultural Experiment Station, College Park.  
Enoch Pratt Free Library, Baltimore.  
Johns Hopkins University, Baltimore.





FIG. 1. *Plantago lanceolata* L. (Plantain). 1, Leaf with flowers; 2, leaf with fruit; 3, stem; 4, fruit; 5, seed.

UNIVERSITY OF ILLINOIS LIBRARY

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Maryland Academy of Science,  
Baltimore.

**MASSACHUSETTS:**

Agricultural Experiment Station,  
Amherst.  
American Academy of Arts and  
Sciences, Boston.  
American Antiquarian Society, War-  
renton.  
Boston Public Library.  
Harvard College, Museum of Com-  
parative Zoology, Cambridge.  
Harvard University, Arnold Arbore-  
tum, Jamaica Plain.  
Harvard University, Gray Herbar-  
ium, Cambridge.  
Horticultural Society, Boston.  
Museum of Fine Arts, Boston.  
New England Free Library.  
Peabody Institute.  
Peabody Museum, Cambridge.  
Peabody Museum, Salem.  
Phillips Academy, Andover.  
Salem Public Library.  
Smith College, Northampton.  
Springfield City Library, Spring-  
field.  
Williams College, Williamstown.

**MICHIGAN:**

Agricultural Experiment Station,  
Agricultural College.  
Department of Conservation, Geo-  
graphical Survey Division, Lansing.  
Detroit Institute of Art.  
Grand Rapids Public Library.  
Michigan Academy of Science, Ann  
Arbor.  
Michigan College of Mines, Houghton.  
Michigan State Library, Lansing.  
State Board of Agriculture, Lansing.  
State Board of Library Commis-  
sioners, Lansing.  
University of Michigan, Ann Arbor.

**MINNESOTA:**

Agricultural Experiment Station,  
University, Duluth.  
Minnesota Institute of Arts.  
Minnesota Geographical Survey, Minn-  
neapolis.  
Minnesota Historical Society, Saint  
Paul.  
Saint Paul Institute.  
University of Minnesota, Minn-  
neapolis.

**MISSISSIPPI:**

Agricultural Experiment Station,  
Agricultural College.

Mississippi State Geographical Sur-  
vey, Jackson.

**MISSOURI:**

Agricultural Experiment Station,  
Columbia.  
Bureau of Geology and Mineral Indus-  
try and Mineral, Saint Louis.  
Missouri Botanical Garden, Saint  
Louis.  
Missouri Historical Society, Colum-  
bia.  
Missouri State Geology and Geol-  
ogical Survey, Columbia.  
Saint Louis Public Library.  
University of Missouri, School of  
Mines, Rolla.  
Washington University, Saint Louis.

**MONTANA:**

Agricultural College, Bozeman.  
Montana State Forestry, Helena.

**NEBRASKA:**

Agricultural Experiment Station,  
Lincoln.

**NEVADA:**

Agricultural Experiment Station,  
Reno.

**NEW JERSEY:**

Agricultural Experiment Station,  
Trenton.  
Department of Conservation and  
Development, Trenton.  
Horticultural Society, Trenton.  
Newark Museums Association.  
Princeton University.

**NEW MEXICO:**

Historical Society, Santa Fe.  
New Mexico Museum, Santa Fe.

**NEW YORK:**

Agricultural Experiment Station,  
Geneva.  
American Academy in Rome, New  
York.  
American Geographical Society,  
New York.  
American Museum of Natural His-  
tory, New York.  
Arts Publishing Company, New  
York.  
Brooklyn Botanic Garden.  
Brooklyn Institute of Arts and  
Sciences.  
Buffalo Society of Natural Sciences.  
Columbia University, New York.  
Coper Union for the Advancement  
of Science and Art, New York.  
Cornell University, Ithaca.  
Forest and Stream Publishing Com-  
pany, New York.

- Garden Club of America, New York.  
 Inter-American Magazine, New York (gift).  
 Japan Society, New York.  
 Metropolitan Museum of Art, New York.  
 Museum of the American Indian, New York.  
 New York Academy of Sciences.  
 New York Botanical Garden, New York.  
 New York Historical Society, New York.  
 Pratt Institute, New York.  
 Public Library, New York.  
 Rochester Academy of Science.  
 Rochester Municipal Museum.  
 Rockefeller Foundation, New York.  
 State College of Forestry, Syracuse.  
 State Library, Albany.  
 State Museum, Albany.  
 Staten Island Institute of Arts and Sciences, New York.  
 Stone Publishing Company, New York.  
 University of the State of New York, Albany.  
 Vassar College, Poughkeepsie.  
 Zoological Society, New York.  
 Long Sang Ti Curio Company, New York (gift.)
- NORTH CAROLINA:**  
 Duke University, Durham.  
 Elisha Mitchell Scientific Society, Chapel Hill.
- NORTH DAKOTA:**  
 Biological Station, University Station.  
 Geological Survey, University Station.  
 University of North Dakota, University.
- OHIO:**  
 Agricultural Experiment Station, Wooster.  
 Cincinnati Museums Association.  
 Cincinnati Society of Natural History.  
 Cleveland Museum of Art.  
 Cleveland Museum of Natural History.  
 Cleveland Public Library.  
 Denison University, Granville.  
 Geological Survey, Columbus.  
 Ohio Academy of Science, Columbus.  
 State Archaeological and Historical Society, Columbus.  
 State University, Columbus.  
 University of Cincinnati.  
 Wilson Ornithological Club, Oberlin.
- OKLAHOMA:**  
 Oklahoma Academy of Science, Norman.  
 Oklahoma Geological Survey, Norman.  
 University of Oklahoma, Norman.
- OREGON:**  
 Agricultural Experiment Station, Corvallis.  
 University of Oregon, Eugene.
- PENNSYLVANIA:**  
 Academy of Natural Sciences, Philadelphia.  
 American Philosophical Society, Philadelphia.  
 Bryn Mawr College.  
 Bureau of Topographical and Geological Survey, Harrisburg.  
 Carnegie Institute, Pittsburgh.  
 Carnegie Library, Pittsburgh.  
 Carnegie Museum, Pittsburgh.  
 Dropsie College, Philadelphia.  
 Engineers' Society of Western Pennsylvania, Pittsburgh.  
 Franklin Institute, Philadelphia.  
 Lehigh University, Bethlehem.  
 Pennsylvania Museum and School of Industrial Art, Philadelphia.  
 Philadelphia College of Pharmacy.  
 Philadelphia Commercial Museum.  
 Sullivant Moss Society, Pittsburgh.  
 University of Pennsylvania, Philadelphia.  
 University of Pennsylvania, Museum, Philadelphia.  
 Wagner Free Institute of Science, Philadelphia.  
 Wistar Institute of Anatomy and Biology, Philadelphia.
- PHILIPPINE ISLANDS:**  
 Bureau of Education, Manila.  
 Department of Agriculture, Manila.  
 Department of Agriculture and Natural Resources, Manila.  
 Department of Interior, Bureau of Science, Manila.
- SOUTH CAROLINA:**  
 Charleston Museum.
- SOUTH DAKOTA:**  
 Agricultural Experiment Station, Brookings.  
 Geological and Natural History Survey, Vermilion.
- TENNESSEE:**  
 Academy of Science, Nashville.  
 Agricultural Experiment Station, Nashville.



Buckingham, Andrew McNally, Edward E. Ayer, John M. Clark, Herman H. Kohlsaatt, George Schneider, Henry H. Getty, William R. Harper, Franklin H. Head, E. G. Keith, J. Irving Pearce, Azel F. Hatch, Henry Wade Rogers, Thomas B. Bryan, L. Z. Leiter, A. C. Bartlett, A. A. Sprague, A. C. McClurg, James W. Scott, Geo. F. Bissell, John R. Walsh, Chas. Fitzsimmons, John A. Roche, E. B. McCagg, Owen F. Aldis, Ferdinand W. Peck, James H. Dole, Joseph Stockton, Edward B. Butler, John McConnell, R. A. Waller, H. C. Chatfield-Taylor, A. Crawford, Wm. Sooy Smith, P. S. Peterson, John C. Black, Jno. J. Mitchell, C. F. Gunther, George R. Davis, Stephen A. Forbes, Robert W. Patterson, Jr., M. C. Bullock, Edwin Walker, George M. Pullman, William E. Curtis, James W. Ellsworth, William E. Hale, Wm. T. Baker, Martin A. Ryerson, Huntington W. Jackson, N. B. Ream, Norman Williams, Melville E. Stone, Bryan Lathrop, Eliphalet W. Blatchford, Philip D. Armour.

STATE OF ILLINOIS }  
 COOK COUNTY } ss.

I, G. R. MITCHELL, a NOTARY PUBLIC in and for said County, do hereby certify that the foregoing petitioners personally appeared before me and acknowledged severally that they signed the foregoing petition as their free and voluntary act for the uses and purposes therein set forth.

Given under my hand and notarial seal this 14th day of September, 1893.

G. R. MITCHELL,

[SEAL]

NOTARY PUBLIC, COOK COUNTY, ILL.

#### CHANGE OF NAME

Pursuant to a resolution passed at a meeting of the corporate members held the 25th day of June, 1894, the name of the COLUMBIAN MUSEUM was changed to FIELD COLUMBIAN MUSEUM. A certificate to this effect was filed June 26, 1894, in the office of the Secretary of State for Illinois.

#### CHANGE OF NAME

Pursuant to a resolution passed at a meeting of the corporate members held the 8th day of November, 1905, the name of the FIELD COLUMBIAN MUSEUM was changed to FIELD MUSEUM OF NATURAL HISTORY. A certificate to this effect was filed November 10, 1905, in the office of the Secretary of State for Illinois.

#### CHANGE IN ARTICLE 3

Pursuant to a resolution at a meeting of the corporate members held the 10th day of May, 1920, the management of FIELD MUSEUM OF NATURAL HISTORY shall be invested in a Board of TWENTY-ONE (21) TRUSTEES, who shall be elected in such manner and for such time and term of office as may be provided for by the By-Laws. A certificate to this effect was filed May 21, 1920, in the office of the Secretary of State for Illinois.

## AMENDMENTS BY LAW

## ARTICLE I

## Section 1

Section 1. Members shall be divided into classes, to-wit: Members, Honorary Members, Young Members, Foreign Life Members, Non-Resident Life Members, Associate Members, New Members, Associate Life Members, Sustaining Members, and Annual Members.

Section 2. The Corporate Members shall consist of the persons named in the articles of incorporation, each of any other persons as shall be chosen from time to time by the Board of Trustees at one of its meetings, upon the recommendation of the Executive Committee, provided each person named in the articles of incorporation shall within ninety days from the adoption of these By-Laws, and persons hereafter named as Corporate Members shall, within ninety days of their election, pay into the treasury the sum of twenty dollars (\$20.00) or more, Corporate Members becoming Life Members, Patrons or Honorary Members shall be exempt from this sum. Annual meetings of said Corporate Members shall be held at the time designated on the notice day that the annual meeting of the Board of Trustees be held.

Section 3. Young Members shall be chosen by the Board from among persons who have received approval of their names, and only upon unanimous recommendation of the Executive Committee. They shall be exempt from all dues.

Section 4. Foreign and Honorary Life Members shall be chosen by the Board upon unanimous recommendation of the Executive Committee from among persons who have received unanimous notice to the Museum. They shall be exempt from all dues and be considered as members in Patronage, shall also be Corporate Members.

Section 5. Any person contributing to the purchase of the fund of One Hundred Thousand Dollars, provided for or made, or specified, or promised to the funds of the Museum, shall be elected a Benefactor of the Museum.

Section 6. Any person contributing the sum of Five Thousand Dollars (\$5,000.00) or more in cash or securities to the funds of the Museum, may be elected a Friend of the Museum, who shall enjoy the same rights that have the right in perpetuity to witness the museum in such following:

Section 7. Any person paying into the treasury the sum of Five Thousand Dollars (\$5,000.00) or more shall, upon unanimous vote of the Board, become a Life Member. Life Members shall be exempt from all dues, and shall enjoy all the privileges and immunities of the Museum that are accorded to members of the Board of Trustees. Any person paying fifty cents or more into the city of Chicago, being into the treasury the price of one Engaged Italian (Chicago) or any other coin shall upon the unanimous vote of the Board, become a Non-Resident Life Member. Non-Resident Life Members shall be exempt from all dues and shall enjoy all the privileges and immunities of the Museum that are accorded to members of the Board of Trustees.

Section 8. Any person paying into the treasury the sum of One Hundred Dollars (\$100.00) or more, shall, upon unanimous vote of the Board, become an Associate Member. Associate Members shall be entitled to all the privileges and immunities of the Museum, including complimentary passes given to contributors of the Museum, if an interest, reserved seat for all exhibits and entertainment under the auspices of the Museum, present reservations is maintained in advance and payment of tickets of membership and complimentary passes, shall, upon unanimous vote of the Board, become a Sustaining Member. Any person paying fifty cents or more into the city of Chicago, being into the treasury the sum of Fifty Dollars (\$50.00) or more shall, upon unanimous vote of the Board, become a Non-Resident Associate Life

Member. Non-Resident Associate Life Members shall be exempt from all dues, and shall enjoy all the privileges and courtesies of the Museum that are accorded to Associate Members.

SECTION 9. Sustaining Members shall consist of such persons as are selected from time to time by the Board of Trustees at any of its meetings, and who shall pay an annual fee of twenty-five dollars (\$25.00), payable within thirty days after notice of election and within thirty days after each recurring annual date. This Sustaining Membership entitles the member to free admission for the member and family to the Museum on any day, the Annual Report and such other Museum documents or publications as may be requested in writing. When a Sustaining Member has paid the annual fee of \$25.00 for six years, such member shall be entitled to become an Associate Member.

SECTION 10. Annual Members shall consist of such persons as are selected from time to time by the Board of Trustees at any of its meetings, and who shall pay an annual fee of ten dollars (\$10.00), payable within thirty days after each recurring annual date. An Annual Membership shall entitle the member to a card of admission for the member and family during all hours when the Museum is open to the public, and free admission for the member and family to all Museum lectures or entertainments. This membership will also entitle the holder to the courtesies of the membership privileges of every Museum of note in the United States and Canada, so long as the existing system of cooperative interchange of membership tickets shall be maintained, including tickets for any lectures given under the auspices of any of the Museums during a visit to the cities in which the cooperative museums are located.

SECTION 11. All membership fees, excepting Sustaining and Annual, shall hereafter be applied to a permanent Membership Endowment Fund, the interest only of which shall be applied for the use of the Museum as the Board of Trustees may order.

## ARTICLE II

### BOARD OF TRUSTEES

SECTION 1. The Board of Trustees shall consist of twenty-one members. The respective members of the Board now in office, and those who shall hereafter be elected, shall hold office during life. Vacancies occurring in the Board shall be filled at a regular meeting of the Board, upon the nomination of the Executive Committee made at a preceding regular meeting of the Board, by a majority vote of the members of the Board present.

SECTION 2. Regular meetings of the Board shall be held on the third Monday of each month. Special meetings may be called at any time by the President, and shall be called by the Secretary upon the written request of three Trustees. Five Trustees shall constitute a quorum, except for the election of officers or the adoption of the Annual Budget, when seven Trustees shall be required, but meetings may be adjourned by any less number from day to day, or to a day fixed, previous to the next regular meeting.

SECTION 3. Reasonable written notice, designating the time and place of holding meetings, shall be given by the Secretary.

## ARTICLE III

### HONORARY TRUSTEES

SECTION 1. As a mark of respect, and in appreciation of services performed for the Institution, those Trustees who by reason of inability, on account of change of residence, or for other cause or from indisposition to serve longer in such capacity shall resign their place upon the Board, may be elected, by a majority of those present at any regular meeting of the Board, an Honorary Trustee for life. Such Honorary Trustee will receive notice of all meetings of the Board of Trustees, whether regular or special, and will be expected to be present at all such meetings and participate in the deliberations thereof, but an Honorary Trustee shall not have the right to vote.



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DINOSAUR EGGS IN MATRIX

Collected by the Third sialic Expedition of American Museum of Natural History, Field Museum of Natural History, cooperating

## ARTICLE IV

## OFFICERS

SECTION 1. The officers shall be a President, a First Vice-President, a Second Vice-President, a Third Vice-President, a Secretary, an Assistant Secretary and a Treasurer. They shall, whenever the governing Board of Trustees, a majority of those present and voting being deemed to quorum, The President, the First Vice-President, the Second Vice-President, and the Secretary or Treasurer shall be chosen from among the members of the Board of Trustees. The meeting for the election of officers shall be held within three Months of the opening of each year, and shall be called for Annual Meeting.

SECTION 2. The officers shall hold office for one year, or until their successors are elected and qualified, but any officer may be removed at any regular meeting of the Board of Trustees on a vote of two-thirds of all the members of the Board. Vacancies may otherwise be filled by the Board at any meeting.

SECTION 3. The officers shall perform such duties as will properly appertain to their respective offices, and such as shall be prescribed by the By-Laws, as designated from time to time by the Board of Trustees.

## ARTICLE V

## THE TREASURER

SECTION 1. The Treasurer shall be custodian of the funds of the Institution, and he shall be hereinafter provided. He shall make disbursements only upon warrants drawn by the Director and countersigned by the President. In the absence or inability of the Director, warrants may be signed by the Chairman of the Finance Committee, and in the absence or inability of the President, may be countersigned by one of the Vice-Presidents or any member of the Finance Committee.

SECTION 2. The securities and investments of title belonging to the Corporation shall be placed in the custody of some Trust Company, if through to be designated by the Board of Trustees, whose Trust Company shall collect the income and principal of said securities as the same become due, and pay same to the Treasurer, except as hereinafter provided, said Trust Company shall allow access to, and deliver any or all securities or investments of title to the joint order of the following officers, namely: The President or one of the Vice-Presidents jointly with the Chairman, or one of the Vice-Chairmen, of the Finance Committee of the Museum.

SECTION 3. The Treasurer shall give bond in such amount, and with such sureties as shall be approved by the Board of Trustees.

SECTION 4. The Harris Trust & Savings Bank of Chicago shall be the fiduciary of The N. W. Harris Trust School Extension of Field Museum, Inc. The bank shall make disbursements only upon warrants drawn by the Director and countersigned by the President. In the absence or inability of the Director, warrants may be signed by the Chairman of the Finance Committee, and in the absence or inability of the President, may be countersigned by one of the Vice-Presidents, or any member of the Finance Committee.

## ARTICLE VI

## THE MUSEUM

SECTION 1. The Board of Trustees shall elect a Director of the Museum, who shall remain in office until his successor shall be elected. He shall have the immediate charge and supervision of the Museum, and shall control the operations of the Institution, subject to the authority of the Board of Trustees and its Committees. The Director shall be the official business of communication between the Board, on its Committees, and the scientific staff and maintenance staff.

SECTION 2. There shall be four scientific departments of the Museum: Anthropology, Botany, Zoology, and Entomology, each under the charge of a

Curator, subject to the authority of the Director. The Curators shall be appointed by the Board upon the recommendation of the Director, and shall serve during the pleasure of the Board. Subordinate staff officers in the scientific departments shall be appointed and removed by the Director upon the recommendation of the Curators of the respective Departments. The Director shall have authority to employ and remove all other employees of the Museum.

SECTION 3. The Director shall make report to the Board at each regular meeting, recounting the operations of the Museum for the previous month. At the Annual Meeting, the Director shall make an Annual Report, reviewing the work for the previous year, which Annual Report shall be published in pamphlet form for the information of the Trustees and Members, and for free distribution in such number as the Board may direct.

## ARTICLE VII

### AUDITOR

SECTION 1. The Board shall appoint an Auditor, who shall hold his office during the pleasure of the Board. He shall keep proper books of account, setting forth the financial condition and transactions of the Corporation, and of the Museum, and report thereon at each regular meeting, and at such other times as may be required by the Board. He shall certify to the correctness of all bills rendered for the expenditure of the money of the Corporation.

## ARTICLE VIII

### COMMITTEES

SECTION 1. There shall be five Committees, as follows: Finance, Building, Auditing, Pension and Executive.

SECTION 2. The Finance Committee shall consist of five members, the Auditing and Pension Committees shall each consist of three members, and the Building Committee shall consist of five members. All members of these four Committees shall be elected by ballot by the Board at the Annual Meeting, and shall hold office for one year, and until their successors are elected and qualified. In electing the members of these Committees, the Board shall designate the Chairman and Vice-Chairman by the order in which the members are named in the respective Committee; the first member named shall be Chairman, the second named the Vice-Chairman, and the third named, Second Vice-chairman, succession to the Chairmanship being in this order in the event of the absence or disability of the Chairman.

SECTION 3. The Executive Committee shall consist of the President of the Board, the Chairman of the Finance Committee, the Chairman of the Building Committee, the Chairman of the Auditing Committee, the Chairman of the Pension Committee, and three other members of the Board to be elected by ballot at the Annual Meeting.

SECTION 4. Four members shall constitute a quorum of the Executive Committee, and in all standing Committees two members shall constitute a quorum. In the event that, owing to the absence or inability of members, a quorum of the regular elected members cannot be present at any meeting of any Committee, then the Chairman thereof, or his successor, as herein provided, may summon any members of the Board of Trustees to act in place of the absentee.

SECTION 5. The Finance Committee shall have supervision of investing the endowment and other permanent funds of the Corporation, and the care of such real estate as may become its property. It shall have authority to invest, sell, and reinvest funds, subject to the approval of the Board.

SECTION 6. The Building Committee shall have supervision of the construction, reconstruction, and extension of any and all buildings used for Museum purposes.

SECTION 7. The Executive Committee shall be called together from time to time as the Chairman may consider necessary, or as he may be requested

to do by three members of the Executive Committee, to set upon such matters affecting the administration of the Museum as come under consideration at the Regular Monthly Meetings of the Board of Trustees. It shall, within the beginning of each fiscal year, prepare and submit to the Board an annual budget setting forth the probable receipts from all sources for the ensuing year, and make recommendations as to the expenditures which should be made for routine maintenance and fixed charges. Upon the adoption of the Budget by the Board, the expenditures so stated are authorized.

SECTION 8. The Auditing Committee shall have access to any and all accounting and bookkeeping, and full control of the financial records. It shall cause the same, once each year, or oftener, to be examined by an expert individual or firm, and shall transmit the report of such expert examination, in triplicate, to the Board at the next ensuing regular meeting after such examination shall have taken place.

SECTION 9. The Finance Committee shall determine by such means and processes as shall be contemplated by the Board of Trustees by whom, and to what amount the Pension Fund shall be contributed. These determinations of Finance shall be subject to the approval of the Board of Trustees.

SECTION 10. The Chairman of each Committee shall report the acts and proceedings thereof at the next ensuing regular meeting of the Board.

SECTION 11. The President shall be ex-officio a member of all Committees and Chairman of the Executive Committee. Vacancies occurring in any Committee may be filled by ballot at any regular meeting of the Board.

## ARTICLE IX

### NON-PAYING MEMBERSHIP

SECTION 1. At the November meeting of the Board each year, a Nominating Committee of three shall be chosen by lot. Said Committee shall make nominations for membership of the Finance Committee, the Building Committee, the Auditing Committee, and the Pension Committee, and for three members of the Executive Committee, from among the Trustees, to be submitted at the ensuing December meeting and voted upon at the following Annual Meeting in January.

## ARTICLE X

SECTION 1. Whenever the word "Museum" is employed in the By-Laws of the Corporation, it shall be taken to mean the building in which the Museum as an Institution, is located and operated, the material exhibited, the material in study collections, all its storage, furniture, fixtures, cases, tools, scientific books, and all appurtenances of the Institution and the workings, researches, installations, expenditures, fixed work, laboratories, library, publications, lecture courses, and all scientific and maintenance activities.

SECTION 2. These By-Laws may be amended at any regular meeting of the Board of Trustees by a two-thirds vote of all the members present, provided the amendment shall have been proposed at a preceding regular meeting.

## BENEFACTORS

AYER, EDWARD E.	*HARRIS, NORMAN W.
BUCKINGHAM, MISS KATE S.	*HIGINBOTHAM, HARLOW N.
*FIELD, JOSEPH N.	*PULLMAN, GEORGE M.
FIELD, CAPTAIN MARSHALL	RAYMOND, MRS. ANNA LOUISE
FIELD, STANLEY	*RAYMOND, JAMES NELSON
GRAHAM, ERNEST R.	SIMPSON, JAMES
HARRIS, ALBERT W.	*STURGIS, MRS. MARY D.

## HONORARY MEMBERS

AYER, EDWARD E.	JONES, ARTHUR B.
AYER, MRS. EDWARD E.	KEEP, CHAUNCEY
BLACKSTONE, MRS. T. B.	LUDWIG, H. R. H. GUSTAF ADOLF, CROWN PRINCE OF SWEDEN
BREASTED, PROF. JAMES H.	MCCORMICK, STANLEY
CHALMERS, WILLIAM J.	ROSENWALD, JULIUS
CRANE, CHARLES R.	ROSENWALD, MRS. AUGUSTA N.
CRANE, RICHARD T., JR.	RYERSON, MARTIN A.
FIELD, CAPTAIN MARSHALL	SARGENT, HOMER E.
FIELD, STANLEY	SIMPSON, JAMES
GRAHAM, ERNEST R.	SPRAGUE, ALBERT A.
HARRIS, ALBERT W.	

## PATRONS

*AKELEY, CARL E.	KNIGHT, CHARLES R.
ARMOUR, ALLISON V.	KUNZ, GEORGE F.
BUTLER, EDWARD B.	LANGDON, PROF. STEPHEN
CHERRIE, GEORGE K.	MARKHAM, CHARLES H.
COLLINS, ALFRED M.	MITCHELL, JOHN J.
CONOVER, H. BOARDMAN	PAYNE, JOHN BARTON
CUMMINGS, MRS. ROBERT F.	PROBST, EDWARD
CUTTING, C. SUYDAM	RAWSON, FREDERICK H.
DAY, LEE GARNETT	ROOSEVELT, KERMIT
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FIG. 1. Standing Bodhisattva, from the Cave of the Thousand Buddhas, Luoyang, Henan, China, 5th century A.D. (British Museum, London)

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 GOODMAN, DAVID  
 GOODWIN, E. H.  
 GOODWILL, CHARLES F., DR.  
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 GOODWIN, LEONOR S.  
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 GOODWIN, EDWARD C.  
 GOWENLOCK, T. H.  
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 GRANTSMAN, FRED W.  
 GRAY, FREDOT J.  
 GRAY, FREDOT H.  
 GRAY, WILLIAM A.  
 GRAYSON, CHARLES E.  
 GRAY, W. S.  
 GRAY, JAMES F.  
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 GRAY, ROBERT D.  
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 GRAY, CLARENCE A.  
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 GRAY, NICHOLAS M.  
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 GRAYSON, EDWARD L.  
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 JENSEN, GORM  
 JERNBERG, C. EDGAR  
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 JOSEPH, A. G.  
 JOSEPH, MORRIS  
 JOY, JAMES A.  
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 JUNKUNC, STEPHEN  
 JUST, FREDERICK M.
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 KAHN, CHARLES E.  
 KAHN, I. W.  
 KANAVEL, DR. ALLEN B.  
 KANN, MAX M.  
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 KAPSA, LADISLAV A.  
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 KARPEN, SOL  
 KASEHAGEN, FRED W.  
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 KEEHN, MRS. THEODORE C. L.  
 KEELER, EDWIN R.  
 KEENE, WILLIAM J.  
 KELLOGG, JAMES G.  
 KELLY, EDWARD T.  
 KELLY, JOSEPH J.  
 KENDRICK, W. S.  
 KENNEDY, JAMES F.  
 KEOGH, GORDON E.  
 KEPLINGER, W. A.  
 KERWIN, EDWIN M.  
 KESLER, EDWARD C.  
 KILLINGER, GEORGE F.  
 KIDDER, GRANT L.  
 KIMBALL, MRS. LOUISE L.  
 KIMBARK, JOHN R.  
 KING, DR. C. BRUCE  
 KING, FRANK J.  
 KING, FRANK O.  
 KING, JOHN B.  
 KINGSTON, MRS. ROSE L.  
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 KINSELLA, DR. L. C.

- KINNEY, LOUIS A.  
 KINNEY, ROBERT S.  
 KIPP, C. F.  
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 KINNEHILL, HOWARD W.  
 KIRK MILLER, MARY WILLIAM  
 KLEIN, MAX  
 KLEIN, ARTHUR F.  
 KLEIN, DR. ISAAC  
 KLEIN, MICHAEL B.  
 KLEIN, PETER  
 KLEIN, RICHARD B.  
 KLEIN, T. HENRY  
 KLEINBAUM, DR. JOSEPH B.  
 KLEINMAN, ALEXANDER  
 KLEINER, JOSEPH S.  
 KLINE, ARL  
 KLINE, LOUIS A.  
 KLINER, JOHN F.  
 KLINGBERG, LOUIS J.  
 KNAB, GEORGE  
 KNAPP, CLIFFORD J.  
 KNAPP, GEORGE S.  
 KNIGHT, CHARLES S.  
 KNIGHT, STANLEY M.  
 KNORR, JOHN W.  
 KNORR GUNNER, M.  
 KNORRER, HAROLD D.  
 KOCH, PAUL W.  
 KOCH, THOMAS W.  
 KOENIG, GEORGE W.  
 KOEPLER, E. E.  
 KOEHLER, WILLIAM S.  
 KOHN, ISIDOR  
 KOHN, OSCAR  
 KOHNST JOSEPH, JR.  
 KOHN, ARTHUR G.  
 KOLATAK, CHAS. T.  
 KOMAROV, SOR.  
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 KOTIN, GEORGE N.  
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 KOVACHOFF, DANIEL  
 KOWALSKI, AUGUST J., JR.  
 KOWCZYNSKI, DR. LUCIAN  
 KRABBE, ARTHUR M.  
 KRAEMER, OTTO C.  
 KRAPPY, WALTER A.  
 KRAPPY, DR. OSCAR H.  
 KRASNIK, OSCAR  
 KRASNIK, GEORGE W.  
 KRASNIK, GEORGE F.  
 KRASNOGORSKI, ALBERT B.  
 KRASMAN, ANDREW  
 KRASNIK, A. MORRIS  
 KRASNOGORSKI, DR. JULIUS H.  
 KRASNOGORSKI, GEORGE W.  
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 KRIST, DR. GERARD N.  
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 KRUPINSKI, DR. C. S.  
 KRUPNIK, ARTHUR H.  
 KRUSH, EDWARD L.  
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 LAHL, WILLIAM J. M.  
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 LAKE, FRANK H.  
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 LANGRISH, JOHN F.  
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 LANGSON, ISIDOR A.  
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 LANNES, GUSTAVE R.  
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 LEIGHT, EDWARD A.  
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- NASH, PATRICK A.  
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