

71
C4A3Z
SDA

FIELD MUSEUM OF NATURAL HISTORY

FOUNDED BY MARSHALL FIELD, 1893

PUBLICATION 271

REPORT SERIES

VOL. VIII, No. 1

ANNUAL REPORT OF THE DIRECTOR

TO THE
BOARD OF TRUSTEES

FOR THE YEAR 1929

29018



CHICAGO, U. S. A.

January, 1930

CONTENTS

	Page
Board of Trustees.....	6
Officers and Committees.....	7
List of Staff.....	8
Report of the Director.....	11
Lectures and Entertainments.....	32
James Nelson and Anna Louise Raymond Public School and Children's Lecture Division.....	34
Nature Study Courses.....	39
Lecture Tours for Adults.....	40
Educational Meetings.....	41
Radio Broadcasting.....	41
Division of Publications.....	42
Library.....	45
Expeditions and Research.....	47
Accessions.....	93
Departmental Cataloguing, Inventorying and Labeling.....	124
Installations and Rearrangements.....	128
The N. W. Harris Public School Extension.....	155
Art Research Classes.....	156
Division of Public Relations.....	157
Division of Printing.....	162
Divisions of Photography, Roentgenology and Illustration.....	163
Division of Memberships.....	165
Cafeteria.....	166
Attendance Statistics and Door Receipts.....	167
Financial Statements.....	168
List of Accessions.....	170
Department of Anthropology.....	170
Department of Botany.....	173
Department of Geology.....	179
Department of Zoology.....	183
Raymond Division.....	186
Division of Photography.....	186
The Library.....	187
Articles of Incorporation.....	199
Amended By-Laws.....	201
List of Benefactors, Honorary Members, and Patrons.....	206
List of Corporate Members.....	207
List of Life Members.....	208
List of Associate Members.....	211
List of Sustaining Members.....	231
List of Annual Members.....	235

A list of all classes of Members will be found at the end of this Report.

Vacancies on the Board of Trustees were filled by the election of Mr. Fred W. Sargent, Mr. Samuel Insull, Jr., and Mr. William V. Kelley. Mr. George A. Richardson was elected as a Corporate Member, and at the December meeting of the Board of Trustees he was placed in nomination for a trusteeship, with final action scheduled for the Annual Meeting to be held in January, 1930.

The outstanding addition to the exhibits during the year was the Neanderthal (Mousterian) Man group, installed in Ernest R. Graham Hall of Historical Geology, which was completed and opened to the public on June 8. This life-size group, showing an entire family of Neanderthals and a replica of a cave once actually occupied by these prehistoric people, is the only restoration of its kind in the world. It is a gift to the Museum from Mr. Ernest R. Graham, and is the work of Mr. Frederick Blaschke, sculptor, of Cold Spring-on-Hudson, New York. Research and collecting of material for use in connection with it was performed by the Marshall Field Archaeological Expedition to Western Europe in 1927, under the leadership of Mr. Henry Field, Assistant Curator of Physical Anthropology. The group attracted a tremendous amount of attention, and it is estimated that fully 400,000 Museum visitors have viewed it since it was placed on exhibition. The publicity in connection with it exceeded all precedents, photographs of it and articles about it having appeared in newspapers and magazines all over the world. A complete description of the group will be found in this Report on page 143.

A great many other new exhibits were placed on view during the year. A few of those which are especially interesting are as follows: six additions to the series of large mural paintings of prehistoric animals, presented by Mr. Graham and painted by Mr. Charles R. Knight, bringing the total now on the walls of Graham Hall to sixteen; a habitat group of Indian rhinoceros, the animals being reproduced (by the cellulose-acetate method developed by Taxidermist Leon L. Walters) from specimens obtained by the James Simpson-Roosevelts Asiatic Expedition of 1925-26; a group of Abyssinian dassies composed of specimens obtained by the Field Museum-Chicago Daily News Abyssinian Expedition of 1926-27; a model of an oil well; a 341½-carat aquamarine gem presented by Mr. Richard T. Crane, Jr.; a specimen of the peculiar Guatemalan cow-tree presented by the United Fruit Company as a result of a request from

Professor Samuel A. Record, Research Associate in Wood Technology; a number of antiquities from Kish recently obtained by the Field Museum-Oxford University Joint Expedition to Mesopotamia; a selection of the zoological specimens brought home by the Cornelius Crane Pacific Expedition; and a life-size figure representing a Dyak hunter of Borneo.

In addition to the above, four new groups for the Hall of American Mammal Habitat Groups were completed, to be opened to the public early in January, 1930. These consist of a group of polar bear, the specimens for which were presented by Mr. Frederick H. Rawson; a group of Alaska brown bear composed of specimens obtained in 1927 by the John Borden-Field Museum Alaska-Arctic Expedition and the Alexander H. Revell-Field Museum Alaska Expedition; a group of American bison composed of specimens presented by the late Arthur B. Jones, and a group of musk-ox of the Hudson Bay variety (see page 151). The other new exhibits mentioned in the preceding paragraph are all described in detail in the section of this Report devoted to INSTALLATIONS AND REARRANGEMENTS, beginning on page 128.

Much progress was made with reinstallations and improvements in many of the exhibition halls of the Museum, and with relabeling. Especially notable in this respect are the improvements made in Hall J (Egyptian archaeology), Hall 5 (Indians of the Great Plains), Hall D (African ethnology), the Madagascar collection in Hall E, the Arthur B. Jones Malaysian Collection in Hall G, Carl E. Akeley Memorial Hall (African mammals), Hall 21 (systematic bird collections), Hall 25 (plant economics), Charles F. Millspaugh Hall (North American woods), Hall 34 (minerals, crystals, meteorites, physical geology), Clarence Buckingham Hall (physical geology, rocks, relief maps), and Hall 36 (petroleum, coal, clays, sands).

Including parties engaged in domestic field work, the Museum had seventeen expeditions operating during 1929, and an eighteenth expedition got under way just as the year closed. Thirteen expeditions were at work in overseas territory or foreign waters; four were engaged in work in North America. Full details concerning the personnel, and the work performed, of all the expeditions will be found in the section of this Report under the heading EXPEDITIONS AND RESEARCH, beginning on page 47. The following is a brief summary:

The William V. Kelley-Roosevelts Expedition to Eastern Asia for Field Museum completed its work of more than a year's dura-

tion with the return of the last member in December. The expedition was eminently successful, bringing the Museum a total of 15,397 zoological specimens, 2,400 sheets of botanical specimens, and a few ethnological items. Most remarkable was the success of Colonel Theodore Roosevelt and Mr. Kermit Roosevelt in obtaining near the Tibetan border a complete specimen, including skin, skull and skeleton, of the rare giant panda, the first such specimen ever brought out of Asia. The animal fell before the joint fire of their rifles, and is the first, so far as known, ever shot by a white man. Of the total specimens collected a large proportion was obtained by the second division which worked in French Indo-China under the leadership of Mr. Harold Coolidge, Jr., of Boston. Valuable assistance, which was most helpful and is highly appreciated, was rendered to the expedition by Mr. Jean Theodore Delacour of Seine-Inférieure, France; by His Royal Majesty, the King of Luang-Prabang; and by various military and civil officials of the government of French Indo-China.

Likewise eminently successful was the Cornelius Crane Pacific Expedition of Field Museum, the members of which returned in September after nearly ten months of cruising and collecting among the islands of the South Pacific, aboard Mr. Crane's yacht, the *Illyria*. This expedition brought back approximately 18,000 zoological specimens, and also a few ethnological and geological specimens. A new species of rodent was discovered in the Galapagos Islands by this expedition. Mr. Karl P. Schmidt, Assistant Curator of Reptiles, was leader of the scientific party.

The Frederick H. Rawson-Field Museum Ethnological Expedition to West Africa completed its work in Angola (Portuguese West Africa) where extensive and valuable collections were made, and proceeded to Nigeria (British West Africa) where work was to be continued in the early part of 1930. Reports from the leader of the expedition, Mr. W. D. Hambly, Assistant Curator of African Ethnology, indicate that intensive studies were made of many tribes encountered during more than 10,000 miles of travel in Africa. More than 1,200 artifacts were collected in Angola alone; and valuable data, still and motion pictures, and dictaphone records were obtained for ethnological research purposes.

The Chancellor-Stuart-Field Museum Expedition to the South Pacific obtained rare zoological specimens, among them two of the giant lizard of Komodo, Dutch East Indies, and two of the reticulated python of Borneo, largest reptile known to science. The



THE LATE RUSSELL W. HENDEE

A young mammalogist who gave his life for science in French Indo-China
while a member of the William V. Kelley-Roosevelts Expedition
to Eastern Asia for Field Museum

With the especial object of obtaining specimens for a lion group, a month's trip was then made to the Zerengetti Plains in Tanganyika. Here, in a relatively short time, six fine lions including both old and young were obtained, and in addition a good black rhinoceros, two aard-varks, several zebras, and more Grant's gazelles for use in the water hole group.

The expedition finally disbanded in Nairobi, Mr. Albrecht leaving for the United States August 5 and reaching Chicago September 20. Some time later the collections were received in excellent condition. Captain White and Major Coats must be given great credit for carrying through a difficult program, traversing a region largely waterless and subject to restrictions imposed by loosely governed natives. But for the cordial cooperation of Negus Tafari Makonnen of Abyssinia, again graciously accorded a Field Museum expedition, it would have been impossible. The Negus, it will be remembered, generously cooperated also with the Field Museum—*Chicago Daily News* Abyssinian Expedition of 1926–27.

The results of the Harold White–John Coats Expedition provide material for a group of lions, a group of aard-varks and a water hole group, which, as projected, will be the largest habitat group ever produced at Field Museum. This group will include five reticulated giraffes, a black rhinoceros, a herd of eight or ten Grant's gazelles, several zebras, and some smaller animals.

The expedition was not equipped for general collecting of small animals, but concentrated on the group material. Nevertheless, a few small mammals were obtained, and also certain interesting and valuable birds. Among these is a series of the Abyssinian blue goose, a species of restricted range, which is rare in collections. There is also a good representation of the game birds of the francolin group, including one specimen of an entirely unknown species very distinct from those previously described.

The Chancellor–Stuart–Field Museum Expedition to the South Pacific left San Francisco February 20 for New Zealand, Australia, and the East Indies. The expedition consists of Mr. Philip M. Chancellor of Santa Barbara, California, and Mr. Norton Stuart, also of Santa Barbara. Mr. Chancellor, who is financing the expedition, acts as photographer to the expedition. Special equipment for intimate photographic studies of living animals, including a diving bell for undersea work, is carried. Mr. Stuart, who is an



GROUP OF INDIAN RHINOCEROS

William V. Kelley Hall of Asiatic Mammals

James Simpson-Roosevelts Asiatic Expedition

Reproduction in cellulose-acetate by Leon L. Walters. Background by Charles A. Corwin

About one twenty-second natural size

water is prepared. The most suitable strength for this has not yet been determined, but the exact strength is not important. The solution is applied to corroded spots or spread over the affected area with a small camel's-hair brush. After about thirty seconds the surplus liquid is removed with blotting paper and a second solution is applied. This second solution consists of barium hydroxide dissolved in distilled water. It does not keep well and must be prepared freshly each time it is used. The barium hydroxide powder must also be kept at all times hermetically sealed. A thorough washing completes the treatment. It should be noted that where, as is the case with many of the bronzes, the malignant matter penetrates throughout the specimen, the above-described treatment will not suffice.

ZOOLOGY.—Further marked advance was made during the year in the preparation and installation of habitat groups of mammals. Five large groups with painted backgrounds were completed, and one of smaller size, open on four sides. Of the large groups, one was added to William V. Kelley Hall and four to the Hall of American Mammal Habitat Groups. The animals represented are the Indian rhinoceros, polar bear, Alaska Peninsula brown bear, American bison, and musk-ox. In addition, a small group of Abyssinian dassies or coneys was finished and placed in Carl E. Akeley Memorial Hall.

The Indian rhinoceros group (Plate XIX) is a large and striking group prepared from material obtained by the James Simpson-Roosevelts Asiatic Expedition of 1925-26. It includes two specimens, male and female, reproduced from animals shot in Nepal by Mr. and Mrs. Kermit Roosevelt after the main part of the expedition's work in Turkestan and the Himalayas had been concluded. They were prepared by Taxidermist Leon L. Walters, by means of the process originated by him of reproduction in cellulose-acetate. They furnish a further demonstration of the superiority of this process for the exhibition of large, practically hairless mammals. One animal is shown standing on the reedy bank of a river, while the other is wallowing in shallow water near-by. The painted background, executed by Staff Artist Charles A. Corwin, represents a sluggish river meandering through grassy swamps with low hills lightly clad with small trees and bushes in the distance.

Of the four large mammal groups added to the Hall of American Mammal Habitat Groups, two are wholly new and two are based on reinstallation of animals formerly exhibited in floor cases without

backgrounds. Their completion makes possible the opening of a part of the west half of the hall for which other groups are now in preparation. The brown bear of the Alaska Peninsula, giant among extant bears, is shown in a group representing a scene in Pavlof Bay, Alaska Peninsula. The specimens were obtained by the John Borden-Field Museum Alaska-Arctic Expedition and the Alexander H. Revell-Field Museum Alaska Expedition of 1927. A large male bear stands at one side, while his mate, with her back turned to him, is busily engaged in fishing for salmon in a small stream. Two partly grown cubs are playing with the fish which their mother has scooped out of the water. The background shows the symmetrical volcanic cone and snowy slopes of Mount Pavlof. The group was prepared by Taxidermists Julius Friesser and Arthur G. Rueckert, with painting by Staff Artist Corwin.

The polar bear group, presented by Mr. Frederick H. Rawson, stands opposite the group of brown bear, and completes a quadrangle with the earlier groups of glacier bear and grizzly bear, so that from the center of the hall four groups of American bear are seen at once. A magnificent male polar bear of exceptional size and quality, descending the inclined surface of a block of ice, forms the outstanding feature of the group. Below him a female is crouching on the ice and two small cubs are playing about her. An Arctic scene of snow and ice, painted by Mr. Corwin, rises behind. This group also was prepared by Messrs. Friesser and Rueckert.

The groups of bison and musk-ox (Plates V and X) stand opposite each other, occupying the largest spaces in the hall. Both were produced by using animals formerly in open four-sided floor cases. The group of musk-ox includes seven animals originally mounted by Carl E. Akeley. They stand variously disposed on moss-carpeted tundra. A bleak, treeless plain lies behind them, and low hills with light patches of snow rise in the distance. A large bull occupies a prominent position on a slight elevation, and females with younger animals are gathered near-by, among them two small calves idly nuzzling each other.

The bison group contains seven animals ranging from large bulls to partly-grown calves, all in the full, heavy coat of late fall or early winter. They are represented as coming down a clay embankment over well-trod trails to the bed of a prairie stream beside which a few small cottonwood trees stand. The effect of a large herd in the vicinity is given by numerous animals painted on the background by Mr. Corwin, some slowly filing over the prairie

as if leaving the watering place, and others crowding over the edge of the embankment on their way to it. The specimens were mounted and the reinstallation effected by Mr. Friesser. The group was presented by the late Arthur B. Jones, a former Trustee of the Museum.

In addition to the completion of these mammal groups, much progress was made with others which are under way. A group of the South American marsh deer is in the final stages of preparation at this writing. All the animals are mounted and only details of the accessories remain to be done. A group of the great anteater of tropical America also is well advanced, and preliminary sketches and models have been made for groups of tapir and guanacos. Progress on the sea lion group for the Marine Hall was interrupted by the absence of Taxidermist C. J. Albrecht in Africa, but several of the smaller animals have been completed, and the others are in such stages that the completion of the group in the coming year may be expected.

Taxidermist Walters has devoted himself during a large part of the year to a reproduction of a white rhinoceros from a specimen collected by the Conover-Everard African Expedition of 1926-27. This work is nearing completion and the finished product, which promises to be a magnificent piece, will doubtless be placed on exhibition early in 1930.

In the systematic exhibit of North American birds, one case with two screens was installed early in the year, showing marsh birds and shore birds, with seventy-six specimens of sixty-six species of cranes, rails, plovers, sandpipers, and their allies. These were the work of Taxidermist Ashley Hine, who has now finished many of the larger American birds and is beginning work with some of the numerous smaller forms. A few foreign birds from recent expeditions were mounted also, and are awaiting installation.

After the return of the Cornelius Crane Pacific Expedition, a temporary exhibit of some of the material obtained by it was installed in four cases and placed in Stanley Field Hall. This included specimens of mammals, birds, and reptiles, together with a series of water-color paintings by Mr. Walter A. Weber, artist of the expedition. The paintings have since been removed.

The west half of Albert W. Harris Hall, in which reptiles and amphibians have been exhibited, was completely reorganized during the year, mainly by Associate Curator William J. Gerhard with

Field Museum Arctic Expedition of 1929, which they conducted. Messrs. Thorne and Graves also contributed funds toward the cost of preparing the group. The Museum is indebted also to Mr. Henry Graves, Jr., of New York and to Mrs. Louise E. Thorne of Chicago for substantial contributions toward the cost of preparing the group.

A unique life-size group representing the *Meshippus*, a species of small three-toed horse which lived in North America millions of years ago, was completed and placed on exhibition in Ernest R. Graham Hall. So far as is known this is the first group restoration ever made of extinct mammals, represented as scientific research indicates they appeared in life, and in the surroundings amid which they lived. Six figures, including full-grown males, mares and young, modeled by Mr. Frederick Blaschke, are in the group, which is a gift from Mr. Ernest R. Graham. The scene is in the Black Hills of South Dakota where these animals are known, from fossil skeletons, to have been fairly common in their day.

An acquisition of great importance was the 745-pound Paragould (Arkansas) meteorite, presented to the Museum by President Stanley Field. This is the largest single meteoric stone ever seen to fall, and is a most valuable addition to the institution's collection of meteorites which, in point of number of falls represented, is the largest collection in the world. The Paragould meteorite has been placed on exhibition in Hall 34.

An exhibit of the rare giant dragon lizard of Komodo, Dutch East Indies, was placed on view in Albert W. Harris Hall. It was prepared from one of the specimens obtained by the Chancellor-Stuart-Field Museum Expedition to the South Pacific (1929-30). This is the largest extant species of lizard, and is found only in the islands of Komodo and Flores of the Lesser Sunda group, east of Java. The exhibit is a reproduction in cellulose-acetate made by Staff Taxidermist Leon L. Walters, by the process he invented and perfected some years ago in the course of his work at the Museum, and which he has successfully applied in creating many exhibits now to be seen in the halls of the institution.

He also prepared an exhibit of the giant prehensile-tailed skink of the Solomon Islands, the original specimen of which was collected by the Cornelius Crane Pacific Expedition of Field Museum in 1929. This is also on view in Albert W. Harris Hall.

Another exhibit prepared during 1930 by this process, is a reproduction of the rare white rhinoceros of Africa, the original specimen

for which was obtained several years ago by the Conover–Everard–Field Museum Expedition to Tanganyika. This is on exhibition in Hall 15.

A mammoth crystal of beryl, weighing approximately 1,000 pounds, discovered in a quarry at Albany, Maine, was presented to the Museum by Mr. William J. Chalmers, and placed on exhibition in Stanley Field Hall.

To the series of American mammal habitat groups in Hall 16 was added a group of marsh deer, largest of all South American deer, in a scene typical of its environment. Five specimens, obtained several years ago by the Marshall Field Brazilian Expedition, are in the group.

An exhibit of unusual interest installed in Hall J is an actual-size representation of a prehistoric burial of Egypt, containing the remains of an Egyptian woman who died some time before 3500 B.C., surrounded by various original artifacts found in such ancient graves. This type of burial preceded the development of mummification and the periods in which elaborate tombs were built.

A remarkably complete and excellent fossil skeleton of an ichthyosaurus or fish-lizard which lived about 150,000,000 years ago, the specimen possessing the unusual feature of including in the slab of stone in which it is imbedded a clear impression of the fins and the skin, was placed on exhibition in Ernest R. Graham Hall.

Seven more of the large mural paintings of prehistoric life being prepared by Mr. Charles R. Knight, for the walls of Ernest R. Graham Hall, were completed and installed during 1930. These bring the total number now on exhibition to twenty-three, and only five more paintings remain to be executed. This notable series is a gift to the Museum from Mr. Ernest R. Graham.

An extraordinary specimen of lodestone, weighing more than 400 pounds, and possessing unusual magnetic power, was placed on exhibition in Clarence Buckingham Hall. Displayed with it are various objects which illustrate its powerful magnetism. The specimen comes from the Wasatch Mountains in Utah.

Reproductions of the two most common ragweeds of the Chicago region, made in the Stanley Field Plant Reproduction Laboratories, were completed and placed on exhibition in the Hall of Plant Life. They are of particular interest to the public because their pollen is held responsible for the widespread affliction of hay fever.

A noteworthy collection of Navaho silver jewelry was placed on exhibition in Hall 6, part of it having been recently acquired as the

Mr. Arthur S. Vernay of New York and London was the sponsor and co-leader of a very important zoological expedition—the Vernay–Lang Kalahari Expedition for Field Museum. Associated with him in the leadership was Mr. Herbert Lang, formerly of New York. The territory in which this expedition worked was the Kalahari Desert and along the Botletle River in the British protectorate of Bechuanaland. It returned late in the year bringing collections remarkable for their size, variety and value. Its record of achievement places it among the most successful expeditions ever sent to Africa. (Route of expedition shown on map facing p. 348.)

The Field Museum Archaeological Expedition to the Southwest began important excavations on the Lowry ruin in southwestern Colorado, and the making of archaeological collections representing Indians believed to have lived 1,500 years ago and more. The most important accomplishment during the 1930 season was the excavation of an ancient kiva or ceremonial chamber, and eleven other large rooms of the ruins. The expedition was financed with income from a fund established by Mr. Julius Rosenwald and the late Mrs. Augusta N. Rosenwald. Dr. Paul S. Martin, Assistant Curator of North American Archaeology, conducted the expedition.

The Chancellor–Stuart–Field Museum Expedition to the South Pacific, which began work in 1929, returned early in 1930. It was led by Mr. Philip M. Chancellor, its sponsor, and Mr. Norton Stuart, both of Santa Barbara, California. Important acquisitions obtained by this expedition include two excellent specimens of the reticulated python of Borneo, which is the largest reptile known to science, and two specimens of the rare giant dragon lizards of Komodo.

Shortly after his return from the above-mentioned expedition, Mr. Chancellor organized the Chancellor–Stuart–Field Museum Expedition to Aitutaki and departed for the Cook Islands. Aitutaki is one of the most remote and least known islands of the Pacific Ocean. The expedition remained in this field for several months. When it returned it brought some 400 fishes for the Museum collections, and some 14,000 feet of motion picture film showing the life of the natives and undersea scenes.

An expedition sponsored and conducted jointly by Captain Harold A. White of New York and Major John Coats of London, England, which had as its principal object the securing of the beautiful, rare and most elusive African antelope known as the bongo, was able to take five of these greatly desired animals. In addition to these, the first still and motion pictures of the living bongo were

made. Also secured were a fine bull eland and a baby rhinoceros, both greatly needed for a water hole group now in preparation. The expedition is continuing its hunt for other unusual animals.

Mr. C. Suydam Cutting returned recently to New York from a successful zoological expedition for the Museum to Sikkim in India, and along the northern border of Tibet. The expedition was organized and financed by Mr. Cutting. He was accompanied by Mr. Herbert Stevens, of Tring, England, who has remained in the field to continue the work of the expedition.

The Field Museum-Oxford University Joint Expedition to Mesopotamia concluded its eighth season of archaeological excavations at Kish during the early part of 1930, and toward the end of the year began its ninth season, which is continuing into 1931. As in previous years, Field Museum's participation in this expedition is financed by Mr. Marshall Field. Each year this expedition has succeeded in accumulating archaeological collections and data of tremendous importance. Professor Stephen Langdon continued as director of the expedition, and Mr. L. C. Watelin as field director.

The Frederick H. Rawson-Field Museum Ethnological Expedition to West Africa, which began work in 1929, returned to Chicago in 1930 after nearly a year in the field. Work was conducted in two regions—Angola (Portuguese West Africa) and Nigeria (British West Africa). Approximately 2,000 objects representing the tribes of these regions were collected, and a large amount of ethnological data was obtained. Mr. W. D. Hambly, Assistant Curator of African Ethnology, was leader of the expedition.

The Peruvian division of the Marshall Field Botanical Expedition to the Amazon completed in 1930 its work begun the preceding year, and returned. Llewelyn Williams, Assistant in Wood Technology, was in charge. The expedition made large and important collections of woods and other botanical material in the Amazonian forests of Peru, which contain one of the world's richest floras, and have received little attention from botanists because of their inaccessibility.

Operations have been begun in southern China by a Museum expedition, sponsored by Mr. Marshall Field, the immediate object of which is to obtain specimens for use in a habitat group of the rare goat-antelope known as the takin. The expedition is led by Mr. Floyd T. Smith of Long Island, New York, who is the only white man in the party.

Mr. Henry Field, Assistant Curator of Physical Anthropology, who since early in the summer had been gathering material and data

this is written, the first drawing its work to a close, the second well under way, and the last just getting to its field of operation.

Several private expeditions have reported the collecting of zoological material for Field Museum. Notable is that of Mr. Marshall Field, who obtained several lions for the Museum while on a pleasure trip to Africa. These will be used in a habitat group which has been much desired. Report has been received also from Mr. James E. Baum, Jr., to the effect that he has obtained specimens of large mammals for presentation to the Museum during his personally organized expedition to Persia.

Foremost of zoological expeditions during the year was the Vernay-Lang Kalahari Expedition for Field Museum. This was organized, financed, and participated in by Mr. Arthur S. Vernay, well known for his work in India and elsewhere. The plans of Mr. Vernay were carried out on a large scale and, although Field Museum was the principal beneficiary, material was also collected for the British Museum (Natural History), London, the Transvaal Museum, Pretoria, and the American Museum of Natural History, New York. Mr. Herbert Lang was placed in charge of general management and preparation, his large previous experience in Africa making him especially qualified for this position. Further technical personnel was obtained through cooperation with the Transvaal Museum and the following members of its staff became associated with the expedition: Mr. Austin Roberts, ornithologist; Mr. G. van Son, entomologist and botanist; Mr. V. Fitzsimmons, herpetologist; and Mr. G. Noome, taxidermist. Dr. A. W. Rogers, Director of the Union Geological Survey of South Africa, accompanied the expedition as geologist and contributed much to its success. Mr. Vernay himself completed the field party, and gave his especial attention to large mammals. The complete organization for continuous work consisted of fourteen white men and sixteen natives.

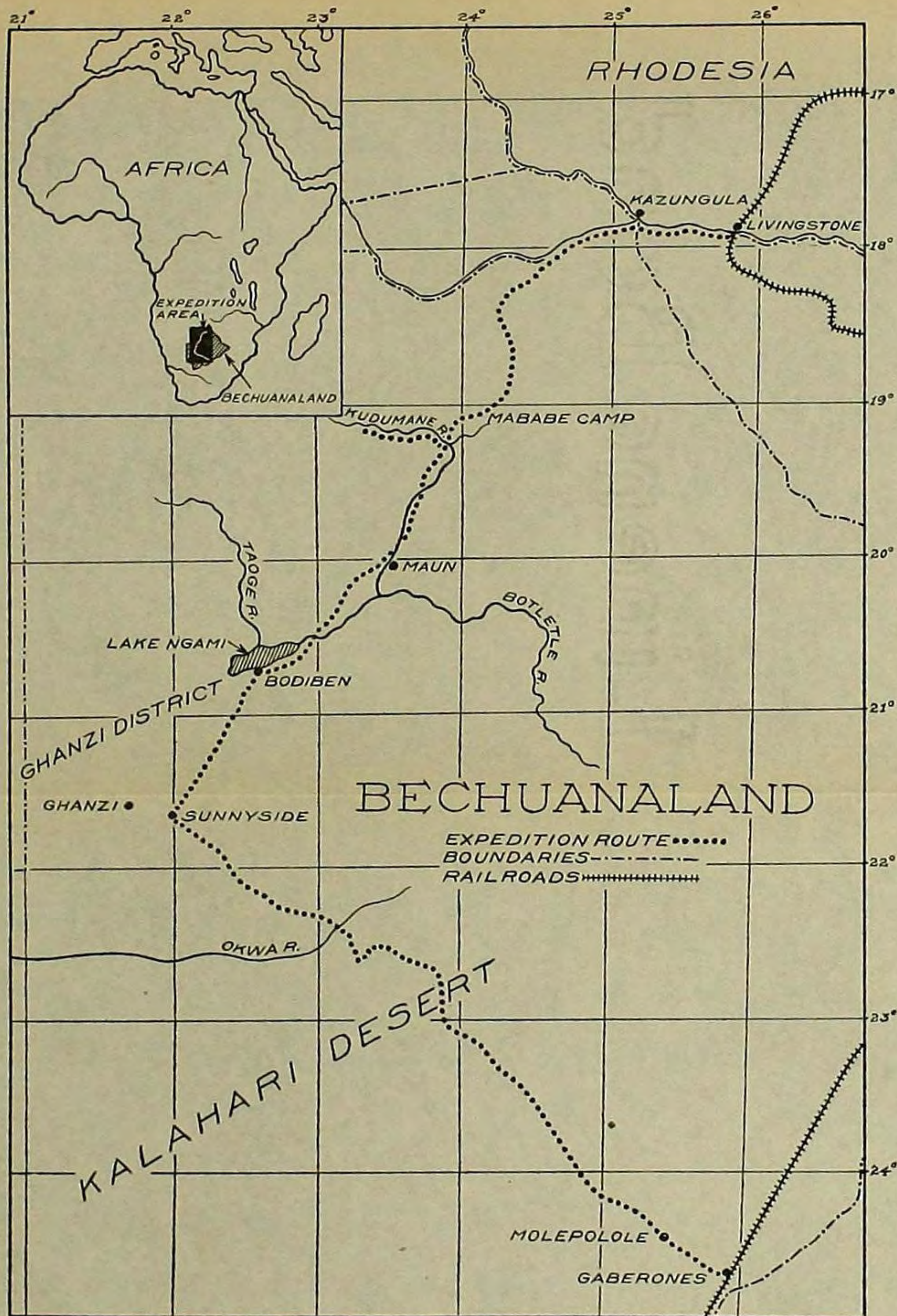
The expedition received the cordial cooperation of the officials of the countries traversed, without whose assistance it could not have carried out its work. Lord Athlone, Governor General of South Africa, extended important aid and good will and took much interest in the expedition. Captain The Honorable B. E. H. Clifford, Imperial Secretary for British South Africa, not only provided numerous indispensable facilities for passage through the country, but also gave invaluable advice in practical matters based on his personal knowledge of conditions gained on his own expedition of 1928. The Resident Commissioner of Bechuanaland, Colonel Rey, gave all

possible assistance. The many courtesies accorded were deeply appreciated by Mr. Vernay and are most gratefully acknowledged by Field Museum.

The expedition depended largely upon motor transport, using five one and one-half ton trucks and one six-cylinder passenger car. Much difficulty having been experienced by previous expeditions through scarcity of water and through the frequent puncturing of tires, special precautions were taken to overcome these obstacles. Water tanks were carried on the running boards of all cars, and to one tank on each the radiator was connected to a device by which steam from the radiator was condensed and conserved. This resulted in a running loss of water amounting to no more than 2 per cent. The tires used were the heavy-duty type with special air-container tubes. These covered 5,800 miles, much of it over trackless ground, without a single puncture, a record which seems almost miraculous.

Mr. Vernay sailed from Southampton, England, to Cape Town early in February and went thence to Kroonstadt, arriving March 1. Here a brief preliminary trip was made to the region about twenty miles northeast of Kroonstadt in the Orange Free State. This was for the special purpose of obtaining specimens of the blesbok and black wildebeest, species which are now becoming rare and confined to this area. Excellent specimens of both were secured, as well as a few examples of the springbok. Mr. Vernay then went to Pretoria, and thence to Mafeking, where he proceeded by rail to Gaberones, in southeastern Bechuanaland, which was the base of the main expedition.

At Gaberones motors and other equipment had been assembled, and with everything in readiness the entire party immediately set out March 18, going northwest into the Kalahari Desert at Molepolole and then continuing in a diagonal traverse through the center of the desert to the vicinity of Ghanzi. Leaving the Ghanzi district and the main Kalahari, they worked northward to Lake Ngami which was found to be wholly dry. The next main point was Maun, west of the Botletle River, where conditions were still very dry, but collecting was carried on continuously. Farther north it was expected to work up through swamps by boats, but lack of water prevented this, so a trip was made with porters up the Kudumane River until water was found thirty-five miles from its mouth. Hunting was carried on here for some time, and also in the vicinity of the Mababe Flats.



MAP OF REGION TRAVERSED BY VERNAY-LANG KALAHARI DESERT EXPEDITION

At this point Mr. Vernay proceeded at once to Livingstone, leaving the expedition to work slowly from the Mababe Flats to Kazungula. Here a road was cut south for hunting around Great Makakari where valuable material was obtained. On September 7, the expedition came out to Livingstone and brought its field work to a close.

The broad appreciation of all the possibilities of the expedition for museum purposes shown by Mr. Vernay in planning and organizing it, and his wise choice of personnel, brought well-deserved results. A difficult region was traversed without mishap, and a collection was made which, considering the time spent, is the equal of or superior to any other ever brought out of Africa. Preliminary classification and enumeration of specimens before shipment indicates long series of practically all the large mammals of South Africa, including the following: giraffe, blesbok, springbok, eland, sassaby, steinbok, lechwe, reedbuck, sable antelope, Burchell's zebra, kudu, puku, roan, lion, leopard, brown hyena, wild dog, and aardvark. Of mammals in general, there are 800 specimens of some ninety species; of birds, 1,500 specimens of about 350 species; of reptiles, 2,500 specimens; of fishes, 500 specimens; of lower invertebrates, 1,000 specimens; of insects, 25,000; and of plants, a large collection as yet not recorded by number. A further important result is a complete and detailed photographic record of the expedition which for quality of production and choice of subjects has rarely, if ever, been equaled.

Finally, as a result of this expedition, Field Museum comes into possession of a remarkably fine specimen of the giant sable antelope of Angola. This was obtained through arrangements made by Mr. Vernay with Mr. Allan Chapman, and with the Portuguese Colonial Office and the Governor General of Loanda, to whom grateful acknowledgment is made for permission to take the specimen. The horns of this specimen measure five feet two and one-half inches in length, and it is therefore among the finest of the few examples of this rare antelope preserved for museum purposes.

The Chancellor-Stuart-Field Museum Expedition to Aitutaki, Cook Islands, sponsored and led by Mr. Philip M. Chancellor of Santa Barbara, California, sailed from San Francisco June 11. Mr. Chancellor, accompanied by Mr. Norton Stuart, proceeded to Rarotonga, Cook Islands, and thence by trading schooner to Aitutaki Island, arriving in July. Their object was the collection of the highly colored and greatly varied fishes of the coral reefs, and the photography of reef life in general. They returned in December, bringing

approximately 400 fishes among which are very peculiar types suitable for reproduction and exhibition in the Museum's new Hall of Fishes, now under construction. In addition to this valuable ichthyological collection, the expedition produced some 14,000 feet of motion picture film, partly of undersea scenes taken with a diving bell and special cameras, and partly of various interesting subjects illustrating native life on the island.

The Harold White—John Coats African Expedition of 1930, led by Captain Harold A. White of New York and Major John Coats of London, England, had as its principal object the securing of certain especially rare and desirable African mammals. It also supplemented the results of the Abyssinian expedition of 1929, likewise conducted by Captain White and Major Coats.

Captain White and Major Coats reached Nairobi by airplane early in September and arranged a special hunt for the beautiful but most elusive antelope known as the bongo, a species never obtained by any of the Museum's previous African expeditions. This hunt was made in the Aberdare Mountains in dense humid forests at an elevation of 10,000 feet. After very hard hunting, fortune favored them and they were rewarded with success almost beyond expectations. The following quoted from a letter received from Captain White indicates what took place:

"After one week of hunting twelve hours a day in that terrible forest, an old native tracker brought us into the heart of the bamboo forest where we discovered an old salt lick that his father had told him about and which had been lost to the younger generation. Here, early one morning, we saw a herd of over thirty bongo just entering the forest, and we picked our female and young yearling out of this group. Several days later, after waiting all night at this lick in terrible cold and rain, we shot a large bull just coming down to drink. This animal is a beauty and has a very fine horn measurement of over thirty inches. Later on, we secured another herd bull, making in all four fine large animals and one small young one."

The bongo is unquestionably one of the most difficult to secure of the large mammals of Africa, and Captain White and Major Coats are to be congratulated on their success. Besides the specimens, they had the rare good fortune, doubtless unique, to obtain clear and distinct moving pictures of the live animals in their forest habitat.

Captain White and Major Coats continued hunting in other selected localities and obtained a very fine bull eland and a small

baby rhinoceros, both of which were needed for use in the large water hole group for which they collected the principal animals in 1929. At last reports, they were expecting to get specimens of Hunter's antelope, a scarce and localized species not at present represented in Field Museum.

The Suydam Cutting Expedition to Sikkim was organized and sponsored by Mr. C. Suydam Cutting of New York, well known traveler and sportsman, and companion of Messrs. Theodore and Kermit Roosevelt on their recent expeditions for Field Museum. Mr. Cutting spent the summer and early fall of 1930 in the highlands of Sikkim and neighboring parts of Tibet. Associated with him was Mr. Herbert Stevens of Tring, England, who devoted himself to general collecting from fixed camps of smaller mammals, birds, and reptiles, while Mr. Cutting moved about engaged in photography and big game hunting. Under date of October 3, Mr. Cutting wrote from the field, reporting that he had obtained three specimens of the Tibetan Argali sheep (*Ovis ammon hodgsoni*). These were taken in Sikkim near the Tibetan border at an altitude of 17,800 feet. Mr. Cutting returned to New York in December, leaving Mr. Stevens to continue detailed work. Specimens from this expedition will not be received until 1931.

The Marshall Field Expedition to China was just reaching its first field of operation near the close of the year. This expedition is conducted by Mr. Floyd T. Smith, who will be accompanied by a corps of trained native Chinese collectors and who will work in cooperation with Chinese scientific societies. Mr. Smith sailed from the United States in July, and after reaching Shanghai, spent some weeks in establishing relations with Chinese officials and in accumulating and perfecting equipment. On November 29, Mr. Smith, with five Chinese assistants, started up the Yangtze River with the intention of continuing to Suifu and thence up the Min River to Chiatingfu, where it was planned to establish a headquarters for preliminary work. Among immediate objects is that of obtaining a series of specimens and complete material for a habitat group of the peculiar goat antelope known as the takin. Later, detailed general collecting is planned for the district of Mouping, in the province of Szechwan, to obtain typical examples of the many animals discovered there by the French missionary Armand David. Subsequent work will be carried on in southern provinces, especially the province of Kweichow.

Field Museum is much indebted to the Chinese Ministry of Education and to the Academia Sinica of Nanking, through Dr.

due to the fact that quantities of material collected by the larger expeditions were still in transit at the end of the year. The accessions are distributed as follows: mammals, 672; birds, 9,619; reptiles and amphibians, 1,004; fishes, 525; insects, 1,002; lower invertebrates, 271; skeletons, 49. The number obtained by Museum expeditions is 3,389; by gift, 1,714; by purchase, 7,757; and by exchange, 282.

A number of valuable large mammals were received as gifts. Messrs. Honore Palmer and John Wentworth, of Chicago, presented a collection of fifty-five African game animals, mostly represented by scalps and skulls collected in Kenya and Tanganyika.

Mr. Fred Lewis of Diamond Bar Ranch, California, presented the skin of a large black rhinoceros, also from Tanganyika.

His Highness Dilipat Singh of Singahi, Kheri District, Oudh, India, presented the skin, skull and skeleton of an Indian sloth bear shot by himself. Such a complete specimen of this animal is a very desirable acquisition.

Two skins of the gaur ox or seladang taken in Indo-China were sent as a gift by Mr. Charles Rydell of San Francisco. These provide additional material from which to select specimens to be used in a habitat group of these animals for William V. Kelley Hall.

By exchange with the Museum of Comparative Zoology, at Harvard University, Cambridge, Massachusetts, 213 specimens of mammals from all parts of the world were obtained. A skin of a fine male of Steller's sea-lion was acquired by exchange with the University of Iowa.

Mammals received from expeditions were relatively few, numbering only 173 specimens. Most important was a second skin, skull and leg bones of the giant panda from western China. This came as a sequel to the William V. Kelley-Roosevelts Expedition to Eastern Asia for Field Museum, through Dr. R. L. Crook, a missionary in Yachow, China, who was commissioned to get it by Messrs. Theodore and Kermit Roosevelt. The skin is complete and in excellent condition. In similar manner there were received, through instructions left by the Kelley-Roosevelts Expedition, one bull banting, one cow seladang, a barking deer and a leopard. These were collected by Mr. F. J. Defosse in southern Indo-China.

From the Third Asiatic Expedition of the American Museum of Natural History, in which Field Museum continued to cooperate, a further consignment of mammals was received, consisting of 153 carnivores and bats.

Accessions of birds were unusually large, due mainly to several advantageous purchases. Most important was the acquisition of the private collection of the late Edward E. Armstrong of Chicago. This collection consists of 5,981 bird skins from North America, Costa Rica, and Colombia, all very carefully prepared and of high quality. It not only adds a large number of species previously unrepresented in the Museum, but also supplements in a most useful way the Museum's series of North American birds. Among many rarities, *Arinia boucardi*, *Leucuria phalerata*, *Carpodectes outoniae*, and *Habia atro-maxillaris* may be mentioned as of particular interest.

A second important purchase was that of a collection of Australian birds obtained from Mr. James W. Woodhead of Auckland, New Zealand. The avifauna of the peculiar Australian region was previously represented in the Museum's collection only by a few odd specimens of poor quality. Also through purchase, 314 birds from southern Parana and Santa Catherina, Brazil, came into possession of the Museum. The region was previously unrepresented in the Museum, and this relatively small collection is therefore an important acquisition. Especially noteworthy are *Leptotriccus sylvicola*, *Otus sanctae-catherinae*, and *Amazona vinacea*.

From the William V. Kelley-Roosevelts Expedition there were received 1,149 birds collected in Yunnan and Szechwan, China, by Mr. Herbert Stevens, while a member of this expedition. Through the same source, as Field Museum's share of M. Jean Delacour's expedition to Indo-China in 1930, there were acquired 1,053 birds of that region. This lot supplements collections made in 1929 and is rich in characteristic species of the peculiar Indo-Chinese fauna. Several examples of the rare trogon, *Pyrotrogon wardi*, are worthy of special mention.

By exchange with the Museum of Comparative Zoology, at Harvard University, there was obtained a specimen of the rare bird, *Boanerges internigrans*, from China, which is allied to the Canadian jay. Two rare petrels from the South Pacific Ocean were received in exchange from the American Museum of Natural History, New York.

Notable among gifts of reptiles are three rare South African lizards from Dr. W. J. Cameron of Chicago; an exceptionally fine "glass snake" from the Indiana dunes, presented by Mr. Maurice Weil of Chicago; a rare West African gecko from Miss Emily A. Clark of the Interdenominational Mission in Nigeria; thirty-four specimens from Mr. D. S. Bullock of Angol, Chile; and eleven specimens from Irak,

is a faithful representation of the actual locality from which the animals were secured.

The group of Pacific walrus (Plate XXXVII) forms another important feature of the hall of marine mammals. The specimens for this group were collected and presented by Mr. Bruce Thorne of Chicago and Mr. George Coe Graves II of New York, principals of the Thorne-Graves-Field Museum Arctic Expedition of 1929. Field Museum is indebted to them not only for the specimens but for a generous contribution covering a large part of the cost of preparing the group. Seven animals are included in the group, one large bull, two younger males, two adult females, and two partly grown young. The ponderous beasts are shown huddled together in their usual manner on an Arctic ice floe, the old bull with his head raised, the cows literally overlapping each other, and the young ones clambering over them. The polished ivory of the formidable looking tusks glints in the subdued rays of a midnight sun cleverly devised to mingle with the background of ice and snow. The entire effect is one of striking interest, and the group stands as one of exceptional individuality. The taxidermy of the walrus group was done by Jonas Brothers of Mount Vernon, New York. The group was installed by Mr. Albrecht, and the background and light effects are by Mr. Corwin.

The group of South American marsh deer (Plate XXV) is the first of several South American groups planned for the western end of Hall 16. The specimens for it were collected by Mr. Colin C. Sanborn, Assistant in Mammalogy, as part of the work of the Marshall Field Brazilian Expedition of 1926-27. Five animals are shown amid the tall grass under the uncertain shade of a palm tree. The scene represented is that of one of the great *pantanales* so characteristic of central Brazil, a vast, level, grassy swamp, dotted here and there with low bushes in clumps, from each of which rise a few slender but towering palms. The species is the largest of South American deer, mainly of a rich tawny color, and it makes a beautiful subject for group treatment. The taxidermy is by Mr. Leon L. Pray, with background by Mr. Corwin.

An important addition to the systematic exhibit of mammals is the white rhinoceros, largest of extant rhinoceroses. A reproduction of this animal in cellulose-acetate by Taxidermist Leon L. Walters was finished and placed on exhibition in Hall 15. It is a very fine example of museum technique and has the double advantage of faithfully portraying nature and of preserving the skin of an animal

now probably approaching extinction. The specimen used in the preparation of this exhibit was obtained by Messrs. H. B. Conover, R. H. Everard, and John T. Zimmer during the Conover-Everard Expedition to Tanganyika Territory in 1926-27. Field Museum is greatly indebted to British officials, whose permission to take the specimen was courteously granted.

In George M. Pullman Hall improved installation was begun with the retirement of two old-style cases and recoloring of the floors of the cases.

In continuation of the revision and improvement of the systematic exhibit of North American birds, two cases of song and insectivorous birds were installed during the year, adding greatly to the general appearance of Hall 21. One of these cases contains finches, sparrows, tanagers and allied birds totaling 128 in number. Each is on a natural perch, and here and there accessories have been introduced, giving interest and variety. The second case contains warblers, thrushes, kinglets and related species, and the two sides of the screen accommodate 145 specimens. It has been necessary to some extent to utilize old mounts, but so far as possible fresh birds have been secured on recent field trips by Taxidermist Ashley Hine and especially prepared by him for mounting.

The reorganization of the systematic exhibit of reptiles and amphibians undertaken last year was continued in the west division of Albert W. Harris Hall. A symmetrical arrangement in ten new cases was completed with a final case containing an African python and three monitor lizards. The groundwork for these cases was made and the installation carried out by Associate Curator William J. Gerhard with the assistance of Mr. E. J. Liljeblad and Mr. Walters.

A striking addition to the reptile exhibits is a cellulose-acetate reproduction of the "dragon lizard of Komodo," as the giant monitor collected by the Chancellor-Stuart-Field Museum Expedition to the South Pacific (1929-30) has been called. This animal is shown in an alert attitude on a special base occupying an entire case. The Komodo lizard is by far the largest true lizard now existing, and Field Museum is greatly indebted to Mr. Philip M. Chancellor for his interest and perseverance in securing so notable an addition to the hall of reptiles. Another new exhibit, also a fine reproduction in cellulose-acetate, is that of the large prehensile-tailed skink of the Solomon Islands, based on specimens collected by the Cornelius Crane Pacific Expedition of Field Museum. Both of these exhibits were prepared by Taxidermist Walters.