

THE AMERICAN MUSEUM OF NATURAL HISTORY

SEVENTY-FIRST ANNUAL REPORT
FOR THE YEAR 1939

SERIAL SCIENTIFIC PUBLICATIONS

NATURAL HISTORY, The Magazine of The American Museum of Natural History:

Volumes I-XLIV, 1900-1939. An illustrated magazine, issued monthly, excepting July and August, devoted to records of scientific research, exploration and discovery, of the development of museum exhibitions and of museum influence on education. Contributors include the scientific staff, explorers and Members of the American Museum, and other eminent naturalists. Issued to all Members as one of the privileges of membership, or on subscription \$3.00; 50c. a copy.

THE JUNIOR NATURAL HISTORY MAGAZINE:

Volumes I-III, 1936-1939. An illustrated monthly magazine for young readers. \$1.00 a year; 10c. a copy; special rates for schools.

THE SKY, Magazine of Cosmic News. Published by the Sky Publishing Corporation.

Volumes I-IV, no. 1, 1936-1939, published by the Hayden Planetarium of the American Museum of Natural History. An illustrated monthly magazine on astronomy and astronomical subjects. \$2.00 (\$2.50 foreign) a year; 20c. a copy.

BULLETIN of the American Museum:

Volumes I-LXXVI, 1881-1939. Scientific records of explorations and collections of the Museum, in Geology, Palaeontology, Mineralogy, Zoology, and, originally, Anthropology. \$4.00-\$10.00 a volume.

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MEMOIRS of the American Museum:

Volumes I-XV, 1893-1930; New Series, I-III, 1912-1921. (Volumes II, IV, V, VII, VIII, X-XV form the Jesup North Pacific Expedition series, Volumes I-XI). Prices range from 75c. to \$18.00 a part.

SPECIAL SCIENTIFIC PUBLICATIONS

A REVIEW OF THE PRIMATES:

By Daniel Giraud Elliot. 1913. A monographic treatise in three quarto volumes. Paper, \$35.00; morocco, \$45.00.

BIBLIOGRAPHY OF FISHES:

By Bashford Dean. 1916-1923. Covers the entire literature of fishes to 1914 and embraces 45,000 titles arranged alphabetically by authors. Three volumes, \$15.00.

THE BASHFORD DEAN MEMORIAL VOLUME:

Article I, 1930, \$1.25; Article II, 1931, 60c.; Article III, 1931, \$1.75; Article IV, 1932, \$2.50; Article V, 1933, \$1.00; Article VI, 1937, \$3.50.

(Publications continued on third page of cover.)

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SEVENTY-FIRST ANNUAL REPORT FOR THE YEAR 1939

"For the purpose of establishing and maintaining in said city a Museum and Library of Natural History; of encouraging and developing the study of Natural Science; of advancing the general knowledge of kindred subjects, and to that end of furnishing popular instruction."

THE CITY OF NEW YORK
Issued May 1, 1940

EDITED BY RUTH TYLER

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SEVENTY-FIRST ANNUAL REPORT OF THE PRESIDENT

*To the Trustees of
The American Museum of Natural History
and to the Municipal Authorities of the City of New York*

IN 1939, as in previous years, American Museum expeditions, financed by friends of this institution, went into the field and brought back specimens from various parts of the world. During the same period members of the Scientific Staff conducted widespread research in the realm of the natural sciences. In the course of the year, as the result of exploration and research plus careful planning and preparation, several new Museum halls and numerous individual exhibits were made part of our record of Nature's works, many of which are rapidly vanishing from the face of the earth.

Exploration, research and the completion of new exhibits are important ends in themselves. In addition, they are the mediums through which the fruits of our activities are brought to the focal point of one of the Museum's basic purposes, namely, Education.

This is neither a new thought nor a new development in our policies. More than sixty years ago, before this institution moved to its present location on Manhattan Square from the Arsenal in Central Park, the Museum was dedicated to the cause of education by Albert S. Bickmore, then its scientific head. In 1880 Professor Bickmore launched the Museum's educational program with a series of natural history lectures to teachers of the New York public schools. The lecture materials were designed so that teachers could use them in the classrooms.

From this humble beginning the Museum has, in the span of sixty years, expanded its educational facilities so that they are no longer limited to courses of instruction to teachers, but embrace widespread and systematic educational activity to millions of public school pupils not only within the Museum itself but in classrooms throughout the entire school area.

It is not my purpose to go into details and statistics here. They will be found in the section of this report covering the work of the Department of Education. But I do want to emphasize that the Museum is aware of, and awake to, its position as a part of the school system of New York City.

Methods of education have changed with the years. The schools have moved away from the stand taken by many forms of foreign education, namely, that to educate is to fill a child with facts, or with propaganda

disguised as facts, for a regimented future. The move in America has been towards a program of public education which in moral, spiritual and intellectual growth will be the best guarantee of a desirable future for America. Since among the materials most necessary to such growth are the materials of nature, the status of the museum in a community has taken on a new meaning.

With this trend a second has been taking place, in that greater stress is being placed upon social and natural sciences in the school curriculum. Half, or more than half, of every child's school learning time from kindergarten to college is spent in this type of learning. This means that any museum devoted to the social and natural sciences is becoming increasingly important.

While these changes have been taking place in the schools the City has grown. Its people have been crowded closer together. Nature and natural things have been pushed farther afield. Children have been forced to learn more and more at second-hand, from books and in school rooms rather than from things found in their natural environment of trees, woods, fields and streams. Learning, in addition to becoming more necessary, has become more difficult. Source materials have become more rare.

This Museum stands in a strategic position with respect to these great trends of New York's public education. It has in greater amount, and more adequately available than in any other museum in the world, the base materials so necessary to the developing trends of school purpose. It has, secondly, a trained scholarly staff to provide the highest cooperation with the City schools. And it has, thirdly, Nature itself on display.

To promote these changes in educational thought and to parallel the improvement in the schools the Museum has constantly elaborated its policy. This is to extend the senses used in the understanding of its materials far beyond the visual to the auditory, the sensory, the emotional, the social and the ethical avenues of approach. Through these the understanding of nature, formerly a part of the environment of every school child but now, in cities like this, increasingly remote, has been made a living, moving experience to hundreds of thousands of school pupils.

Not only has the direction of educational thought been focused on these problems, but it has also been effective in the conduct of two of the Museum's newest and most intriguing enterprises, its use of the Hayden Planetarium and its participation in radio broadcasting.

Astronomical elements have quite different appearances to the man on the street or the child in the school room than reality, and the changes in the spacial relationships of the sun, moon, planets and stars often take so

long to complete that their truth is obscured. A single experience in the Planetarium is sufficient to simplify these truths so they can be understood, and to increase the speed of the changes so that they can be even more easily seen. Thousands of New York City school children have had greater opportunities than were afforded to Copernicus or Galileo.

In radio, the Museum is represented on the "American School of the Air" conducted by the Columbia Broadcasting System and this program reaches not only thousands of New York City school pupils in many of the four hundred and fifty elementary and junior high schools equipped with radio receiving sets, but also several million children in schools throughout the country. A separate astronomical educational program is presented by the Columbia Broadcasting System's educational department for the Hayden Planetarium every week and yet another is broadcast each week from under the dome of the Planetarium itself.

It is fitting that the Museum should acknowledge its debt to the Mayor, the Commissioner of Parks, and to the other officials of the City administration, particularly the Superintendent of Schools, Dr. Harold G. Campbell, and the members of his professional staff. Without such support from the City and the active cooperation of the City school officials the Museum's part in public education could not be nearly so effective.

TEN YEAR DEVELOPMENT PROGRAM

Summarizing the accomplishments of the Ten Year Development Program for 1939 is best done by stating that 1,235 subscriptions were received from all sources for a total of \$133,825.75, of which \$121,869.25 is applicable to 1939 operation.

A new activity in 1939 enlisted our New York City members in a membership campaign. Three hundred and fifty new members were obtained and the ground-work has been laid for further development.

The Women's Century Fund Committee, under the chairmanship of Mrs. Winthrop W. Aldrich, raised \$23,109.75 during the year, and the Men's Committee, with Mr. S. Sloan Colt as chairman, obtained \$51,875.

The efforts of the Program in 1939 resulted in raising the amount needed to balance the Museum budget and provided a cash reserve for 1940.

The officers of the Program are: Mr. F. Trubee Davison, Chairman; Mr. A. Perry Osborn, Executive Chairman; Mrs. Winthrop W. Aldrich and Mr. S. Sloan Colt, Vice-Chairmen; Mr. E. Roland Harriman, Treasurer, and Mr. Reuel C. Estill, Secretary.

REPORT OF THE DIRECTOR

In the ensuing pages of this report every department in the Museum gives a necessarily brief and factual outline of its annual accomplishment. The year 1939 was, however, distinguished for the amount of new material placed on exhibition in the Museum and a further word about this activity is necessary and fitting.

Ten years ago Mr. Harry Payne Whitney gave three quarters of a million dollars, matched by the City, to construct the Whitney Wing. Now this building stands as a model museum unit, not only for the Ornithology Staff which works in its offices and laboratories and preserves and stores the most important study collection of birds in the world but for the public which visits its three exhibition halls. Eight groups in the Hall of Pacific Island Birds were finished at the time of the formal opening in June, and a ninth is being built through the generosity of Mr. Richard Archbold. Mr. Cornelius Vanderbilt Whitney, adding to the already great benefactions of himself and his family, has given funds for the completion of the remaining groups, so that this hall, one of the loveliest in the entire Museum, will be finished as soon as we can gather and prepare the requisite material.

With the installation of two groups in 1939 the entire second floor of the Akeley African Hall is now completed. Anyone visiting the third floor gallery can watch others in the actual process of construction. One expedition is at present in Africa collecting materials for two groups, and as soon as seasonal conditions are favorable, a collector will secure specimens of the cheetah. This is the final group, and in the not distant future the entire exhibit will be complete.

For many years all fossil reptile specimens on exhibition have been crowded into one hall. The addition of the superb new Jurassic Hall, opened this year, provides space not only for the visitor to see the larger mounted skeletons in a proper perspective, but for an arrangement of the fossil reptile collection as a whole in chronologic order from the early Permian forms to those of the late Cretaceous. Several rare and new specimens have been added and the two halls with the connecting corridor permit a suitable expansion in the exhibition for a period of several years.

In the new North American Mammal Hall the group of Rocky Mountain Goats is finished, and the construction and preparation staffs are engaged in preparing cases and group accessories and animals for the remainder. Funds, the vital necessity before any construction can be undertaken, have been pledged by various friends and benefactors for all the larger groups in this hall.

Exhibition in the Roosevelt Memorial has been fittingly concentrated on the life of Theodore Roosevelt and on the natural history of New York State.

Although this represents our most conspicuous performance in new exhibition, it is not all. Separate groups, commanding the same patience, artistry and skill, have been built elsewhere in the Museum. This brief statement only suggests what cannot be revealed at all in the departmental reports, the energy and careful attention applied by the personnel in every stage of the planning and execution of their work.

We have also many loyal friends and helpers. They deserve and receive our thanks in full measure: the City administration, in particular Mr. Robert Moses, the Commissioner of Parks, for their whole-hearted cooperation; the Work Projects Administration for valuable workers in nearly every department; many individuals who give their services either for full or part time and who receive no compensation but the gratitude we express to them here; and the hundreds of donors of material or money on whose magnificent support much of our accomplishment is based.

THE SCIENTIFIC DEPARTMENTS

NEW EXHIBITS

Astronomy and the Hayden Planetarium. Two maps, one of the United States, the other of the world, giving the location of meteorite falls, were a feature of the 1939 exhibits which also included a model of the "Time and Space" building at the World's Fair, lent by the Longines-Wittnauer Watch Company; a colored model of Mars, made by W. P. A. craftsmen under the supervision of the staff, exhibited first during Mars' close approach to the earth in July; a new series of timekeeping instruments on loan from Mr. L. C. Eichner; a collection of sundials and other astronomical instruments presented by Mr. and Mrs. Leo E. Frank; a sundial commemorating explorations of Admiral Byrd, designed by Mr. J. R. Swain; and sixteen tectites received on exchange from the University of Adelaide, Australia.

Scientific and technical staff personnel, with the assistance of W. P. A. artists and craftsmen, made numerous improvements in the equipment.

Geology and Mineralogy. The renovated and rearranged Hall of Petrology now presents adequately and attractively the main facts of structural geology, petrology and ore deposits, with a good synoptic collection of rocks.

For the exhibit of primitive art the Department contributed a case illustrating five milleniums of Chinese carvings in stone, the material drawn chiefly from the Drummond Jade Collection.

Palaeontology. The new Jurassic Hall, opened on April 17, permits the rearrangement of the entire reptile collection, the exhibition of many classic specimens long denied to the public, and the display for the first time of twelve new dinosaur skeletons and several cases of comparative series.

In the Hall of Geology rearrangement of the invertebrate palaeontology exhibition material and study collections continues. We installed a special permanent exhibit of fossil vertebrates of New York State in the Roosevelt Memorial.

Living Invertebrates. Good progress was made on the Pearl Divers group for the Hall of Ocean Life; completion is expected in 1940. At the close of 1939 Mr. Francis L. Jaques finished the mural for the gallery above this group, representing Polynesian pearl divers gathering pearl shell from a lagoon in the South Seas. A miniature replica of the group was exhibited in the New York State building at the World's Fair.

In the Darwin Hall a series of four glass models for the Sponge Alcove and a fine model of a tube-building rotifer for the comparative rotifer series were completed. A volunteer, Miss Constance Paradise, and the W. P. A. artist assigned to the Department furthered the preparation of labels and diagrams for this hall.

Entomology. In addition to numerous minor improvements in the Hall of Insect Life we completed a habitat group of army ants in the Canal Zone and a display of about 850 specimens of butterflies and moths of the world.

Ichthyology. The Bimini or Tropical Ocean group, opened this year, is a new type of exhibit, unglased and with fluorescent lighting. This group, an undersea scene in the Bahamas, is based primarily on material from the Lerner Bimini Expedition of 1937 but includes also a large manta and a young whale shark. Several fine fish specimens were presented by their captors for exhibition purposes.

Herpetology. Various biological principles were illustrated by a new series of live specimens, with particular emphasis on the behavior of desert forms. Mr. William H. Woodin, III, gave us thirty-one desert reptiles for these exhibits. Among other live reptiles were a California boa, a desert mouse that never drinks but manufactures its water out of dry vegetation, and an "eyelash viper" which closely mimics the air plants among which it lives. W. P. A. artists and craftsmen prepared the backgrounds and cases for many of these exhibits.

Experimental Biology. Several groups, mechanically operated, showing how different the world appears to various kinds of animals were opened in December as a preview of the contemplated Hall of Animal Behavior. Technicians of the W. P. A. assisted in every phase of this work, in addition to the preparation of many exhibits for the Hall itself. In this exhibit, the microvivarium, the first to be installed in a natural history museum, shows the biological drama in a drop of water.

Exhibits in the former Hall of Public Health were rearranged, supplemented and moved to the third floor Roosevelt Memorial ambulatory.

Ornithology. Three halls in the Whitney Wing were formally opened on June 6 (to the general public on June 7): the Hall of Biology of Birds; the Gallery of Bird Art; and the Whitney Memorial Hall of Pacific Island Birds. In the last-named hall the ninth group, showing birds of the high mountains of New Guinea, was begun, financed by Mr. Richard Archbold whose expedition obtained the materials. Although work continued steadily,

with W. P. A. assistance, throughout the year in the Hall of Biology of Birds, no new cases were opened to the public.

The Department is responsible for one of the four groups completed in the Roosevelt Memorial, the Bird Sanctuary at Oyster Bay. Another group in the Hall of the Birds of the World, showing bird life of the Arctic Tundra at Churchill, Manitoba, was completed, the gift of Mr. William A. Rockefeller who sponsored and led the expedition that secured the birds and accessories last year.

Mammalogy. Six large habitat groups were finished in 1939: the Upper Nile Region and the Libyan Desert in the African Hall, both collected and financed by Mr. William D. Campbell; the Giant Panda in the Hall of North Asiatic Mammals, the specimens and materials collected by Mr. and Mrs. Dean Sage, Jr., the group donated by Mr. Dean Sage, Sr.; the Rocky Mountain Goat, the first group to be finished for the North American Mammal Hall, collected and donated by Mr. and Mrs. H. B. Clark, Miss Abbey Kissel and Mr. John Lowell Lyman; white-tailed deer in Adirondack woods, typifying principles of conservation, in the Roosevelt Memorial, the gift of Mr. E. Roland Harriman. After repairs and revision, the Manatee was restored to exhibition in the Hall of Ocean Life. A study series of the mammals of New York State, installed in the first floor corridor of the Roosevelt Memorial, caused much favorable comment.

An agreement was reached with Mr. Alfred Klein of Nairobi to collect, in southern Rhodesia, specimens and accessories for the Cheetah group, the last for the African Hall. Mr. William D. Campbell is generously providing the preparation costs. Colonel Francis Colby collected the specimens and accessories for the Alaska Brown Bear group and paid all costs of the field trips; the Boone and Crockett Club has underwritten the preparation costs.

Comparative Anatomy. Dr. William K. Gregory and Dr. Milo Hellman, as a result of their 1938 expedition to South Africa, made a new reconstruction of the jaws and skull of *Plesianthropus transvaalensis* Broom, a South African man-ape of the Pleistocene period. This was placed on exhibition in the Osborn Hall of the Age of Man.

The Hall of Horse Skeletons was greatly improved by a thorough rearrangement and the addition of Mr. Chubb's mountain zebra skeleton.

Anthropology. A special exhibit of primitive native art from the Americas, Africa and Polynesia was installed during the World's Fair. The Mexican Hall was entirely rearranged and revisions were made in parts of the Woodland Indian and Asiatic Halls. Eight new miniature groups and three special American Indian exhibits were completed.

RESEARCH AND PUBLICATION

Astronomy and the Hayden Planetarium. Planetarium staff members are regular contributors to *The Sky*. Mr. William H. Barton prepared star maps to be sealed in the Oglethorpe University Crypt of Civilization to be opened in 8113. Mr. Hugh Rice made computations on asteroids and compilations on the planets for ephemeris material for publication.

Geology and Mineralogy. Dr. Frederick H. Pough contributed a paper to the *Proceedings* of the Staten Island Institute, and the Curator wrote an article on the annual progress of mineralogy for the *New International Year Book* for 1938.

Palaeontology. One *Bulletin* Article by Dr. Edwin H. Colbert on Mongolian Carnivora and three *Novitates* were printed by the Museum. A number of papers by staff members were published in other periodicals. Dr. George Gaylord Simpson was co-author with Miss Anne Roe of a volume, "Quantitative Zoology," which appeared during the year. Research work in various fields continued steadily, some projects being complete and ready for publication.

Living Invertebrates. One *Novitates* on annelids by Dr. A. L. Treadwell, and one on Brachyura by Dr. Melbourne Ward were issued by this Department. The editor has two *Bulletin* Articles and four *Novitates* ready for the press. Most of the research of this Department is continuing work begun in earlier years, not yet finished.

Entomology. We issued twenty-one technical papers, including a long *Bulletin* Article by Dr. W. J. Gertsch on revision of the crab-spiders and one by Mr. Herbert F. Schwarz on Indo-Malayan stingless bees. We have twenty-two papers in press. In addition Dr. R. E. Blackwelder prepared a large supplement to the Leng check-list of beetles, and Dr. Gertsch thoroughly revised "The Spider Book" by Comstock.

Ichthyology. The Bingham Oceanographic Foundation, Yale University, has in press a paper by Mr. John T. Nichols on an extensive collection of fishes lent by the Foundation. Mr. Nichols has also a *Novitates* in press describing four new catfishes.

Dr. W. K. Gregory and Mr. G. Miles Conrad published a *Bulletin* Article on the body forms of marlin from New Zealand and Australia. Mr. Conrad also studied and described a fossil fish from the Upper Eocene of Florida, allied to the recent squirrel fishes.

Dr. E. W. Gudger's most important work was the preparation for the press of Article 7, of which he is the author, of the Bashford Dean Memorial

Volume. Dr. Bertram G. Smith is finishing the last Article for this volume.

Dr. Louis Hussakof completed a *Novitates* on the Devonian fishes of Arizona.

The other members of the Department published various *Novitates* and articles in outside journals.

Herpetology. Mr. C. M. Bogert completed his report on the snakes secured by the Snyder East African Expedition, and published two papers on *Salvadora*, a genus of snakes.

Mr. Francis Trembley completed his study of the South American lizards in our collection, including the important Bassler material.

Reports by Dr. Harvey Bassler on South American snakes and turtles, and by Miss Judy Peterson and Dr. G. Kingsley Noble on South American frogs were greatly advanced.

Experimental Biology. Research on the mechanisms regulating the social behavior of vertebrates continued this year, supported in part by the National Research Council, Committee for the Study of Problems of Sex. Dr. G. K. Noble published five papers in this field, one a *Bulletin* Article with Brian Curtis, and completed two others.

Dr. Frank A. Beach published two papers in outside journals in the same field and has a third in press.

Dr. William Etkin published a paper in the *Journal of Experimental Zoology* on the endocrine system of the tadpole.

Dr. Libbie H. Hyman published no fewer than nine papers on various invertebrates and has four more in press. The first volume of her monumental treatise on the invertebrates will appear early in 1940.

Generous assistance was given to many phases of the research program by W. P. A. workers.

Ornithology. The publication record of this Department in 1939 was exceptional:

Dr. Frank M. Chapman—a paper, financed by Mr. W. H. Phelps, on studies of Upper Zonal Birds of Mt. Auyan-tepui, Venezuela, and several papers and reviews on grackles and certain South American birds.

Mr. John T. Zimmer—numbers 30–33 (two financed by Mr. W. H. Phelps) in the *Novitates* series “Studies of Peruvian Birds,” and various articles in other journals.

Dr. Robert Cushman Murphy—numerous technical and popular articles on ornithology, oceanography and conservation, six of which he lists as of major importance.

Dr. James P. Chapin—*Bulletin* Volume 75, "The Birds of the Belgian Congo, Part 2." Financed by Mr. Charles W. Boise. W. P. A. assistance is also acknowledged.

Dr. Ernst Mayr—seven ornithological papers and various reviews.

Mrs. E. M. B. Naumburg—a *Bulletin* Article on east Brazilian and Paraguayan birds in the Kaempfer Collection.

Dr. A. L. Rand—with Mr. Richard Archbold a book, "New Guinea Expedition."

Mr. Thomas Gilliard—a paper (financed by Mr. W. H. Phelps) on material from the Phelps Venezuelan Expedition.

Mr. Dean Amadon—with Mr. A. R. Phillips, a paper on 1938 field work in Arizona.

All staff members here listed have additional papers ready for publication.

In addition to the research represented by this printed work, Dr. Murphy pursued investigations on petrels and albatrosses in collaboration with Mr. Robert A. Falla, Director of the Canterbury Museum, Christchurch, New Zealand. Dr. Mayr continued work on the birds of the Whitney South Sea Expeditions, the Vernay-Cutting Expedition to Burma, and (in collaboration with the Academy of Natural Sciences of Philadelphia) the Dennison-Crockett Expedition to New Guinea. Dr. Rand was occupied in studying New Guinea birds in the Archbold Collections, and Mr. Gilliard spent the latter part of the year assisting Mr. Phelps in identification of the Venezuelan birds in his own collection.

Mammalogy. Mr. T. Donald Carter and Dr. J. E. Hill actively carried on study and identification of African mammals, the New York Academy of Sciences publishing a paper on the geography of African rodents by Dr. Hill. Mr. Carter completed the identification of mammals collected by the Legendre Indo-China Expedition.

Mr. G. G. Goodwin studied over 2,000 mammal specimens from Honduras and Costa Rica, and also the mammals collected by the Legendre Iran Expedition. Descriptions of new species, two titles on Iran material, one on Honduras material, were published in *Novitates*.

Dr. G. H. H. Tate and Mr. Richard Archbold published two papers on the material collected on the latter's several expeditions to New Guinea. Mr. Archbold was co-author of the volume, "New Guinea Expedition." Dr. Tate published the results of part of his researches on South American mammals in a *Bulletin* Article.

Comparative Anatomy. The Transvaal Museum printed in its *Annals* the joint report on the dentition of *Plesianthropus transvaalensis*

by Dr. Gregory and Dr. Hellman. The same authors also collaborated on a paper on the evolution and classification of the civets and allied Carnivora, published by the American Philosophical Society.

Mr. H. C. Raven continued his work on the gorilla monograph and published a paper in the *Journal of Mammalogy*, one *Novitates* and a *Bulletin* Article on the anatomy and evolution of the ocean sunfish and its allies.

Dr. George Pinkley carried on part of the studies on the evolution of the brain of vertebrates in which he was collaborating with the late Dr. Tilney.

Mr. Conrad continued his studies on the body forms of vertebrates and assisted the Curator in his researches.

Anthropology. Dr. George C. Vaillant, supported by a grant from the Rockefeller Foundation, completed a photographic survey of the Indian arts of North America and published a beautifully illustrated report on this research.

Dr. H. L. Shapiro completed a study of the effect of environment upon the anatomy of the Japanese people settled in Hawaii, the conclusions and tables published in his book, "Migration and Environment."

Mr. N. C. Nelson studied archaeological collections in the leading museums of the United States and Canada, and Mr. Junius Bird spent two months in Europe studying Eskimo collections.

Two *Anthropological Papers* were issued in 1939: one by Dr. W. C. Bennett on the archaeology of the north coast of Peru, and the other by Dr. Froelich Rainey on archaeology in central Alaska.

GENERAL DEPARTMENTAL ACTIVITIES

Astronomy and the Hayden Planetarium. Attendance for 1939 was:

Paid.....	362,425
Classes free.....	64,923
Total.....	427,348

As in previous years lecture subjects were changed monthly, with the exception of the World's Fair period when the regular monthly lecture was given only at one evening performance. During the Fair the number of daily lectures was greatly increased.

An added attraction was a telescope placed outside the building through which the audience could view the heavens after the evening performances.

Cosmic ray impulses received by the Cosmic Ray Counter (a machine built by the technical staff with the cooperation of the Bartol Research

Foundation) and transmitted by wire turned on the lights at the opening of the World's Fair. This device also turned on the powerful beacon at the opening of the La Guardia Airport.

Paid lectures were given in the Planetarium for special groups, and the Weems System of Navigation again gave a course in Dead Reckoning, Meteorology and Celestial Navigation over a period of thirty-six weeks.

Observations of the lunar eclipse of October 27 were broadcast from an airplane at 18,000 feet and the top of a city building.

The Junior Astronomy Club reports an increase in membership and attendance at its bimonthly lectures. Mr. James B. Rothschild became Adviser of the Club in October.

Of five hundred Amateur Astronomers Association members, ninety attended its weekly classes in astronomy and mathematics. The first national convention of amateur astronomers, meeting at the Museum August 10 to 20, elected a committee to consider permanent organization of amateur astronomical societies in one national unit. The class in telescope making, conducted by the Optical Division of the Association and the Planetarium, had a capacity registration.

The Book Corner reports a considerable increase in business, especially in mail orders.

Geology and Mineralogy. Curator Whitlock delivered the eight spring and fall talks on "The Appreciation of Gems," and lectured to two other groups. Dr. Pough spoke on minerals before the New Haven Mineral Club, and on gems before the St. Louis Jewelers Association.

Palaeontology. Fifteen scientists from other institutions were accorded working space and the courtesies of the Department for examination of the collections.

Constant evaluation of stored specimens permitted our sending thirty-three boxes of duplicate fossils as gifts to twenty-eight institutions (schools, colleges or museums), the recipients paying labor and shipping costs.

In addition to research work within the Museum, Dr. Colbert continued his connection with the Academy of Natural Sciences of Philadelphia, was appointed Lecturer at Bryn Mawr College, and as Lecturer in the Graduate Faculty at Columbia University gave Dr. Gregory's course in zoology during the latter part of the fall semester and the entire spring semester.

Miss Georgia M. Whitman, sculptress, voluntarily gave her time in modeling twenty-two types of dinosaurs for the culminating exhibit in the Jurassic Hall.

During the year we had part time assistance of several typists, three sculptors, two artists and one translator from the W. P. A., whose work was of value to the Department.

Living Invertebrates. Curator Miner was elected President of the New York Academy of Sciences in December. He gave addresses at the annual meetings of the Columbia Chapter of Sigma Xi, of which he was elected an honorary member, and of the Cincinnati Chapter. Two lectures to other groups were on his undersea work.

The hundreds of glass models in the Drawin Hall were cleaned. New electrical installation in forty cases in the Shell Gallery improves the exhibition value of the shell collection. About 5,000 specimens were catalogued during 1939.

The W. P. A. artist in the Department finished an important series of scientific drawings, and two W. P. A. typists assisted in secretarial work.

Entomology. We again suffered a reduction in the staff in the retirement of Mr. Frank E. Watson. We were greatly helped by a number of faithful volunteer workers and by generous contributions of specimens. There were 159 accessions, including more than 43,000 specimens of insects and spiders, to our study collections. These collections are used not only by students working here but at present eighty-seven lots, some of them large, are on loan to students in other institutions. Of these thirty-three were sent out in 1939.

Ichthyology. Six large collections were examined, identified and catalogued: Bali fishes from the Lerner Expedition of 1939 by Mr. J. T. Nichols and a volunteer, Mr. John Robas; Siamese fresh-water fishes, gift of Dr. Hugh M. Smith, by Mr. Nichols; aquarium fishes from the East Indies and South America, gift of Mr. W. L. Brind, by Mr. Nichols and Miss F. LaMonte; fresh-water fishes from British Guiana and Venezuela, gift of Mr. A. S. Pinkus, fresh-water Venezuelan fishes from the Phelps Venezuelan Expedition, and fossil shark material, by Miss LaMonte. Miss LaMonte gave two lectures and one "School of the Air" broadcast.

Dr. Gregory and Miss Wilmann, assisted by two W. P. A. workers, revised and reclassified several thousand cards bearing references to the literature of ichthyology from 1914 through 1938.

The Museum invited cooperation of the newly formed International Game Fish Association, which now represents sixteen countries, in securing scientific data and records from sportsmen.

Herpetology. The moving of the departmental offices from the fifth floor, African Wing, to the first floor of Section 15 furnished an occasion for rearranging much of our material. No fewer than 1,699 specimens from nearly forty donors were added to the collection this year. We made loans to eighteen institutions and gave access to the collections to numerous students. W. P. A. workers helped in this department routine.

Experimental Biology. Dr. G. K. Noble was appointed Visiting Professor of Zoology at New York University. Five of his graduate students have work in hand which will materially aid in developing the research program of the Department.

The collection of sectioned brains, an indispensable basis for understanding the behavior of animals studied in the laboratory, was increased during the year. The opportunity of doing original work in the field of animal psychology is attracting many volunteers to the Museum. We set aside a small laboratory for the instruction of volunteers and other students in this field of study.

New cages were constructed by W. P. A. craftsmen for the laboratories, and the stocks were maintained and the bibliographies brought up to date with other W. P. A. help.

Ornithology. Dr. Murphy was active on the lecture platform during the year, was elected an Honorary Member of the Royal Hungarian Institute and a Corresponding Member of the Royal Australasian Ornithologists' Union, was reelected President of the National Association of Audubon Societies and a director on the board of the Long Island Biological Association. He also served on the scientific advisory committee of the United States Antarctic Expedition.

Dr. Chapin was elected President of the American Ornithologists' Union at the annual meeting.

Dr. Mayr attended and presented papers at the Sixth Pan-Pacific Science Congress, was elected co-chairman and a member of the permanent committee of the section on terrestrial fauna of the Pacific Islands. He also presented a paper before the American Association for the Advancement of Science, and gave two lectures in an ornithology course at Ohio State University. He was reelected Editor of the Linnaean Society of New York and was made a Corresponding Member of the Royal Ornithologists' Union. Office assistance for Dr. Mayr by the W. P. A. for part of the year is acknowledged.

With help from the W. P. A. we catalogued last year about 4,000 birdskins, 10,727 sets of eggs and 566 skeletons. As volunteers Mr. Charles K.

Nichols and Miss Barbara Hoyt helped greatly in the rearrangement and consolidation of collections. Mr. Hugh Birkhead, under Dr. Mayr's supervision, was occupied with the Old World specimens, assisted for a time by Mr. Robert Merritt, volunteer; Mr. Charles Schell, under Mr. Charles O'Brien's supervision, with the New World; Mr. Dean Amadon, with nests, eggs and skeletons.

On eighty-five separate requests we lent about 1,500 specimens to other institutions. Numerous artists, photographers, technicians, and visiting scientists from all parts of the world were given facilities for using our collections. Again with W. P. A. assistance, 3,500 pamphlets were bound and filed and many thousand labels and index cards were typed.

Mammalogy. Although intensive field work scattered members of the staff on three continents during the year, resulting in the accession of approximately 7,800 specimens, routine departmental duties were carried on as usual.

Lectures were given by staff members, and Dr. Anthony participated in several of the Museum radio programs.

Mr. Raymond M. Gilmore of the International Health Division of the Rockefeller Foundation continued during 1939 the cooperative arrangement whereby he deposits in this Department specimens collected by the yellow fever field stations in South America. In return he avails himself of our facilities for the study and identification of his mammals. We have received to date 2,400 specimens of mammals from Mr. Gilmore.

We express grateful appreciation to Mrs. Kenneth S. Walker and Miss Abbey Kissel, volunteer assistants, for valuable work accomplished during the year.

Various research workers visited the Department to study the collections, and we lent a fair number of specimens to other institutions.

Comparative Anatomy. The Department added to its study collections from material furnished by the New York Zoological Park and by the Michael Lerner Australia-New Zealand Expedition.

Dr. Gregory gave two lectures before the Royal Societies of New South Wales and Queensland on problems relating to the origin and evolution of man, and three radio broadcasts in Auckland and Sydney describing the work of the expedition.

With the aid of a W. P. A. worker our collection of scientific books and papers was catalogued to date.

Arrangements were made for the distribution by Ward's Natural Science

Establishment of Rochester of a series of models illustrating the family tree of man and the evolution of the skull.

Anthropology. Most of the seventy-seven new collections, of which sixty-four were gifts, were catalogued in 1939. Fifty-two loan exhibits were assembled and labeled for exhibition in schools and museums, chiefly in and near New York City. We reclassified and catalogued the Eskimo collections. More than 4,000 new labels were placed in the exhibition halls.

The volunteer services of the Misses Phyllis Brewster, Helen Cabot and Emily Cross, Mrs. Ethel Cutler Freeman and Mrs. Lola Mautner greatly advanced the work of our laboratory and exhibition staff.

Two W. P. A. projects, under the direction of Dr. Shapiro, continued throughout the year: the compilation of data on the physical anthropology of the American Indian, and art work upon the races of man exhibit.

EXPEDITIONS

NORTH AMERICA

Geology and Mineralogy. Dr. Frederick H. Pough visited the active mineral localities in St. Lawrence County, New York, in North Carolina and Tennessee, and the mines at Bancroft, Ontario, and at Asbestos, Quebec. He collected a magnificent suite of specimens from the fluorite localities of Hardin County, Illinois.

Palaeontology. Dr. Barnum Brown, Dr. Harold E. Vokes and Mr. Roland T. Bird, financed by the North Continental Oil and Gas Corporation, Ltd., of Canada, secured valuable geological sections and exhibition material in Alberta and Montana.

Dr. Vokes went to Mexico in September on a grant from the American Association of Museums from a fund provided by the Carnegie Corporation of New York and, through the courtesy of the Geological Survey of Mexico, secured a collection which included an entirely new late Cretaceous invertebrate fauna from southeastern Puebla.

Financed by the Frick Pliocene Fund, Mr. Albert Thomson spent about four months in the Big Badlands of South Dakota. Dr. J. T. Gregory and Dr. Walter Granger joined him later. Their collection of Oligocene mammals is especially rich in eutherians. They also made a surprising discovery of some primitive artifacts and broken pottery, the first ever found in that region.

Mr. Erich Schlaikjer and Mr. William O. Sweet, sponsor of the expedition, spent a month in reconnaissance work in the Big Bend region,

southwestern Texas, locating the remains of a Jurassic-like fauna which persisted into the late Cretaceous.

Mr. G. D. Guadagni of Boston, a valued friend, collected some rare Cretaceous plant material in Montana.

Miss Clara Wooldridge relocated the original site at "Linton," Ohio, from which a Carboniferous amphibian fauna was obtained many years ago. She presented the collection she made in this area.

Living Invertebrates. In January Dr. Roy W. Miner and Mr. Wyllys R. Betts, through the cooperation of Messrs. H. B. Clark and Murray Coggeshall, went to Florida to arrange for field work for the proposed Sponge Fisheries group. At Tarpon Springs they received cordial cooperation from Mr. George Emanuel, President of the Sponge Exchange. Dr. Miner and Mr. Betts tested various types of film for underwater photography at Marineland, Silver Springs and Rainbow Springs.

Dr. Willard G. Van Name spent about seven weeks in California collecting and studying ascidians at Kerckhoff Marine Laboratories, Corona Del Mar; the Hopkins Marine Station at Pacific Grove; and at the University of Southern California at Los Angeles.

Dr. George H. Childs made a preliminary survey of conditions at Santa Catalina Island for the proposed Kelp Garden group for the Darwin Hall.

Entomology. Dr. Frank E. Lutz spent about a month in Florida collecting chiefly minute species of insects and spiders that live among fallen leaves and other debris. Dr. R. E. Blackwelder collected beetles in New England.

Ichthyology. Mr. Sidney Shapiro made a survey of the coastal fishes of the Carolinas and Florida, for a study of the growth, phylogeny, and evolution of body form in certain families of fishes.

Herpetology. Mr. C. M. Bogert, with a grant-in-aid provided by the Carnegie Corporation of New York through the American Association of Museums, accompanied Dr. Vokes to Mexico. Mr. Bogert's collections included a series of large living iguanids for the laboratory of experimental biology. Throughout the trip they received numerous courtesies from the Mexican authorities.

Experimental Biology. As part of an extensive investigation of the evolution of social behavior in vertebrate animals, Dr. Noble visited Florida and South Carolina to study the chameleon and certain fresh-water fishes in the field, and returned with large collections of living fishes and reptiles. As a member of the advisory board of the biological station of

the Huyck Preserve, Rensselaerville, New York, Dr. Noble made several field trips through central New York utilizing the laboratory as a base. He assembled a large collection of living fishes.

Dr. Myron Gordon visited Mexico in the spring to collect a series of living fish for his endocrine and genetic researches.

Ornithology. Mr. Amadon spent several weeks in the American Southwest studying the birds of the region.

Mammalogy. With the generous financial support of Mr. Charles G. Meyer, Messrs. W. D. Buchanan and Howland Meyer of the Department and Mr. Peter Crowe, a volunteer, took the trailer to the Big Bend district in Texas. They were in the field from August 10 to December 10 and brought back 400 mammals, including topotypes, an important collection as we previously had nothing from this area.

Mrs. Harry P. Davison and Mrs. F. Trubee Davison, with Mr. Gardell D. Christensen of the Department of Preparation, went to Alberta to complete field work for the Rocky Mountain Sheep group but unfortunately no rams worthy of the group were found.

Anthropology. Mr. Gordon Ekholm, assistant to Dr. Vaillant, supported by the Edward Harkness Fund, spent the year in northwestern Mexico, examined 150 sites and discovered and dated a new culture.

Dr. Froelich Rainey, supported by the Voss Fund, spent the summer excavating on the west coast of Alaska and discovered a new Arctic culture horizon.

SOUTH AMERICA

Palaeontology. Dr. G. G. Simpson completed the Venezuelan Expedition begun in 1938, sponsored by the Venezuelan Government and Mr. H. S. Scarritt. A large collection was made of poorly preserved but important and mostly new Pleistocene mammals. A small Miocene collection, recent mammals, plants and ethnological material were also secured by Dr. and Mrs. Simpson.

Anthropology. Dr. Alfred Metraux returned from Argentina and Bolivia with collections and valuable field notes. He was financed by the Voss Fund.

ASIA

Ornithology. Mr. Suydam Cutting sponsored arrangements with the Bombay Natural History Society for a joint expedition in parts of India, and with a private collector for work in other parts of the country.

Mammalogy. Dr. H. E. Anthony returned to the Museum June 1 from the Vernay-Cutting Burma Expedition, led and financed by Messrs. Arthur S. Vernay and Suydam Cutting. Among the 1,035 mammals, 1,487 birds, and 2,500 plants subsequently sent to the New York Botanical Garden, are many rare and interesting items and some species new to science.

Mr. G. G. Goodwin returned in January from the Iran Expedition conducted by Mr. and Mrs. Sidney Legendre. The collection of 280 mammals included not only forms new to science but also genera and species not hitherto represented in any American museum.

AFRICA

Mammalogy. The Vernay Rhodesia Expedition finished field work in 1938 but Mr. Carter did not return until January, 1939. Mr. Arthur S. Vernay generously provided the financial backing for this expedition and Mr. Guy Shortridge of the Kaffrarian Museum, King William's Town, South Africa, made the local arrangements and was the leader in the field. Messrs. Shortridge and Carter secured an amazingly large collection of mammals, divided between the two museums. Our share, with additional material obtained by Mr. Carter on an exchange basis, was 2,760 specimens.

In February Dr. G. H. H. Tate and Mr. Robert W. Kane of the Department of Preparation went to the Guinea Coast, west Africa, to collect the Chimpanzee and Mandrill groups for the Akeley African Hall. Mr. William D. Campbell is financing the expedition and preparation of both groups. The party encountered difficulties due to the rainy season, and did not complete the undertaking by the end of 1939. Although specimens of the mandrills and accessories for both groups were obtained, the specimens of chimpanzees are yet to be taken.

SOUTH SEAS AND PACIFIC ISLANDS

Ichthyology. Members of the Michael Lerner Australia-New Zealand Expedition obtained measurements of and other valuable data concerning forty-two marlins caught by the party. In addition to this laboratory study collections of fishes were made at various places in New Zealand, New South Wales, the Barrier Reef and Bali.

Ornithology. Mr. Lindsay Macmillan completed work in New Caledonia for the Whitney South-Sea Expeditions, with a remittance of several hundred birdskins and some nests and eggs. He is now collecting in Australia for the expeditions.

Dr. A. L. Rand, ornithologist on the Indisch-Amerikaansche Expeditie, which is financed by Mr. Richard Archbold, returned from Netherland

New Guinea in June with 5,203 birdskins, numerous nests, eggs, and spirit specimens, and materials for the bird group now under construction in Whitney Memorial Hall.

Mammalogy. The Indisch-Amerikaansche Expeditie, financed and led by Mr. Richard Archbold, returned in May, 1939. Mr. W. B. Richardson served as mammalogist, in addition to Mr. Archbold, and Mr. L. J. Brass was botanist. The expedition brought back over 4,000 mammals, 25,000 botanical specimens, some reptiles and fishes, as well as the birds mentioned above. Two thousand square miles of unknown country in New Guinea were explored by air and on foot from sea level to snow line.

Comparative Anatomy. Three members of this Department, Dr. Gregory, Mr. Raven and Mr. Conrad, accompanied the Michael Lerner Australia-New Zealand Expedition. Dr. Gregory's visit to the museums and many localities in North and South Islands, New Zealand, and the Barrier Reef in Australia, and Mr. Raven's extensive tour in Queensland, New South Wales and Victoria, gave considerable impetus to the planning and preparation of exhibits illustrating the natural history of New Zealand and Australia. Many government and museum officials in both countries gave the party assistance in countless ways.

Anthropology. Dr. Margaret Mead returned in May from three years of ethnological field work in Bali and New Guinea, and is preparing a scientific report on her findings.

MUSEUM SERVICES

EDUCATION

During the year the significant changes in the reorganization of the Department were consolidated and further developments were initiated in line with future purposes.

The full effect of the restriction of distribution to Museum materials related to the various areas of the Museum was reached. The number of persons affected by these materials dropped, as expected, but the changes resulted in a significant improvement. The quality of the slide collections and silent and sound motion pictures was improved, and the variety and number of circulating collections increased.

The Carnegie Corporation of New York provided the regular music equipment furnished to universities, and a fund for records. Programs of great interest were developed for twelve halls, as well as correlated activities for school groups to the accompaniment of music, which were heard by more than 19,000 visitors.

A sound motion picture library was established, which is run with a small service charge.

A Division of Private School Service was also established for which materials are being developed and new services instituted.

Paid guiding, originally planned for the period of the World's Fair, was so successful that the program was continued and will be revised and augmented during the coming year. This provides the only supervised educational activity for adults on Sundays.

The Field Activity Program of the Board of Education was reorganized to make the project an integral part of the Museum educational service, subject to its complete supervision and supplementary to the teaching activities of the Museum education staff itself.

The significant statistics of departmental service follow:

I. Reached by staff by direct contact

Attendance, lectures and instruction in Museum.....	247,635
Attendance, lectures and instruction outside Museum....	146,942
Attendance and instruction (pupils), Planetarium.....	64,923
Attendance and instruction, Bear Mountain Trails.....	420,000
Attendance, School Science Fair.....	11,337
Attendance, Music.....	19,892
Total reached by direct contact.....	910,729

II. Reached by departmental circulation of materials

Motion picture distribution	4,590,354
Lantern slide distribution	9,117,080
Distribution of circulating collections	11,370,061
Total reached by circulation	25,077,495
TOTAL REACHED BY ALL EDUCATION SERVICES	25,988,224

PUBLIC AND PRESS INFORMATION

Publicity for the Museum and the Hayden Planetarium was covered by a total of 24,500 releases and about 950 photographs. Despite conditions abroad returns from foreign periodicals are greater than ever. Considerable coverage was obtained for *Natural History* though dissemination of digests and special features by the major news syndicates.

The radio program "New Horizons," in its fifth year, reached more than 200,000 classrooms and 8,000,000 listeners each week from New York to Hawaii over the "American School of the Air," sponsored by the Columbia Broadcasting System. The Ministry of Education of Mexico is translating this program into Spanish for re-broadcast in Latin America.

The "Men Behind the Stars" weekly program of popular astronomy in the Planetarium continued its fourth year over the Columbia network. "This Wonderful World" continued in its third year over the Mutual Broadcasting System as a weekly program of natural history and astronomy quizzes for children.

These programs over two hundred and forty stations a week are being heard by organized groups in museums, libraries and clubs throughout the country, in addition to school audiences and the general public, a total of more than 624,000,000 contacts by radio during the year.

Special radio events for Planetarium publicity, such as the lunar eclipse, the close approach of Mars in the summer and the use of the cosmic ray machine, were broadcast over the Mutual Network. These special features were widely used by newspapers for their news interest.

Radio commentators gave generous mention of activities in the Museum and Planetarium throughout the year.

The Department cooperated with the administrative staff and the Longines-Wittnauer Watch Company in publicizing the "Time and Space" exhibit at the New York World's Fair.

The Guest Relations Bureau promoted Planetarium attendance through car cards and posters displayed in city transportation lines through the generosity of Collier Service Corporation. The Bureau made bookings for

820 groups, about 30,000 people including nearly 20,000 school children from New York and neighboring states. These arrangements are distinct from the free courses for children conducted by the Department of Education. In addition, 359 groups with over 10,000 visitors from business organizations, universities, high schools, church societies and clubs were also booked by the Guest Relations Bureau during 1939.

The mailing and distribution of Planetarium literature could not have been performed without the cooperation of employees assigned to the Department by the W. P. A.

LIBRARY

Accent this year fell on one detail of the Library duties, the care and distribution of the major portion of the Museum publications. In preparing and printing classified price lists of these publications, we overhauled the stock of the early papers and by sorting incomplete oversheets salvaged a few *Bulletins*, although the original supply of many was exhausted.

Deprived of our attic storage space because the excess weight put too much strain on the building construction, we checked the entire stock of *Novitates* and transferred it to the basement. More material will be removed as soon as storage facilities can be found. The duplicate collection will be disposed of and many other series sold or given away. Lack of shelf space in all parts of the Library seriously impedes our service and prohibits proper care of our valuable collections.

It is a pleasure to report that the painting of the walls of the west stack-room returned that room to its normal condition.

The task of making catalogue cards of the Osborn Library for use in the general Library was completed.

Miss Florence Thompson, Miss G. E. Mook and Miss Patricia Emmet, volunteers, assisted in the preparation of bindery and other routine work. Valuable help was rendered by the W. P. A. in preparing the Edwards entomological correspondence and in the bindery.

Nine hundred and sixty-one books and 280 pamphlets were bound, and seventy-seven hours of labor contributed to various departments by the bindery.

The generosity of Mr. Cyril F. dos Passos and Dr. William Procter made possible the acquisition of certain rare items of scientific importance.

BOOK SHOP

The new Book Shop on the first floor of the South Pavilion opened June 5. The change in location and the extremely attractive appearance of the new shop elicited enthusiastic comment.

Exhibits at private schools increased the scope of our service and gave the Book Shop a great deal of favorable publicity.

The average individual sale increased to \$1.14, as compared to \$.904 for 1938, due mainly to the benefit of a more attractive display of the merchandise.

We made a net profit for the year of \$1,172.97, more than half of which was earned during November and December.

PRINTING AND PUBLISHING

The Print Shop increased its output from 4,179,519 to 5,071,285 printed pieces. These consisted of routine job work for all departments, 584 labels and 529 pages. Pages included 116,000 copies of *The Junior Natural History Magazine* (twelve issues), 55,000 copies of the *School Nature League Monthly Bulletin* and Reprints, and nine price lists of Museum publications.

Typesetting of Article 7 of the Bashford Dean Memorial Volume, amounting to forty galleys, was completed.

Six chapters of Volume 2 of the Proboscidea Memoir are in type, and four chapters, or 250 pages, are made up.

The staff consisted of the foreman, keyboard and caster operator, two compositors and two pressmen. Valuable assistance was given by four W. P. A. workers.

Anthropological Papers, Bulletins, Novitates, Natural History, Annual Reports of the President and of the Pension Board, and publications issued by the Committee on Popular Publications were sent to outside printers.

SCIENTIFIC PUBLICATIONS

(*Bulletin, Novitates, Anthropological Papers*)

The following papers were published in 1939: *Bulletin* Volume 75; Articles 1 to 8 of *Bulletin* Volume 76; two *Anthropological Papers*; *Novitates* Nos. 1015-1051; and two indexes. This is a total of 1,660 pages and 655 illustrations. The change of format from a single to double column page, thereby increasing the size of the type bed but not of the page, for all scientific publications effects considerable saving in pages and cost.

One *Bulletin* Article and two indexes are in press. Forty-six manuscripts from the various departments, approximately 1,600 printed pages and 327 illustrations, await publication in 1940.

POPULAR PUBLICATIONS

(*Handbooks, Guide Leaflets*)

The much-needed new general guide to the exhibition halls, compiled by Dr. Roy W. Miner, Chairman of the Committee on Popular Publications,

with the help of the staff, was put on sale in September. The Committee also issued five new *Guide Leaflets*, new editions of three others, two printings of the "Pocket Guide," reprintings of two *Handbooks* and three series of postcards based on Museum subjects.

The entire stock of popular publications was transferred October 1 from the Library to a special storeroom under the direct custody of the Committee.

NATURAL HISTORY Magazine

The circulation of *Natural History* increased by 1,430 in 1939 and now totals 27,919, or two and one-half times greater than the circulation of five years ago when the magazine was reorganized. The average renewal rate at that time was sixty to sixty-five per cent. In 1939 it was eighty-four per cent, an extraordinarily high figure for renewals and an important index to the health and growth of the magazine. This was accomplished in the face of an editorial budget reduction which necessitated, among other sacrifices, the elimination of sixteen pages from each issue.

An increase in the number and the higher quality of manuscripts submitted gratified the editors beyond expectation and assure a rapidly growing popular interest in natural history subjects.

The Advertising Department sent out questionnaires which yielded valuable information concerning reader interest and advertising scope. This Department also reports in 1939 the largest increase in new advertising accounts.

Natural History expresses its gratitude for assistance from the W. P. A.

THE JUNIOR NATURAL HISTORY MAGAZINE

Annual subscriptions to *The Junior Natural History Magazine* increased considerably in number during 1939, and public and private schools sold thousands each month on a consignment basis. The magazine continued to be financially self-sustaining.

THE SKY Magazine

The paid circulation of *The Sky* rose from 5,208 on January 1 to 5,478 on November 30. With the December, 1939, issue (Volume 4, no. 2) ownership of *The Sky* was transferred to the Sky Publishing Corporation, with editorial offices in the Planetarium. The magazine remains the official organ of the Hayden Planetarium.

CONSTRUCTION, INSTALLATION AND OPERATION

ARTS, PREPARATION AND INSTALLATION

Our major achievement this year was the creation and installation, with painted backgrounds, mounted specimens and accessories, of no fewer than sixteen large habitat groups.

We also prepared the Conservation Alcove for the Hortus Building at the New York World's Fair and five miniature groups showing industries practiced by American Indian tribes.

The amount of work on the preservation of skins and skeletal material and on plaster casts for the scientific collections was even greater than usual, and numerous designs and models were made as preliminary studies for future exhibits.

Dr. James L. Clark, Messrs. Robert E. McConnell, A. E. Butler and Waddy McFall collected specimens and data for the Mountain Lion group along the north rim of the Grand Canyon. Mr. Charles S. Chapman painted field studies for the background. Mr. Beverley R. Robinson is sponsor not only for the expedition but for the preparation of this group. Mr. Butler made a reconnaissance trip into Mexico in the interest of the Jaguar group, the gift of Mr. C. V. Whitney. Mr. Gardell D. Christensen accompanied the H. P. Davison Expedition to Alberta for the Bighorn Sheep group. Mr. Ludwig Ferraglio spent five months with the Lerner Australia-New Zealand Expedition, preserving and making casts of the material collected. Mr. Robert W. Kane spent the entire year in Africa painting background studies and collecting accessories for several African Hall groups, financed by Mr. Philip M. Plant and Mr. William D. Campbell.

GENERAL SUPERINTENDENT

The General Superintendent reports, in addition to the routine inspection, maintenance, construction, drafting, repair work, guarding, cleaning and general operating work performed by the forces under his jurisdiction, the following major activities:

An increase in electrical energy generated in the Museum power station, painting of the Planetarium dome without interruption or interference with the program of demonstrations, extensive remodeling of various spaces to provide for departmental moving, progress on case construction for the new Hall of North American Mammals, improvements in the heating, ventilating and electrical systems, and installation of the Museum exhibit at the New York World's Fair.

Attendance records in 1939 were:

General attendance.....1,197,967

Lectures, meetings, special exhibits, concerts, etc..... 360,061

Total (exclusive of the Planetarium).....1,558,028

This represents an increase of 77,640 over 1938.

Craftsmen assigned by the W. P. A. gave assistance to the mechanical departments during part of the year.

The Restaurant was patronized by 58,626 persons, and the Cafeteria accommodated 105,092 children during the year.

The Emergency Aid Room gave treatment to 3,790 persons.

REPORT OF THE TREASURER—FINANCIAL ADMINISTRATION

BUDGETARY FUNDS OF 1939

The Budget of 1939 (City Maintenance, General and Morris K. Jesup Fund Accounts), as approved by the Trustees on January 16, 1939, was as follows:

Disbursements.....	\$1,284,386.09	
Receipts.....	1,181,965.26	
Estimated Deficit.....		<u>\$102,420.83</u>

The actual receipts and disbursements are as follows:

Receipts.....	\$1,290,471.55	
Disbursements.....	1,220,467.63	
Balance, December 31, 1939.....		<u>70,003.92</u>

This balance of \$70,003.92 is carried forward to 1940 for obligations contracted in 1939, for subscriptions of 1940 paid in 1939, and the remainder to reduce the prospective deficit of 1940.

During the year the Ten Year Development Program Committee brought in from all sources the sum of \$121,869.25, of which \$103,491.25 was allocated as contribution for General Purposes, and the sum of \$18,378.00 was transferred to Membership Fees from the total amount received.

For convenience we show below, completely segregated, the receipts and disbursements from Budgetary Accounts and Special Funds for the year 1939.

SUMMARY OF RECEIPTS AND DISBURSEMENTS FOR ALL PURPOSES, 1939

Receipts

City of New York for Maintenance		\$497,059.09
Trustees Funds:		
Balance, January 1, 1939	\$242,220.05	
Income from Endowment Funds	\$604,072.59	
Contributions of Trustees, Members, Friends, Foundations, etc.	427,136.74	
Membership Dues	53,055.00	
Sales, Film Rentals and Guiding, etc.	27,594.78	
Loan	1,500.00	1,113,359.11
		<hr/>
Total Income, Trustees Funds		1,355,579.16
		<hr/>
Total Income, All Sources		\$1,852,638.25

Disbursements

Administration and Operation	\$792,470.97
Scientific and Research	489,430.69
Printing, Books and Publications	37,121.77
Arts, Preparation and Installation	130,808.47
Education	86,232.47 ✓
New York State Roosevelt Memorial Building	24,871.16
Transferred to Investment Fund for Reinvestment	3,548.29
	<hr/>
Total, All Costs	1,564,483.82
	<hr/>
Balance, December 31, 1939	\$288,154.43
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Explanation of Balances

City Maintenance Account		
Capital Fund	\$15,000.00	
Special Funds Account		
For specially designated purposes	203,150.51	
Morris K. Jesup Fund Account		
Brought forward for 1939 obligations	550.00	
General Account		
Carried forward to 1940 for obligations contracted in 1939, for subscriptions of 1940 paid in 1939, and the remainder to reduce the prospective deficit of 1940	69,453.92	70,003.92
		<hr/>
		\$288,154.43
		<hr/> <hr/>

PERMANENT ENDOWMENT FUNDS, 1939

The Treasurer, who is also Chairman of the Finance Committee, desires to report that the following additions were received to the Endowment Fund:

Gifts and Bequests:

Beatrice, Countess of Granard, Gladys Phipps and the late Ogden L. Mills	\$25,000.00
Maria DeWitt Jesup	182.50
Virginia Scott Hoyt	2,500.00
Edwin W. Orvis	2,000.00
Henry Fairfield Osborn	138.72
Jeanette Robertson	2,250.54
James Reuel Smith	797.94
J. Kennedy Tod	40,000.00
Felix M. Warburg	10,000.00
Edward S. Whitney	12,500.00
Membership Fees	4,500.00
	<hr/>
	\$99,869.70

The Finance Committee also reports the following summary of the transactions during the year:

Receipts

Cash on hand, January 1, 1939	\$222,253.85
Cash received a/c Gifts, Bequests and Membership Fees	99,687.20
Proceeds from Sales and Redemption of Securities and Amortization Payments	2,474,524.23
Refund a/c Advance for Foreclosure Costs	1,920.33
Transfers from Income Accounts for Reinvestment	3,548.29
	<hr/>
	\$2,801,933.90

Disbursements

Cost of Securities Purchased	2,453,994.50
Balance, December 31, 1939	<hr/>
	\$347,939.40

The Endowment Fund on December 31, 1939, had a book value of \$14,472,923.99, of which amount real estate holdings carried on our books at cost total \$1,517,548.53. The sum of \$260,153.61 has been temporarily invested in reduction of indebtedness to bank. The balance, representing marketable securities and cash and amounting to \$12,695,221.85, had a market value at December 31, 1939, of \$12,313,322.02. The estimated annual income from our invested funds is \$602,207.27, a yield of 4.16% on book value. The yield on our marketable securities is 4.35% based on book value, and 4.49% based on market values.

FINANCIAL STATEMENT, 1939

BUDGETARY ACCOUNTS

	CITY MAINTENANCE ACCOUNT	GENERAL ACCOUNT	MORRIS K. JESUP FUND ACCOUNT	TOTALS
Receipts				
Balance, January 1, 1939.....	\$15,000.00	\$21,984.59	\$3,400.00	\$40,384.59
City of New York.....	497,059.09			497,059.09
Income from Endowment Funds.....		351,215.73	229,895.79	581,111.52
Membership Fees.....		53,055.00		53,055.00
Sales, Film Rentals, Guiding and Credit Interest on Loans.....		22,511.65	1,808.48	24,320.13
Contributions of Trustees, Members and Friends.....		109,541.22		109,541.22
Total Receipts.....	<u>\$512,059.09</u>	<u>\$558,308.19</u>	<u>\$235,104.27</u>	<u>\$1,305,471.55</u>
Disbursements				
Administration and Operation.....	\$442,235.87	\$324,247.68		\$766,483.55
Scientific and Research.....	15,335.52	90,884.47	\$152,468.81	258,688.80
Printing, Books and Publications.....		19,849.36	12,050.44	31,899.80
Arts, Preparation and Installation.....		2,748.11	70,035.02	72,783.13
Education.....	15,492.86	50,248.33		65,741.19
New York State Roosevelt Memorial Building.....	23,994.84	876.32		24,871.16
Total Disbursements.....	<u>\$497,059.09</u>	<u>\$488,854.27</u>	<u>\$234,554.27</u>	<u>\$1,220,467.63</u>
Balance, December 31, 1939				
Capital Fund.....	15,000.00			
Carried forward to 1940 for obligations contracted in 1939, for subscriptions of 1940 paid in 1939, and the re- mainder to reduce the prospective deficit of 1940.....		69,453.92	550.00	85,003.92
	<u>\$512,059.09</u>	<u>\$558,308.19</u>	<u>\$235,104.27</u>	<u>\$1,305,471.55</u>

SPECIAL FUNDS ACCOUNTS
(NOT AVAILABLE FOR BUDGETARY PURPOSES)

Receipts

Balance, January 1, 1939.....	\$201,835.46
Income from Endowment and Investment Funds.....	22,961.07
Contributions of Trustees, Members, Friends, Foundations, Grants, Organizations, etc.....	317,595.52
Sales, Film Rentals and Guiding.....	3,274.65
Loan.....	1,500.00
	<u>\$547,166.70</u>

Disbursements

Administration and Operation.....	\$25,987.42
Scientific and Research.....	230,741.89
Printing, Books and Publications.....	5,221.97
Arts, Preparation and Installation.....	58,025.34
Education.....	20,491.28
Transferred to Investment Funds for Reinvestment.....	3,548.29
	<u>344,016.19</u>

Balance, December 31, 1939, for specially designated purposes. . . . 203,150.51

\$547,166.70

All the foregoing accounts have been

Examined and { MALCOLM P. ALDRICH }
 Approved { CORNELIUS V. WHITNEY } Auditing Committee.
 E. and O. E. { H. RIVINGTON PYNE }

NEW YORK, December 31, 1939.

E. ROLAND HARRIMAN, *Treasurer.*

ADAMS & BECKER

Certified Public Accountants

110 East 42nd Street

New York

THE AMERICAN MUSEUM OF NATURAL HISTORY

CERTIFICATE OF AUDITORS

We have audited the records relating to the cash transactions of The American Museum of Natural History for the year ended December 31, 1939.

Conforming to your usual custom, certain collections to and including January 26, 1940, have been treated as of December 31, 1939, in order to obtain the benefit for the period then ended, of revenue earned during 1939, but which became due and payable on January 2, 1940.

WE HEREBY CERTIFY, that in our opinion, subject to the foregoing comment, the receipts and disbursements for the period under review were properly accounted for and correctly stated upon the records.

(Signed) ADAMS & BECKER

Certified Public Accountants.

New York, February 3, 1940.

REPORT OF THE SECRETARY—MEMBERSHIP AND PERSONNEL

We gained 5,987 new Members and lost 5,683 by death or resignation. The total for 1939 was 25,135 active Members.

The Secretary records below the action of the Trustees in revising several classes of membership.

Over 1,300 Members and guests, some coming from considerable distances, attended the Eleventh Annual Members' Visiting Day on April 28.

The Membership Department successfully handled the circulation of *Natural History*, *Junior Natural History* and *The Sky*, and assisted in promotion activity of the Hayden Planetarium and the Ten Year Development Program.

Grateful recognition is hereby given to the W. P. A. workers assigned to this Department for their loyal and efficient support during the year.

The membership enrollment for 1939 was as follows:

Associate Members.....	19,064	Honorary Life Members.....	81
Annual Members.....	4,039	Fellows.....	118
Sustaining Members.....	274	Honorary Fellows.....	15
Corresponding Members.....	25	Patrons.....	235
Supporting Members.....	50	Associate Benefactors.....	67
Contributing Members.....	44	Associate Founders.....	28
Life Members.....	1,063	Benefactors.....	28
Endowment Members.....		9	

THE BOARD OF TRUSTEES

At the Annual Meeting January 16, 1939, these officers were reelected: President, F. Trubee Davison; Second Vice-President, Cleveland E. Dodge; Treasurer, E. Roland Harriman; Secretary, Clarence L. Hay. Mr. A. Perry Osborn was elected First Vice-President in place of Mr. J. P. Morgan. The resignation of Mr. Morgan from the Board, of which he had been a member since March 24, 1908, was accepted by the Trustees with profound regret. The Trustees of the Class of 1938 were reelected to the Class of 1943: Robert Woods Bliss, Archer M. Huntington, Junius S. Morgan, A. Perry Osborn, Kermit Roosevelt, Frederick M. Warburg and James Rowland Angell.

The President recommended and the Trustees approved the establishment of a Special Committee on Economic Geology Exhibits; the appointment of Mr. H. B. Clark and Dr. James L. Clark to the Special Committee on North American Mammals; the appointment of Mr. Wilton Lloyd-Smith to the Executive Committee in place of Mr. Kermit Roosevelt; the establish-

ment of a Special Committee on Participation in the 1939 New York World's Fair with the following personnel: Frederick M. Warburg, Chairman, Arthur S. Vernay, Douglas Burden, Clarence L. Hay, Junius S. Morgan, F. Trubee Davison and Roy Chapman Andrews.

Mr. John I. Downey's resignation from the Special Committee on Astronomy and Planetarium, and Mr. Junius S. Morgan's resignation from the Auditing Committee, of which he was Chairman, were accepted at the Executive Committee meeting April 6, 1939. The Committee appointed Mr. Malcolm P. Aldrich to the Auditing Committee as its Chairman.

At a joint meeting of the Executive and Finance Committees on June 14, the Secretary announced with regret the death on May 8, 1939, of Dr. Alexander Lambert, a member since 1936 of the New York State Theodore Roosevelt Memorial Committee.

The Board of Trustees on November 13, 1939, elected Mr. S. Sloan Colt a member of the Class of 1940 to fill the vacancy caused by the death of Mr. Henry W. Sage. A resolution of sympathy was passed concerning the death on November 8, 1939, of Dr. Livingston Farrand.

At the Annual Meeting on January 16 Mr. A. Perry Osborn expressed the general agreement of the Trustees that the fee for Life Membership was too low. Accordingly the Executive and Finance Committees had recommended a new membership schedule, with Life Membership raised to \$1,000, Patronship to \$5,000, and the addition of two new classes, Supporting Membership at \$100 annually, and Contributing Membership at \$50 annually. It was further recommended that the privilege of designating successors to higher classes of membership be abolished. The Secretary therewith gave the first formal notice of the amendments to Article XII of the Constitution and Article VII of the By-Laws necessary to effect these changes. The amendments to both Articles were adopted by the Board May 1, 1939, and became effective on that date.

THE ADMINISTRATIVE AND SCIENTIFIC STAFFS

The following appointments were approved by the Board of Trustees January 16: Walter F. Meister, Assistant Bursar in place of Francis Bushell, retired; Edwin C. Meyenberg, Assistant Bursar; Robert J. Seibert, Acting Assistant Bursar without staff status; Robert R. Coles, Associate Lecturer in the Department of Astronomy and the Hayden Planetarium; Junius B. Bird, Assistant Curator of Anthropology; W. C. Bennett, Research Associate in Anthropology; Jean E. Wiedemer, Staff Assistant in the Department of Public and Press Information.

Dr. George H. Childs was appointed Assistant in Comparative Inverte-

brate Anatomy in the Department of Living Invertebrates by the Board of Trustees on May 1. At this meeting Mr. William D. Campbell was made Assistant to the Director as of October 1, 1939, but at the meeting of the Executive Committee on October 19, this appointment was postponed for at least a year because of Mr. Campbell's ill health. In view of important recent developments in conservation exhibits the Trustees approved the change of title of the Department of Woods and Forestry to the Department of Forestry and Conservation, with the following personnel: Clarence L. Hay, Honorary Curator; Charles Russell, Executive Curator; H. E. Anthony, Robert Cushman Murphy and Willard G. Van Name, Advisory Associates.

The Executive and Finance Committees, meeting jointly on June 14, 1939, appointed Dr. W. J. Gertsch Associate Curator of Spiders, and Mr. Frederick L. Hahn Production Manager of *Natural History*, and accepted with regret Miss Dorothy A. Bennett's resignation, as of June 15, 1939, as Assistant Curator of Astronomy and the Hayden Planetarium and Associate Editor of *The Sky*.

On October 19, 1939, the Executive Committee appointed Mr. John C. Armstrong Associate in Marine Invertebrates in the Department of Living Invertebrates, to take effect as of October 1, 1939.

We are grieved to record the death on December 24, 1939, of Dr. George Emerson Brewer, Research Associate in Somatic Anthropology.

ADMINISTRATION OF THE YEAR 1939

BOARD OF TRUSTEES

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First Vice-President

A. PERRY OSBORN

Second Vice-President

CLEVELAND E. DODGE

Treasurer

E. ROLAND HARRIMAN

Secretary

CLARENCE L. HAY

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ARTHUR S. VERNAY

SUYDAM CUTTING

A. HAMILTON RICE

WILLIAM PROCTER

FREDERICK H. OSBORN

ROBERT EARLL MCCONNELL

Class of 1940

GEORGE T. BOWDOIN

DANIEL E. POMEROY

CORNELIUS V. WHITNEY

H. RIVINGTON PYNE

S. SLOAN COLT

WILTON LLOYD-SMITH

Class of 1941

DOUGLAS BURDEN

E. ROLAND HARRIMAN

CLEVELAND E. DODGE

JOHN D. ROCKEFELLER, 3RD.

CHILDS FRICK

LEONARD C. SANFORD

Class of 1942

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CLARENCE L. HAY

LINCOLN ELLSWORTH

LEWIS W. DOUGLAS

MALCOLM P. ALDRICH

DEAN SAGE, JR.

ARTHUR H. BUNKER

Class of 1943

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ARCHER M. HUNTINGTON

KERMIT ROOSEVELT

JUNIUS S. MORGAN

FREDERICK M. WARBURG

JAMES ROWLAND ANGELL

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FIGIELLO H. LA GUARDIA

(MAYOR OF THE CITY OF NEW YORK)

JOSEPH D. MCGOLDRICK

(COMPTROLLER OF THE CITY OF NEW YORK)

ROBERT MOSES

(COMMISSIONER OF PARKS OF THE CITY OF NEW YORK)

*The President is *ex-officio* a member of all Committees.

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F. TRUBEE DAVISON

E. ROLAND HARRIMAN

CLARENCE L. HAY

COMMISSIONER OF PARKS

GEORGE T. BOWDOIN

CHILDS FRICK

JUNIUS S. MORGAN

DANIEL E. POMEROY

WILTON LLOYD-SMITH

A. PERRY OSBORN

JOHN D. ROCKEFELLER, 3rd.

ex-officio

Finance Committee

E. ROLAND HARRIMAN, *Chairman*

ROBERT EARLL McCONNELL

FREDERICK M. WARBURG

A. PERRY OSBORN

JUNIUS S. MORGAN

ARTHUR H. BUNKER, *Adviser*

FREDERICK H. SMYTH, *Bursar*

Auditing Committee

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CORNELIUS V. WHITNEY

H. RIVINGTON PYNE

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LEWIS W. DOUGLAS

FREDERICK H. OSBORN

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JACOB W. SHROPE

H. E. ANTHONY, *Secretary*

Counsel to the Board of Trustees

LEWIS L. DELAFIELD

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SUYDAM CUTTING

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JOHN D. ROCKEFELLER, 3RD.

LEONARD C. SANFORD

ARTHUR S. VERNAY

Co-ordinating Committee of General Departmental Committee

FREDERICK H. OSBORN, <i>Chairman</i>	CLARENCE L. HAY
DOUGLAS BURDEN	LEONARD C. SANFORD

Special Sub-Committee on Entomology

LEONARD C. SANFORD	WILLIAM PROCTER
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CHARLES J. LIEBMAN	WALDEMAR A. CHADBOURNE
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JOHN A. KINGSBURY	DUNCAN H. READ
HENRY NORRIS RUSSELL	WALLACE W. ATWOOD
HARLOW SHAPLEY	LENOX RILEY LOHR

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North American Mammals

ROBERT EARLL McCONNELL,	KERMIT ROOSEVELT
<i>Chairman</i>	JOHN D. ROCKEFELLER, 3RD.
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DOUGLAS BURDEN	H. B. CLARK
WILTON LLOYD-SMITH	H. E. ANTHONY, <i>Curator</i>

JAMES L. CLARK, *Preparation*

Participation in 1939 New York World's Fair

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WHITNEY	ROY CHAPMAN ANDREWS, <i>Director</i>

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MRS. WILLIAM H. GOOD	COLONEL HENRY L. STIMSON
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North Asiatic Hall

SUYDAM CUTTING, <i>Chairman</i>	JAMES L. CLARK
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WILLIAM J. MORDEN	DEAN SAGE, JR.
LT. COL. F. M. BAILEY, C.I.E.	THEODORE ROOSEVELT

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 CHILDS FRICK
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 A. PERRY OSBORN
 ROY CHAPMAN ANDREWS, *Director*
 CLARK WISSLER, *Dean, Scientific Staff*
 CHARLES RUSSELL, *Curator*

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Assistant Bursars

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EDWIN C. MEYENBERG

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REX P. JOHNSON

Mechanical Superintendent

CHARLES C. GROFF

Power Plant Engineer

WILSON L. TODD

Custodian

LOUIS W. KINZER

Membership Secretary

CHARLES J. O'CONNOR

Assistant to the President

HANS CHRISTIAN ADAMSON

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H. E. ANTHONY, D.Sc., Secretary of the Council of Heads of the Scientific
Departments

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ARTHUR L. DRAPER, Assistant Curator
ROBERT R. COLES, Associate Lecturer
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FREDERICK H. POUGH, Ph.D., Research Associate in Meteorites

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FREDERICK H. POUGH, Ph.D., Assistant Curator

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BARNUM BROWN, Sc.D., Curator of Fossil Reptiles
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ontology
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H. E. VOKES, Ph.D., Assistant Curator of Invertebrate Palaeontology
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CHARLES C. MOOK, Ph.D., Research Associate

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FRANK J. MEYERS, Research Associate in Rotifera
HORACE W. STUNKARD, Ph.D., Research Associate in Parasitology
A. L. TREADWELL, Ph.D., Sc.D., Research Associate in Annulata
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ROSWELL MILLER, JR., C.E., Field Associate
WYLLYS ROSSETER BETTS, JR., Field Associate

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CYRIL F. DOS PASSOS, LL.B., Research Associate in Lepidoptera
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ALFRED E. EMERSON, Ph.D., Research Associate in Termites

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C. M. BREDER, JR., Sc.D., Research Associate
E. GRACE WHITE, Ph.D., Research Associate
LOUIS HUSSAKOF, Ph.D., Research Associate in Devonian Fishes
WILLIAM BEEBE, Sc.D., Research Associate in Oceanography
VAN CAMPEN HEILNER, M.S., Field Representative
MICHAEL LERNER, Field Associate

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WILLIAM ETKIN, Ph.D., Research Associate
LIBBIE H. HYMAN, Ph.D., Research Associate
R. E. BOWEN, Ph.D., Research Associate

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ERNST MAYR, Ph.D., Associate Curator of the Whitney-Rothschild Collections
CHARLES E. O'BRIEN, Assistant Curator
ELSIE M. B. NAUMBURG, Research Associate
A. L. RAND, Ph.D., Research Associate
PHILIP B. PHILIPP, Research Associate in Oology
ALBERT R. BRAND, Associate in Ornithology

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H. E. ANTHONY, D.Sc., Curator
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G. H. H. TATE, D.Sc., Assistant Curator of South American Mammals
T. DONALD CARTER, Assistant Curator of Old World Mammals
JOHN ERIC HILL, Ph.D., Assistant Curator
RICHARD ARCHBOLD, Research Associate
WILLIAM J. MORDEN, Ph.B., Field Associate
ARTHUR S. VERNAY, Field Associate
WILLIAM D. CAMPBELL, Field Associate

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GEORGE PINKLEY, Ph.D., Associate Curator
G. MILES CONRAD, A.M., Assistant Curator
J. HOWARD MCGREGOR, Ph.D., Research Associate in Human Anatomy
DUDLEY J. MORTON, M.D., Research Associate
S. H. CHUBB, Research Associate

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GEORGE C. VAILLANT, Ph.D., Associate Curator of Mexican Archaeology
HARRY L. SHAPIRO, Ph.D., Associate Curator of Physical Anthropology
MARGARET MEAD, Ph.D., Assistant Curator of Ethnology
BELLA WEITZNER, Assistant Curator of Anthropology

Anthropology—Continued

JUNIOUS B. BIRD, Assistant Curator of Anthropology

CLARENCE L. HAY, A.M., Research Associate in Mexican and Central American Archaeology

WILLIAM W. HOWELLS, Ph.D., Research Associate in Physical Anthropology

MILO HELLMAN, D.D.S., D.Sc., Research Associate in Physical Anthropology

FREDERICK H. OSBORN, Research Associate in Anthropology

ROBERT VON HEINE-GELDERN, Ph.D., Research Associate in Anthropology

W. C. BENNETT, Ph.D., Research Associate in Anthropology

WILLIAM K. GREGORY, Ph.D., D.Sc., Associate in Physical Anthropology

ANTOINETTE K. GORDON, Associate in Asiatic Ethnology

ASIATIC EXPLORATION AND RESEARCH

ROY CHAPMAN ANDREWS, Sc.D., Curator

WALTER GRANGER, D.Sc., Curator of Palaeontology

CHARLES P. BERKEY, Ph.D., Sc.D. (Columbia University), Research Associate in Geology

AMADEUS W. GRABAU, S.D. (The National Geological Survey of China), Research Associate

PÈRE TEILHARD DE CHARDIN (The National Geological Survey of China), Research Associate in Mammalian Palaeontology

FORESTRY AND CONSERVATION

CLARENCE L. HAY, A.M., Honorary Curator

CHARLES RUSSELL, Ph.D., Executive Curator

H. E. ANTHONY, D.Sc., Advisory Associate

ROBERT CUSHMAN MURPHY, D.Sc., Advisory Associate

WILLARD G. VAN NAME, Ph.D., Advisory Associate

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GRACE FISHER RAMSEY, Ph.D., Associate Curator

WILLIAM H. CARR, Assistant Curator (Outdoor Education)

JOHN R. SAUNDERS, Assistant Curator

HERMAN A. SIEVERS, Staff Assistant

FARIDA A. WILEY, Staff Assistant

WILLIAM LORD SMITH, M.D., Staff Assistant

GEORGINE MASTIN, Staff Assistant

HAZEL L. MULLER, B.A., Staff Assistant

GLADYS L. PRATT, Associate in Education

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HAZEL GAY, Librarian

HELEN GUNZ, Assistant Librarian

JANNETTE MAY LUCAS, B.S., Assistant Librarian—Osborn Library

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HISTORY

PRESIDENCY OF JOHN DAVID WOLFE, 1869-1872.

- 1869 Museum incorporated. Constitution adopted as drafted by Joseph H. Choate.
- 1870 First home secured, the Arsenal, Central Park.
- 1871 The City of New York appropriated \$700,000 for building. (Section I.)

PRESIDENCY OF ROBERT L. STUART, 1872-1881.

- 1874 Cornerstone of first section of building laid by President Ulysses S. Grant.
- 1878 Contract adopted between Trustees and Department of Parks, as drawn up by Andrew H. Green and Joseph H. Choate.
- 1880 Educational work with the schools inaugurated by Professor Albert S. Bickmore.

PRESIDENCY OF MORRIS K. JESUP, 1881-1908.

- 1892 Museum opened to the public on Sundays.
- 1887-1905 The City of New York appropriated \$4,218,820.94 for eight new building sections, II-VIII, and XV.
- 1907 Museum opened free to the public every day in the year.
- 1908-1917 Mr. and Mrs. Jesup bequeathed \$6,000,000 to the Museum.

PRESIDENCY OF HENRY FAIRFIELD OSBORN, 1908-1933.

- 1908 Constitution amended making the Mayor, the Comptroller and the President of the Department of Parks, *ex-officio* members of the Board of Trustees.
- 1921 Greater New York Charter amended, placing the Museum on the same basis as Public Schools with respect to Corporate Stock Appropriations, by Chapter 618 of the Laws of 1921, State of New York.
- 1921-1925 The City of New York appropriated \$2,233,800 for new sections, IX-XI, and equipment and alterations of old sections.
- 1924 The State of New York provided for the Theodore Roosevelt Memorial (Educational). Cost \$3,500,000. (Original Chapter 615 Laws of 1924.) (Building Section XII.)
- 1929 Appropriation of \$3,550,000 by the City of New York for construction of African Wing, Power Plant and Service Building, and Whitney Wing. (Sections XIII, XVII and XIX.)
- Contribution of \$750,000 by Harry Payne Whitney for one-half cost of Whitney Wing. (Section XIX.)
- 1932 Completion of the African Wing. (Section XIII.)
- 1933 Completion of the Whitney Wing. (Section XIX.)

PRESIDENCY OF F. TRUBEE DAVISON, 1933—

1934 Contribution of \$150,000 by Charles Hayden for purchase of Zeiss Projection Planetarium and Copernican Planetarium.

The American Museum of Natural History Planetarium Authority erecting Planetarium Building with funds (\$650,000) secured through loan from the Reconstruction Finance Corporation. (Section XVIII.)

1935 Opening of the Hayden Planetarium. (Section XVIII.)

1936 Dedication of the Theodore Roosevelt Memorial. (Section XII.)

PERMANENT ENDOWMENT

The Endowment Fund was established in 1884. It now amounts to \$14,472,923.99 (book value). The Trustees especially desire to insure the permanent growth and welfare of the Museum through an increase of the General Endowment Fund. The additional sum of \$10,000,000 is needed at present.

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