

THE AMERICAN MUSEUM
OF NATURAL HISTORY

EIGHTY-FOURTH ANNUAL REPORT
JULY, 1952, THROUGH JUNE, 1953

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THE CITY OF NEW YORK
1953

EIGHTY-FOURTH 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*

THE twelve-month period ending June 30, 1953, has been marked by a consolidation of the gains made possible by our internal reorganization of the previous year. While we are aware that our financial statement is of less importance than the quality of our scientific and educational work, none the less we firmly believe that we must learn to live approximately within our means if we are to continue seeking public support. An institution such as the American Museum of Natural History does not "lose" money when it operates at a deficit, but its position of leadership deteriorates when such a deficit forces it to curtail its over-all program.

In a review of the past year, substantial progress can be reported in the rehabilitation of our public exhibition halls and in the receipt of funds to finance this work. Director Parr will report in the pages to follow on the current status of this program as it affects the various departments. He will also outline the advances we have made in our program of exploration and in our research and teaching activities.

Historians of the future may well characterize the age in which we live not only as that of the atom, but also as one in which the arts of communication reached new heights. During the lifetime of most of us radio, motion pictures, and television have been born, and the effectiveness of the graphic arts has been vastly increased. While not bewitched by the words "public relations," we nevertheless are vigorously pursuing a policy of using all the available media to take the

Museum to the public, not being content to assume that all those who are interested will automatically visit our halls. Ex-President Conant of Harvard once described the concept of education to be a "continuous voyage" throughout life. Through press, radio, motion pictures, and now television we are carrying the story of man and nature to every corner of the United States. By so doing we believe we are not only fulfilling more effectively our function in education, but—selfishly for us—that we will broaden the base of our support.

The magic carpet offered by television is not a substitute for actually coming to the Museum, but there are many for whom regular visits are not possible. We were therefore most gratified when last May the Columbia Broadcasting System began a series of weekly Museum programs under the title "Adventure," appearing Sunday afternoons on a coast-to-coast major network. Obviously we are learning by experience the art of presenting the most effective shows through this new medium, but already it is clear that the professional talent of a major television network combined with the resources of our own staff and collections and our two million feet of motion picture film is producing an educational program of absorbing interest. Spot checks taken by the trade indicate that our audience in the first few months increased from one million for the first show to five million viewers.

We are seeking to increase substantially the number of our subscribing members and at the same time the circulation of our publications. The format of our two magazines is being changed somewhat, increasing the use of pictures, and at the same time maintaining the editorial quality for which the magazines have become known.

It is perhaps worthy of comment at this time to report the lively public interest evidenced as to the position of the Museum in the much-disputed field of "conservation." This word has been so much misunderstood by various well-meaning groups of citizens that there appears to be an unusual

opportunity for an organization such as ours to take a clear position on the subject. We believe that our citizens should be encouraged to protect and to *use*—not to *hoard*—our forests and our streams and all forms of wildlife, providing they are not in danger of extinction. It is our belief that the crop (be it flora or fauna) may be continually harvested if the resource is properly managed.

The Roosevelt Memorial Committee is currently engaged in preparing a permanent series of exhibits containing manuscripts and documents relating to the life of Theodore Roosevelt, which will be presented to the public this fall.

It is interesting to note a continued increase in admissions to the Planetarium. Since our last report certain administrative changes have been made in the Planetarium organization, bringing its staff under the supervision of Director Parr and effecting certain economies in operation not possible when the Museum and Planetarium were functioning as separate entities.

Our endowment funds at July 1, 1953, had a market value of \$18,848,000 (after transferring \$150,500 to meet the operating deficit). This compares with a valuation of \$19,400,000 at the previous mid-year accounting, reflecting the unsettled condition of the securities markets during the past year. Our Pension Fund showed a net worth of \$4,047,000, an increase of \$231,000 from the same date a year ago.

Our Men's and Women's Committees were ably headed by Mr. C. DeWolf Gibson and Mrs. Paul E. Peabody, raising \$150,382 from 1934 individuals through the Contributors Program. This figure compares favorably with the previous year when 1924 individuals contributed \$138,303.

Four new Trustees have been elected to our Board—Messrs. Jules Timmins, C. DeWolf Gibson, Oscar S. Straus, II, and Robert D. Sterling—and in addition the status of Mr. John J. McCloy was transferred from Honorary to Elective Trustee.

The goal which the new administration set for itself in 1951 seems now less distant than might have been expected. Using the achievements of our predecessors as a solid platform and the intensive period of the past two years of reorganization as a springboard, we can look forward confidently to the future. If our plans materialize, it appears that the coming year will see great progress in the development of the "new" Museum.

Alexander M. White

FILLING THE GAPS OF KNOWLEDGE. I

REPORT OF THE DIRECTOR

A. E. Parr

MAN advances towards mastery of himself and of nature by three stages. First he must go forth to gather in all the sights and things to be found in the world. That is exploration. Next he must determine exactly what has been seen and collected, how it resembles and how it differs from the things already known, and how it relates to them. This is the task of systematic research. And last, he must seek to understand the things he has learned to know, how they function and why they exist. This is the ultimate goal of the anthropological, biological, and geological sciences embraced by our Museum. These three stages are not sections of a stream always flowing along in the same direction. Rather are they parts of a wheel revolving upon itself as it rolls forward. The systematists may find that they cannot solve the jigsaw puzzle of the collections and observations which have already been made, so new explorations must be undertaken in order to find the missing links. The biologist may reach the point where he cannot advance any farther without sharper definitions of identities and relationships than the systematists have given him. Therefore, new systematic research becomes necessary, and this in turn may require new exploration.

The hub of this wheel of progress is systematic research. Learning to understand can develop only from knowing precisely what we are trying to understand. Exploration of the unknown can be intelligently planned only from a reasonably complete and orderly inventory of that which is known.

In the last two annual reports we made a survey of the

Museum's efforts towards reaching an understanding of the knowledge it has helped to accumulate in the natural and anthropological sciences, and of its explorations for new knowledge from all parts of the world. It remains for us to examine the past and present states of knowledge in the many subjects with which the Museum concerns itself, and to show what the Museum's program of systematic research has done about filling the gaps in our knowledge, and how it works to bring order where confusion still reigns.

But the range of the Museum's activities is so vast that it would be impractical to attempt to present the whole picture at one time. In the present report we shall, therefore, look into the record of the Museum's contributions to the orderly development of the anthropological sciences, before turning to the special account of general activities during 1952-1953, with the purpose in mind of giving, in subsequent reports, a similar account of the Museum's role in the biological and geological sciences.

The necessity for a museum springs from the need to have a place, and an organization, wherein the activities of teaching can be brought together with the material evidence of the subjects taught and the methods of science can be applied to the original objects of research. Since collections must be acquired before they can be used, the history of any museum department, or of any museum as a whole, usually starts with a rather indiscriminate acquisition of objects of all sorts. And since the material must be studied before its lessons can be taught, research and the mere display of curiosities usually precede the development of a teaching program and of educational exhibits in the modern sense. The history of our own Anthropology Department and of its contributions to knowledge gives an interesting illustration of such a course of evolution.

The properties and activities of the modern anthropology museums, or anthropology departments, represent a union of

two streams of progress springing from separate historical sources.

The accumulation of ethnographic material in the "curio cabinets" of European collectors has had a long and interesting history. By the sixteenth and seventeenth centuries such cabinets were already widespread in Europe. Some of them had become famous and even took on the character of museums. In addition to natural history specimens, they also contained an increasing accumulation of objects representative of the various cultures with which the expanding European culture came into contact. A little later, relics of ancient civilization excavated from the ground also began to find their way to the collectors' cabinets, as archeology was born.

By the end of the eighteenth century many public or quasi-public museums had already evolved from their origins in the curio cabinets, and the process of absorption of other private collections into the public museums had begun. In the early concept, the museum therefore functioned primarily as a repository for the preservation and display of rare and curious objects. In our own country museums founded in the same tradition also began to appear before the dawn of the nineteenth century. A museum was established in Charleston, South Carolina, in 1777; another at Salem, Massachusetts, in 1799.

While specimens accumulated in the curio cabinets, the theoretical foundations of anthropology developed quite apart, in the realm of pure philosophy. For example, Kant, without thinking of himself as an anthropologist, was nevertheless deeply concerned with the problems of human development that later became central issues in anthropology. Similarly Locke and Montesquieu were framing concepts which were destined to be significant in the development of anthropological thought. But the formal integration and recognition of anthropology as a separate scientific subject date back only to the second quarter of the nineteenth century, when the

Société Ethnologique was established in Europe in 1839, and the Ethnological Society in New York in 1842.

When the Department of Anthropology of the American Museum of Natural History was created in 1873, anthropology as a scientific discipline was, therefore, little more than a generation old. Although many contributions of fundamental importance had already been published both here and abroad, the science was still largely theoretical and speculative. The stream of speculative thought had not yet come to a meeting with the flow of material evidence pouring into museum collections. But the time was ripe. Some field work significantly combining theoretical inquiry with factual observations and the study of collections had already been undertaken. Lewis H. Morgan's "League of the Iroquois" had been published 20 years earlier.

The first few years in the history of our Department of Anthropology were devoted to an almost random acquisition of collections and objects for display, mostly by purchase. A foundation had to be laid for the existence and functioning of the new department. Taking advantage through purchase of the collecting already done by individuals following their own inclinations was the quickest way of accomplishing this purpose. For about 17 or 18 years there are no records of research, expeditions, or professionally trained personnel. But by the end of two decades it was nevertheless recognized that the Museum had succeeded in assembling one of the best anthropological collections in the United States, and the Department of Anthropology was ready to begin making its own contributions to knowledge and popular education.

When the Department of Anthropology, in 1890, made the first appointment to its staff of a professional anthropologist, Frederick Starr, and shortly thereafter began to send out its own expeditions under such men as Carl Lumholtz, Henry Villard, and A. F. Bandelier, it was only natural and logical that it should choose for its first domain the ethnog-

raphy and archeology of the Western Hemisphere, of which our country is a part. Recent historical experience was beginning to be mellowed by memory. Hostility towards the first Americans was rapidly changing in the public mind to a vivid interest in Indian ethnography and Indian ways of life. And the world was just beginning to become aware of the vast historical background of ancient civilizations in the Western Hemisphere and of the magnificent monuments they had left behind.

This natural emphasis upon the ethnography and antiquities of the New World has given anthropology a position in our American culture that differs in a quite interesting manner from its position in European thought and intellectual tradition. Anthropology is itself a product of western civilization. And those who seek the answers to its fascinating problems do so by the methods of western science.

In Europe western civilization still stands on its old roots. By natural logic European archeology was from the start strongly focused upon the origins of the civilization of which archeology itself was born.

In the empire-building nations it was to be expected that ethnography should receive its first impetus from the interest and curiosity aroused by the inhabitants of distant possessions. But in the non-colonial nations of continental Europe ethnography, and physical anthropology as well, had already by the turn of the century begun to take up the study of the people and the cultures of the home countries themselves. This identification of anthropology with a nation's desire to find out about itself has since spread to become part of the general European tradition.

In Europe anthropological research, particularly in archeology but also to a greater or lesser extent in the other branches, has thus become associated in the public mind with an introspective effort of western civilization to learn to know and to understand itself.

In the New World, western civilization was only a young transplant without deep roots in the local soil. But there were mighty roots of other cultures drawing the attention. The challenging diversity of the nations of white men in the Old World was obscured by the mixing processes in the melting pot of the New. But there were equally colorful differences between the Indian nations inviting the interest of those whose minds were bent towards the study of humanity. American anthropology therefore made its start with a predominant focus upon the outward-looking application of western science to people and cultures entirely alien to western civilization, with traditions stretching back to a magnificent antiquity, uninfluenced and unrecorded by western man until recent times.

It might be interesting to speculate upon the significance of this difference in the primary orientation of American and European anthropology in relation to other differences that have developed in the intellectual patterns of the Old and the New Worlds. Did it help to set the stage for the development of the objective method of "behaviorism" in the United States while Europe pursued introspective psychology to its ultimate refinement? Did the early, and unavoidable, lack of emphasis upon the roots of western civilization influence the American mind, however slightly, towards the complete break with European philosophical tradition symbolized by American pragmatism? Or is it all coincidence? This is not the place to pursue these questions farther, but it is of interest to note that the early orientation of American anthropology perfectly fitted the trend that soon became manifest in many other fields of American thought.

In the American Museum of Natural History the ethnography and archeology of the New World remain, also today, the chief province of the Department of Anthropology, as a matter of policy based upon the department's rich collections and splendid record of research in this field and upon

the necessity for a division of labor between institutions of limited means.

For the first few years after the Museum began to send out expeditions of its own, instead of relying entirely upon acquisitions by purchase, the Department of Anthropology was still primarily concerned with the growth of its own collections. After the coming of Frederic W. Putnam as Curator of Anthropology a vast and ambitious research program was soon launched, with knowledge rather than mere specimens as its goal. A feeling that many tribal cultures were on the verge of disappearing, even though the Indian people remained, gave a sense of urgency to the new activities, and Putnam was able to bring to the department a staff of trained scientific personnel whose names add luster to the history of the Museum. Among the first to arrive were M. H. Saville and Franz Boas, and others, such as Berthold Laufer, Harlan I. Smith, Livingston Farrand, George Pepper, and Clark Wissler, soon joined the group.

As its share in filling the urgent need for a better knowledge of Indian ethnology the department chose for special emphasis the Northwest Coast Indians and the Indians of the Great Plains of the United States, and of their immediate surroundings.

The systematic investigation of the Northwest Indians was launched by the Jesup North Pacific Expeditions of 1897-1902, which had for their primary purpose the determination of the nature of cultural, racial, and linguistic relationships between northeastern Asia and northwestern America.

The researches of the Jesup expeditions had a profound effect upon American anthropology. Very complete study collections were brought back to the Museum, and a large number of publications, now considered classics, resulted from the work. Connections between northeastern Asia and northwestern America were established beyond doubt. Diffusion was conclusively demonstrated to be the chief

mechanism involved, and a severe blow was dealt to theorists who resorted to "psychic unity" and "parallelism" in order to explain cultural similarities. The results were an inspiration for the Museum and other institutions to make intensive regional investigations and comparisons also in other areas.

The studies produced by the Jesup expeditions had far-reaching consequences for the development of anthropological research methods. Boas' insistence upon ethnographic detail set the standard for other workers. His attention to native language led him to the collecting of phonetic texts, which became a general practice. He stimulated literate Indians to record their experiences in text, and this in turn led him to become interested in autobiographical and personal histories of primitive people. These methods of inquiry were developed further by his students and are now accepted as standard ethnographical procedure.

The systematic investigations of the Plains Indians and their culture began around 1900, while the Jesup expeditions were still in progress. The first studies, by A. L. Kroeber and by Wissler, were concerned with the symbolism in the decorative arts of the Arapaho and Sioux Indians and with the organization of Indian societies based upon individual rank and prestige according to age. Under the direction of Wissler, who became Curator of the Department of Ethnology in 1907, these activities were expanded and integrated into an organized project of wide and comprehensive scope. By the outbreak of World War I, virtually every surviving Plains Indian tribe had been studied, 29 separate reports had been published, and tremendous collections made to preserve the records of these interesting cultures for future research and public benefit.

The distinguished staff associated with Wissler in this project included Robert H. Lowie, Herbert J. Spinden, Leslie Spier, Alanson Skinner, Gilbert L. Wilson, and J. R. Walker.

Apart from the numerous accounts of the various Plains

Indians cultures, two publications resulting from these investigations deserve special mention because of the effects they have had upon general anthropological theory and method. "Societies of the Plains Indians," edited by Clark Wissler, and "The Sun Dance of the Plains Indians: its Development and Diffusion" by Leslie Spier, both published by the Museum, are classic examples of historical reconstruction by close comparisons of the variations in ceremonies and institutions from tribe to tribe.

Although each of these two papers served to refute the evolutionary theories of culture origins that were current at the time, stressing the importance of diffusion instead, the research method they helped to establish nevertheless represents the anthropological counterpart of the systematic methods of zoological classification based upon the theory of evolution. In cultural anthropology human inventiveness replaces biological evolution as the immediate cause of change. Tradition and diffusion replace heredity in transmitting the changes, creating continuity of progress and establishing relationships.

In order to determine the relationships of the Plains Indians cultures it also became necessary to study the cultures of neighboring tribes. Towards the end the investigations were therefore extended to include the Chipewyan, Sarsi, Beaver, Cree, Menomini, and Shoshone tribes, as well as the tribes of the Plains.

Although field work on the original project came to an end about the beginning of World War I, the department's interest in the Plains Indians has continued to the present, with studies of the changing culture of the Omahas by Margaret Mead in 1930, and still later reports on the Plains Cree by David Mandelbaum (1940), and on the Canadian Dakota by Wilson Wallis (1947). In 1936 Wissler published his "Changes in Population Profiles Among the Northern Plains Indians."

While the Department of Anthropology emphasized the study of the Northwestern and Plains Indians and their immediate neighbors, it did not neglect the Indians of other regions. From 1899 to 1904 it made an early start on the investigation of the Maidu, Shasta, and Yurok Indians of northern California, partly in collaboration with the University of California, which subsequently carried on alone. From these early efforts the department acquired a fine study and display collection, and reports by Roland B. Dixon were published by the Museum from 1902 to 1905.

Important ethnological collections from the American Southwest had already been made before the turn of the century in connection with earlier, pioneer archeological work in that region. In 1900 Aleš Hrdlička and W. Orchard collected anthropometric data and ethnological specimens in New Mexico, Arizona, and Colorado. In the following year the Hydes made ethnological collections among the Zuñi and Hopi Indians and made provision for the Museum to publish Washington Matthews' important work on "The Night Chant, a Navajo Ceremony."

In 1909 a Committee on Primitive Peoples of the Southwest was established under the patronage of Archer M. Huntington. In the following year Goddard, who had been placed in charge of the investigations on the nomadic tribes, began his linguistic work among the Apaches, while M. L. Kissel studied Pima and Papago basketry. Spinden, in charge of research on the Pueblos, did field work on those of the Rio Grande. The most important results of the Huntington expeditions were studies of kinship and social organization among the Zuñi by Kroeber and similar investigations by Lowie on the Hopi, which served to fill great gaps in our factual knowledge of these Indians.

In 1918, Spier began the systematic studies of the Havasupai Indians that led to the publication by the Museum of his "Havasupai Ethnography," which has long been con-

sidered a classic that set a style for ethnographic reporting.

This record of contributions to our general knowledge and understanding of the North American Indians is one of which the Museum and the Department of Anthropology can well be proud. The results have been enjoyed by the public in the Museum's own exhibits and in many books that have been widely read, have served as basic college texts for students, and are frequently referred to by the general reader. These include three works by Wissler: "The American Indian," "Man and Culture," and "The Relation of Man to Nature in Aboriginal North America," the last-named being the outstanding presentation of the culture-diffusion point of view in American anthropology. Lowie's "Primitive Society" has, since its publication, been one of the standard works on primitive sociology for anthropologists and sociologists alike, and his "Culture and Ethnology" (1917) has served to acquaint the general public with the principles and problems of cultural anthropology.

Wissler's "North American Indians of the Plains" and Goddard's "Indians of the Southwest" and "Indians of the Northwest Coast," issued in the Museum's own Handbook series, have been enormously useful in teaching.

While the efforts of this and of other institutions were concentrated upon the task of filling an immediate need and desire for a better knowledge of the Indians of our own country, the ethnography of Latin America remained essentially unknown, as a field reserved for future investigation. That future has now arrived. General interest in the native populations to the south has been tremendously increased by what the archeologists have discovered about their magnificent ancient civilizations, by what we have learned about our own North American Indians, by the development of travel, and by the rapid growth of closer ties between the nations of the Western Hemisphere. In recent years the Department of Anthropology has therefore begun to extend its ethnological

research activities into Middle and South America, where such investigations are still in their infancy, corresponding more or less to the stage reached by North American Indian ethnography around 1900.

When Harry Tschopik, Jr., joined the Department in 1947 his previous work had been centered on an extended study of the highland Peruvian cultures of the Aymara Indians, and a continuation of these investigations has become a part of the Museum's own program which should be greatly expanded. Dr. Tschopik is now again in the field conducting a survey of native communities in the lowlands of the upper Amazon to supplement and extend the studies in the highlands of Peru.

Our present task in Latin American ethnology is similar to our original purpose in the study of the North American Indians. We must record and collect material evidence of the indigenous cultures before they disappear or become extensively altered by contact with western civilization. The rapidly accelerated pace of modern history makes the pressure of time more urgent than ever before. And the very real social problems posed by the Indian populations of Latin America give the studies of original cultures and of culture changes an immediate practical value over and above their general interest and theoretical importance. It is to be hoped that the good start already made by the Museum may receive the increasing support it needs and deserves.

One result of the Latin American program already enjoyed by the general public is the temporary exhibit of "Men of the Montaña," showing the ways of life of eastern Peruvian tribes, which has been widely acclaimed both by our general visitors and by the experts.

Since the study of anthropology deals with human behavior and with the results of human activity, it is also closely related to the study of psychology. In the early stages of the science the anthropologists were necessarily chiefly concerned with the task of recording and classifying

the outward manifestations of culture and the physical properties characteristic of various civilizations. As systematic research brought order and usable definitions into our knowledge of the basic facts, it opened the way for the comparative method of analysis, which in turn brought the anthropologists face to face with the problems of culture dynamics, the questions of how cultures evolve from the activities of the human mind and body under the impact of the environment, how they are handed down by training and tradition, modified by new contacts, migrations, and other new experiences, and spread by diffusion. In the answers to all these questions the psychological factors must be brought fully into account.

Wissler was one of the first American anthropologists to recognize the importance of the psychological element in anthropological research. By the 1920's this recognition had become general, and the relationship between the two sciences was fairly clearly defined. With the appointment of Margaret Mead in 1926 the frankly psychological approach to the investigation of anthropological problems was added to the program and to the methods of the Department of Anthropology.

Much of the work done by Dr. Mead has been distinctly pioneering and has had a very profound influence on the development of anthropology in the last generation. It has also aroused wide interest outside scientific circles. Typical of this side of Dr. Mead's work are her books "Coming of Age in Samoa," "Growing Up in New Guinea," and "Sex and Temperament." What gives these studies such a wide interest that all of them have been reprinted in pocket-book editions for the general reader is the fact that in describing and interpreting the interesting behavior Dr. Mead has observed, she does not deal with it simply as a peculiarity of the often distant and isolated people she has studied but is more concerned with the significance of her observations as illustrations of the manner in which psychological forces present in all of

us may express themselves under different circumstances. The conclusions reached by such investigations on the manner of life of faraway people therefore have a direct bearing upon our understanding of ourselves and of our own society. In her more recent "And Keep Your Powder Dry" Dr. Mead has herself pursued these implications to their logical conclusion by applying the methods of the anthropological field workers to a study of our own national character. She has also supervised similar investigations of various European cultures of national importance to us in our role of world leadership.

The subject of physical anthropology is concerned with the anatomy and physiology of man, both in the past and in the present. It thus has points of contact both with the ethnological activities of the Museum that have just been reviewed and with the archeological work that still remains to be described. In the early days of the Museum public and scientific interest in physical anthropology was so dominated by the relatively new Darwinian theories of evolution and of the descent of man that the subject was primarily the concern of the Department of Paleontology rather than the Department of Anthropology. The work of the Department of Paleontology was subsequently also carried on in the Department of Comparative Anatomy, which has now been discontinued. Since the remains of the so-called "missing links" or early ancestors of modern man have all been found outside the Western Hemisphere, our Museum has had little opportunity to share in the original discoveries but has nevertheless contributed in a very important manner to our understanding of the evolution of man, through the distinguished research of such scientists as Henry Fairfield Osborn and William King Gregory in the Departments of Paleontology and Comparative Anatomy and Milo Hellman and Franz Weidenreich in association with the Department of Anthropology.

It was actually not until 1916 that the Department of Anthropology added a physical anthropologist to its staff,

with the appointment of Louis R. Sullivan. In retrospect this might seem a rather belated action, but it actually represented a pioneering step forward by the Museum at a time when there were only two similar positions available in the entire country, and it gave the department an opportunity to contribute greatly to the present flourishing condition of the science of physical anthropology.

Recognizing the inadequacy of our knowledge of the physical characteristics of the American Indians, Sullivan directed his early efforts towards a study of their anatomical features, especially in regard to the form of the skull. Through cooperation with the Bishop Museum's Bayard Dominick Expeditions he was later able to extend his investigations to Polynesia, where up to that time no systematic work had ever been attempted. Before his untimely death in 1925 he had published three monographs on Samoa, Tonga, and the Marquesas Islands, together with several general papers in which he had presented the first racial analysis of the area, solidly based upon adequate scientific data.

In 1926 Harry L. Shapiro, the present Chairman of the Department of Anthropology, was appointed to the post left vacant by Sullivan's death. In the mid-twenties physical anthropology was still more or less completely engrossed in the systematic problems of racial classification, comparative anatomy, and human evolution. The insights into man as a functioning organism that biological research was developing had hardly yet affected the conventional activities of physical anthropology. Although Shapiro's work on coming to the Museum followed in part the traditional lines, as shown in his study of the Greifenberg crania from central Europe and his continuation of the racial analysis of Polynesia begun by Sullivan, his own orientation was towards the application of recent biological developments to physical anthropology. This interest found expression in a series of race-mixture investigations that included the descendants of the mutineers

of the "Bounty" and Chinese-Hawaiian hybrids. In "The Heritage of the Bounty" he has given an interesting account of many of his experiences and observations in the field in connection with some of this work. In Hawaii Shapiro carried out two studies on the influence of environment on the human organism, demonstrating the organic and morphological changes that may follow a change in milieu. Both these lines of investigation were pioneering studies and have contributed to the marked reorientation of physical anthropology in recent times towards a much broader concern with general human biology rather than with the mere anatomy of the human body. Recently Shapiro organized and carried out a broad-scale biological survey of the Puerto Rican population, one of the first of its kind. This has already served as a model for other projects of a similar nature.

It is obvious that contemporary human cultures, human behavior, and human biology cannot be understood unless we also know and understand the cultures, traditions, and biological antecedents from which the current forms have evolved. In 1890 the scope of the Department of Anthropology was therefore broadened to include the field of archeology in its active research program, and by the same logic that governed the ethnological activities it was only natural that the Museum's archeological efforts should be, and remain, primarily concentrated upon the antiquities of the New World.

During 1890-1891 a fund was raised to start Carl Lumholtz on his first explorations in Mexico, and from that time on the Department of Anthropology has continued to play a very active role in Middle American archeology, particularly in the study of the civilizations that existed before the Spanish Conquest.

Interest in the ancient civilizations of this region had been developing steadily throughout the nineteenth century. Humboldt, Waldeck, Nebel, and others had explored and

charted sites and ruins during the early decades of the century. They were followed in the 1840's by Stephens, who first made available really accurate information and reproductions of Mayan cities, and by later investigators.

During the same period the archives of the sixteenth century were also intensively explored. The all-important early chronicles relating to the Indians were copied and published. A great tradition of historical studies was developed in Mexico. A similar interest in Mexican history was shown in England and France and, to a lesser extent, in the United States, but the efforts of the Museum have been directed towards the archeological, rather than the historical, aspect of research.

The early epoch of exploration came to an end about 1880, and the modern period of Middle American studies began shortly before the Museum entered the field.

While Lumholtz was never formally employed by the Museum, the Museum sponsored and assisted financially his extensive ethnological studies in western Mexico, during which he also reported on numerous archeological sites and obtained valuable collections. The first assistant curator for archeology in the Department of Anthropology was Marshall H. Saville, who joined the staff in 1895. Saville was the first person sent by the Museum to conduct regular work in Mexico, where he made excavations in Oaxaca. He was followed by Herbert J. Spinden, who was a member of the department from 1909 to 1920. Spinden traveled widely in Middle and South America, making collections of great importance. His chief contributions while at the Museum were his studies of the calendar systems of the ancient Mayan civilizations, which led to the so-called Spinden correlation, and his Museum Handbook "The Ancient Civilizations of Mexico and Central America." Although intended as a popular presentation, this Handbook has been of tremendous importance in the development of the subject it deals with.

It was the first over-all treatment of Middle American archeology in which the evolution of Mexican and Mayan cultures was clearly recognized and described, with the chronology of the ancient civilizations put in order.

Among those who have contributed greatly to the development of the Museum's activities in Middle American archeology is Clarence Hay, who became a Research Associate of the Department of Anthropology in 1921 and has been particularly active in advancing the study of the early cultures of the Valley of Mexico. It was largely through his influence that the Museum was able to add George C. Vaillant to the staff, in 1927, with the purpose of undertaking a long-term study of the archeology and archeological chronology of this area.

Through a period of about 10 years, Vaillant concentrated upon establishing in detail the prehistoric cultural sequence in central Mexico. He worked first on the earlier civilizations, and his series of four monographs on them were major contributions. He continued these field studies to include the later periods, but the results still remain unpublished. Having placed our knowledge of the sequence of cultural changes in Central Mexico on a systematic basis, Vaillant saw the need for similar studies in other regions and was instrumental in engaging Gordon F. Ekholm to undertake a survey in Sinaloa and Sonora in northwestern Mexico for the Museum. In 1941 Ekholm shifted his activities to the Huasteca, another relatively unknown area, and since that time he has been interested primarily in the eastern coastal area of Mexico, which appears to have played a very important role in the origin and development of the Middle American cultures.

Through this long series of studies of Middle American archeology the Department of Anthropology has played a major role in making it possible today to reconstruct in broad outline the history of the entire area, and it now appears that the record of human occupation of the area goes back for

about 10,000 to 12,000 years, beginning with a simple hunting culture represented by such finds as those at Tepexpan. Discoveries as old as these are still very few and, although there seems to be an association of man at this period with extinct forms, such as the mammoth, the distribution of this culture is still not well known. Such artifacts as have survived are simply varieties of stone tools.

At about 1500 B.C. a new way of life appeared in Mexico, characterized by settled communities and economically based on agriculture. Pottery making also appears now for the first time. This period is generally known as the Archaic or the Formative. During this time the culture appears to be fairly uniform through the whole of Middle America, with little or no striking or distinctive variations.

Succeeding the Archaic, the next major cultural change occurs at about the time of Christ, when large urban centers with heavy concentrations of population developed. Great emphasis was now placed on ceremonial centers where huge religious structures and pyramids were disposed in impressive arrangements. Monumental sculpture and art in various forms embellished these structures and gave a highly characteristic aspect to the period. Techniques of certain kinds, particularly those associated with large populations such as irrigation projects and architecture, showed substantial improvement, and the social and religious structure underwent a development leading to complex hierarchies. During this time local differentiation, particularly in art forms and architecture, became much more evident, with major, geographically concentrated styles such as Oaxaca, Teotihuacan, Tajin, Olmec, and the lowland and highland Maya making their appearance. It was an era of great prosperity and peace and collectively now known as the Classic Period.

Around 1000 A.D., however, it began to break down when a new and final era of warfare and empire building replaced it. In this final epoch we see the culmination of this empire

activity in the Aztec Empire, as discovered by the first Spaniards.

Not only were the pioneer studies in this reconstruction of Middle American history initiated by the Museum, but much of the detailed work of filling in the picture of the sequence of cultures and their geographic distribution was undertaken by the American Museum of Natural History. Following Dr. Vaillant's pioneering work, Gordon F. Ekholm has carried on this long tradition in a series of brilliant excavations. This knowledge of the civilizations that preceded the Conquest is not only of importance in the context of its own subject but is also of immense value as background for a full understanding and appreciation of the splendid art, architecture, and other forms in which the creative spirit of Mexican civilization finds expression today.

The concentration upon Mexican antiquities that enabled the Museum to contribute in such a large measure to our knowledge of this subject also made Middle American studies a focal point in the Museum's archeological program around which its other archeological activities to the south, the north, and the west may be arranged.

The active participation of the Department of Anthropology in the study of South American archeology began in 1892 with Adolph Bandelier's expedition to Peru and Bolivia. At that time great interest in South American prehistory, particularly of Peru, had already been developing over several decades through the influence of such widely read books in English as Prescott's "History of the Conquest of Peru" (1847) and Squier's "People of the Land of the Incas" (1877), and the period 1870-1890 had seen a surprising number of articles and books on the antiquities of Peru.

A major portion of the Museum's Peruvian collections were acquired as a direct result of Bandelier's expedition and provided material for many years of research in the Museum's laboratories before active field work in Peru was again under-

taken. W. A. Wissler's chemical analysis of copper implements from the Andes, published in 1915, was virtually the first of its kind and proved that the production of bronze had been understood by the Peruvians. In 1914-1915 Morris D. C. Crawford prepared two monographs on the prehistoric fibers, spinning, and weaving of Peru. These were the first major contributions on this subject and did much to call attention to the importance of the textile crafts of Peru that are now regarded with such great interest. At the same time C. W. Mead prepared a booklet on elements of Peruvian design, which saw long and useful service, with reprinting continued down to 1951. In 1923 Mead finished his Handbook on Peru for the Museum's series. This was a definite contribution to the literature at a time when there was no comparable publication available and a great need existed for a systematic presentation of the knowledge that had been gained. In 1923 L. L. Locke published his report on the string counting and bookkeeping devices (quipus) developed in Peru before the Spanish Conquest, based upon his study of the Museum's collections. This also was the first comprehensive report devoted to its particular subject to become available in print.

By 1930 new field work in Peru had again become desirable, and this was initiated by R. L. Olson on an expedition sponsored by Myron I. Granger. In 1932 Wendell C. Bennett, at Tiahuanaco, Bolivia, began the first systematic excavations of community debris in the entire Andean region. Up until that time, starting with Uhle's field work in some of the same years that Bandelier was in Peru, the identification of cultural levels had been based primarily on the comparison of material from tombs and their relationship to specific structures. Valid and important conclusions can be and had been reached by this method, but the record of human occupation cannot be revealed by such evidence alone. By his work, Bennett demonstrated the existence of a definite

sequence of ceramic forms and styles and set up a basis for sound comparative studies. The discovery of the great monolithic statue later moved to La Paz and mounted there was but an incidental result of the work. The field work was continued and extended by Bennett and Junius B. Bird, working together in Bolivia in 1934.

At the request of the Venezuelan Government, Bennett also made excavations in that country, bringing back a large collection of specimens and data for the first scientific report on Venezuelan archeology.

While the early work was going forward in Bolivia and Venezuela, Junius Bird had come to suspect that the extreme southern end of the continent might be a critical area for archeological research, of more than regional interest and with direct bearing on the total problem of the antiquity of man in America. This suspicion was borne out by the field work done in southern Tierra del Fuego, in the Straits of Magellan, and over the southern thousand miles of the west coast of South America during the period 1932-1937. These investigations revealed for the first time in America human remains accompanied by artifacts in direct association with the remains of extinct animals and made it possible to demonstrate a cultural sequence covering approximately nine thousand years. Similar surveys subsequently carried out in northern Chile and in Peru also enabled Bird to trace pre-ceramic cultural stages in the more northern regions back to 2500 B.C. and to show the previously unsuspected evolution of a fairly advanced agricultural civilization before the introduction of pottery making.

In summary, the Anthropology Department's contributions to our knowledge of South America center primarily on the prehistoric era, in which they are unmatched by any other single institution in the world.

In recent years the Museum's interest in archeology has also been extended to the westward by Robert Heine-Geldern's and

Ekholm's researches on the old, but very important, problem of possible stimulating influences from the civilizations of Asia and the Pacific upon the development of civilizations in America. But a much larger archeological program has long been pursued by the Department of Anthropology in the northern part of the Western Hemisphere.

Field work in the southwestern United States sponsored by the Museum began with the Hyde brothers' expeditions during the years 1895 to 1903. Extensive collections were made from Pueblo ruins and caves in New Mexico, Utah, Arizona, and Colorado, and this work resulted in one of the earliest descriptions of Basket Maker culture, published by Pepper in 1902. The most important portion of this program was the excavation of Pueblo Bonito under the direction of G. H. Pepper.

Until the beginning of the second decade of the present century, archeologists working in the Americas were mainly engaged in collecting specimens and information about architectural features and paid little attention to the discovery of the chronological relationships that are essential to the reconstruction of prehistory. The great emphasis that is now placed upon the working out of chronological relationships was initiated by the work of N. C. Nelson in the Galesteo Basin of New Mexico in 1912, and at Pueblo Bonito in 1916. This was followed by Kroeber's discussion of the sequence of sites in the region of the pueblo of Zuñi and a demonstration of this chronology by Leslie Spier. This concentration upon chronological problems was continued by Spier in his work on sites in the basin of the Little Colorado and the White Mountains of Arizona. Erich Schmidt made stratigraphic excavations in the basin of the Gila River in 1925 and substantially outlined the chronology of what has since come to be known as the Hohokam culture.

One of the first thorough, large-scale excavations in the Southwest was the work at the Aztec Ruin in northern New

Mexico from 1916 to 1922 under the direction of Earl H. Morris. The spectacular ceremonial building discovered at Aztec has been restored and the site was purchased by the Museum and presented to the National Park Service as a national monument.

The Museum's archeological activities in the eastern United States began with the excavations of Harlan I. Smith at the Fox Farm site in Ohio in 1895. This location is now recognized as one of the type sites of the relatively recent Fort Ancient culture. Smith's report, published in 1910, is remarkably detailed in its descriptions of the artifacts and in the interpretation of their use and apparently served as a model for a number of excellent descriptive reports by other archeologists that followed.

The Department of Anthropology also showed an interest in the problem of early man in the eastern United States. From 1897 to 1903 Ernest Volk excavated for the Museum at the famous site near Trenton, New Jersey, which was thought to yield artifacts from sand deposits of Pleistocene age. Further excavations were carried on here by Skinner and Spier, members of the department staff, in 1914, but the question of the date of the remains from this site is still far from settled. Interest in other possible early man sites was continued by Nelson's work in Mammoth Cave, Kentucky, by Allison's study of the question of the antiquity of the remains in Jacob's Cavern, Missouri, and by Hoebel's work in Bone Cave in the same state.

In a brief visit to the St. Johns River region of Florida in 1917, N. C. Nelson made observations of a large shell heap that was being destroyed for commercial purposes and established one of the very few pottery sequences that was discovered in the eastern United States before 1930. Unfortunately, this example was not followed in the east, as it was in the Southwest, and there was a lag of ten years or more in the development of a comparable interest in chronology.

The archeology of the Missouri River Valley is now well known through studies by Strong, by Wedel of the United States National Museum, and by other archeologists working for various state institutions, but the first significant field work in this region was a survey of sites made by George F. Will and H. J. Spinden, of this Museum, in 1911.

The most consistent program of research which the Museum has sponsored in the east has been the study of the Indian archeology of the vicinity of New York City. In 1902 M. R. Harrington made a systematic excavation of a historic village on Long Island. In 1909 Wissler edited "The Indians of Greater New York and the Lower Hudson," a summary of what was then known of the archeology of this area. During the past decade the information accumulated in the course of these early excavations has been reviewed, and much new information, particularly as to chronology, has been added by Carlyle Smith.

Before joining the staff of the American Museum, James A. Ford was engaged in a program of research in the Lower Mississippi Valley. This has been continued by two seasons of field work in early ceramic and pre-pottery sites in that area and by publications of reports of past work. These have filled important blanks in the prehistory of the eastern United States. In the course of this work the techniques first employed by Kroeber and Spier have been further developed until they have become a rather sensitive instrument for discovering and measuring the time scale of cultural progress. In their improved form, these techniques are now being widely adopted by archeologists.

Through the work done by Harlan I. Smith on the Jesup North Pacific Expedition the Museum laid the first foundations for archeological research on the Northwest Coast of North America, an important region in which little or no systematic effort had previously been made. His six monographs resulting from the Jesup Expedition have served as basic source material

for the archeological studies of this important area, which have been resumed only within the past ten years.

At the turn of the century virtually no work had been done on the prehistory of the Eskimo except in a limited part of eastern Greenland. Several rather good ethnological studies had been made, and ethnologists and others had accumulated small collections of antiquities. On the basis of ethnological information a number of theories had been advanced as to the origin of these interesting people, but no tests of the theories had been made by excavation. The Museum began work on this problem during the Jesup North Pacific Expedition when Bogoras collected from sites in northeastern Siberia. The interest was continued with the expedition to the western Arctic of Stefánsson and Anderson (1908-1912). Extensive collections were made from a number of sites between the mouth of the Mackenzie River and Bering Strait, which were described by Wissler in 1916. This was followed by another pioneer paper on the archeology of the Eskimo of northwest Greenland, published by Wissler in 1918, on the basis of a site excavated by Captain George Comer during the Crocker Land Expedition of 1913-1918.

During the third and fourth decades of this century, the study of Eskimo prehistory developed rapidly, and considerable knowledge was obtained concerning the chronology of what proved to be an unexpectedly long and complicated history. Participating in this phase of careful excavation and analysis, E. M. Weyer, Jr., in the course of the Stoll-McCracken Expedition excavated old Eskimo sites on the Alaska Peninsula which gave the first intimations of the details of the prehistory of this portion of Eskimo territory.

In 1936 Froelich Rainey made a survey of the Yukon Valley and excavated at a number of sites in central Alaska. The old cultures which he examined were Indian rather than Eskimo, but this work contributed to an understanding of the early relationships between the Eskimo and their Indian

neighbors in this part of the north. Rainey also studied the extensive collections which Otto Geist had excavated on St. Lawrence Island in the northern Bering Sea for the University of Alaska and, with Geist, published a paper which added materially to the available information on the last two thousand years of Eskimo prehistory in the Bering Strait region.

From 1939 to 1941 Rainey directed American Museum excavations in an extensive and remarkable Eskimo site at Point Hope, Alaska. The large collections obtained indicated a previously unknown variety of ancient Eskimo culture to which the name "Ipiutak" was given. Ipiutak does not fit into the well-established prehistoric sequence of the Bering Strait region and has more resemblances to cultures of northern Siberia than do other Eskimo cultures of Alaska. Its exact relationship presents a challenging problem that may be solved in the future.

Helge Larsen of the National Museum of Denmark, who had been working with Rainey at Ipiutak, being unable to return to Denmark during the recent war continued to work at the American Museum of Natural History. In 1945 he conducted excavations on Unalaska Island in the Aleutians where several large Aleut middens were being destroyed in the construction of military installations. This work served to clarify the historical significance of the large collection made for the Museum by Lieutenant Commander A. R. Cahn, stationed at Unalaska at that time.

Work on problems of Eskimo prehistory is being continued by James A. Ford who is engaged in reporting on excavations made at Point Barrow, Alaska, for the United States National Museum. The old sites near Barrow, from which collections were first made by Stefánsson in 1912, have revealed the development of the Thule culture, the culture of the coastal Eskimo at the time they first migrated from the western Arctic to Greenland.

THE YEAR 1952-1953

The preceding review of the Museum's contributions to the advancement of the anthropological sciences also covers many of the current and recent activities of the *Department of Anthropology*.

During the year Harry L. Shapiro continued his research on Polynesian problems and completed a paper on the skulls of the moa hunters that had been found together with the skeletons of the extinct moas of New Zealand during the excavations in which Dr. Murphy of the Department of Birds participated. Dr. Shapiro has also been active in preparing a booklet on race mixture to be published by UNESCO as a further contribution towards a better understanding of the world and its people.

A study of German national character was directed by Margaret Mead for the Office of Naval Research and completed in June, 1953. Dr. Mead was also engaged in the development of a theoretical presentation of available anthropological information bearing on "The Psychological Development of the Child" for a meeting of the World Health Organization Committee held in Geneva, and in the preparation of a research paper on the question of mother-child separation presented to the American Orthopsychiatric Association.

In June of this year Dr. Mead left for the Admiralty Islands to investigate the cultural changes that have taken place within one generation since her earlier field work in that locality in 1928.

James A. Ford completed the manuscript for a report on the interesting archeological excavations made at the Jake-town site in Mississippi in the spring of 1951. During February to March of 1953, Dr. Ford resumed field work at the Poverty Point site in Louisiana and was able to prove beyond a doubt that the large and complicated earthworks

discovered there the year before are entirely artificial and not merely modifications of natural topography used by the Indians as a core for their design.

In January, 1953, Harry Tschopik, Jr., left for Peru to spend approximately one year conducting a survey of Indian tribes of the upper Amazon, with more intensive studies of selected groups. In addition to ethnological collections representative of the upper Amazon, and of the Aymara and Quechua of the highlands as well, Dr. Tschopik is also making documentary film records, with sound and color, of the ways of life of these interesting people and of their environment. The first sequences already sent back from the field give promise of excellent results of high pictorial quality, attraction, and interest both for the specialist and for the general public.

Alphonse Riesenfeld assisted Dr. Shapiro in collecting material and information to be used in preparing exhibits for the new Hall of Human Biology. Dr. Riesenfeld also completed two manuscripts on prehistoric stone objects of New Britain and on Bronze Age influences in the cultures of the Pacific islands.

The other members of the Department of Anthropology made excellent progress along various lines of investigation already referred to in the preceding, from which further contributions to our knowledge in many fields of anthropological research may be expected in the near future.

The Davison-Willis Expedition to Madagascar, organized by F. Trubee Davison, brought back to the Department of Anthropology important collections of ethnographic objects, photographs, and color-film records of native crafts and ceremonies.

Among the important additions to the collections of the Department of Anthropology received by gift during 1952-1953 were: an ethnological collection from the Bora Indians of Peru, presented by Paul Seydell; a clay figurine, stone sculpture, and pottery jar from Mexico, donated by Hugh J.

Smith, Jr.; and an ethnological collection from New Guinea, given by Armand Denis.

The interesting researches by Gordon F. Ekholm on Asiatic-American cultural relations and by Junius B. Bird on the textiles and other antiquities of Peru have already been referred to in the preceding and were further advanced during 1952-1953.

In the spring of 1953 Edward M. Weyer, Jr., Editor of *Natural History Magazine*, made a trip to Mato Grosso, Brazil, on which he succeeded in spending some time with native tribes never before visited by white men and was able to make invaluable ethnographic observations and collections as well as a fascinating film record of the people and the conditions he encountered.

In the *Department of Mammals* the Museum has, for many years, drawn heavily upon the time and energy of the Chairman, Harold E. Anthony, for assistance in the general tasks and problems of over-all administration. With his responsibilities as Deputy Director added to those of the chairmanship of the department, Dr. Anthony's time has been largely consumed by administrative work from which the entire Museum has benefited.

The other members of the department have devoted a great deal of their time to the advancement of our knowledge of the mammals of the central and southern part of the Western Hemisphere. George H. H. Tate began the preparation of a book on the mammals of Latin America and the West Indies, and George G. Goodwin continued his research on collections of mammals from Central America, particularly from Mexico. Dr. Tate also carried forward his studies of the Archbold material from the South Pacific and his investigation of the squirrels of southeastern Asia. Mr. Goodwin identified a large collection of fragmentary mammal bones from village deposits in Afghanistan collected by the Fairservis expedition.

A number of expeditions were active, collecting obser-

vations and material for the department from many parts of the world.

The Weeks West African Expedition, under the leadership of Dr. and Mrs. Carnes Weeks, accompanied by T. Donald Carter of the Department of Mammals, made photographs and motion picture records, as well as a collection of birds and mammals, in French Equatorial Africa and the French Cameroons.

The Fourth Archbold Expedition departed for New Guinea at the end of January and was still in the field at the end of the year of this report. This is an expedition of broad scope in which the Arnold Arboretum of Harvard University and the Office of Naval Research are participating with the Department of Mammals, under the leadership of Leonard J. Brass of the Archbold Biological Station. They will cover both the flora and the major elements of the fauna of a region of which very little is known.

The Morden African Expedition, 1953, led by William J. Morden, left in May to work in a region of southwest Africa that is poorly represented in the Museum's collections. The expedition is still in progress, and the results will be reported upon next year.

The First Van Alen Iberian Expedition, conducted by Mr. and Mrs. James H. Van Alen, was likewise still in the field at the end of the year. From this undertaking the Museum hopes to increase its collections of the mammals and birds of Spain with many interesting species at present not readily available for study or display.

The department also made field trips, under the supervision of Mr. Carter, to collect material for the last two exhibits in the Hall of North American Mammals—the Mountain Beaver Group from the West Coast (Olympic Peninsula) and the Gray Fox and Opossum Group from the Smoky Mountains. Both groups are the gift of Mr. and Mrs. Robert D. Sterling.

Edward McGuire, specialist in the department, made

a collection of mammals in the Netherlands West Indies through the cooperation of the Lago Oil and Transport Company. Mr. McGuire also accompanied the Witherby-Kunhardt Guayana Expedition to Venezuela, in cooperation with the New York Botanical Garden. This gave opportunity to make mammal collections in a region in which the department had not previously worked.

The research activities of the *Department of Birds* were continued at a rapid pace throughout the year. Among the finished results, the publication of the third volume, of more than 800 printed pages, of James P. Chapin's "Birds of the Belgian Congo" and the completion of the manuscript for the fourth, and final, volume of this monumental work were items of major interest.

Robert Cushman Murphy published several scientific papers on special subjects growing out of his work on the preparation of a monographic account of the petrels of the world, which will be a major contribution to our knowledge of these birds, when completed.

In addition to his research on Peruvian birds, which resulted in many scientific publications during the year, John T. Zimmer was able to bring well along the manuscript for volume 8 of the "Check-List of Birds of the World," an indispensable ornithological tool on which progress had been interrupted by the recent death of James L. Peters. This check list is being published by Harvard University.

Among the various scientific contributions published by Dean Amadon, his "Avian Systematics and Evolution in the Gulf of Guinea" is of more than usual interest in that it serves to increase our understanding of broad biological principles as well as local and special phenomena.

In "Methods and Principles of Systematic Zoology," published by McGraw-Hill, Ernst Mayr, collaborating with E. G. Linsley and R. L. Usinger, made an important addition to a distinguished record for himself and for the Museum.

This book is a work of great practical usefulness that will become indispensable to every zoologist concerned with the classification and relationships of the animal kingdom. Many other contributions to science also appeared under Dr. Mayr's authorship, and it was a great loss to the Department and to the Museum when Dr. Mayr resigned to accept an Alexander Agassiz Research Professorship at Harvard University.

The research program of the Department of Birds was greatly enriched by the investigations and published contributions of its associates, William H. Phelps, and his son, William H. Phelps, Jr., and Charles Vaurie.

A very important activity for the Department of Birds was the American Museum-Armand Denis Expedition to the interior mountains of New Guinea, on which the scientific work was conducted by E. Thomas Gilliard of the Department. Through Mr. Gilliard's efforts an exceptionally fine series of sound recordings, color photographs, and color films were made of 109 different species of living birds in their native environments. An extraordinarily arresting and magnificently illustrated article by Gilliard, on "New Guinea's Rare Birds and Stone Age Men," was the main feature of *The National Geographic Magazine* for April, 1953.

Dr. Zimmer and Dr. Phelps spent some time collaborating in the field study of birds of Venezuela and of the Caribbean islands. Dr. Murphy visited the Bahamas at the invitation of Arthur S. Vernay and was instrumental in securing adequate protection for the nesting places of the flamingos.

The Frank M. Chapman Memorial Fund made five new grants-in-aid of research in ornithology, and the scientific results of two of the projects previously supported by Chapman grants were made ready for publication.

Among the most interesting results of the very active research program maintained by the *Department of Amphibians and Reptiles* is the conclusive demonstration by

Charles M. Bogert, Chairman of the Department, and Samuel B. McDowell that all snakes have not descended from a common ancestor. On the contrary, their evidence shows beyond a doubt that different reptiles without limbs have evolved quite independently of one another from different types of lizards. These findings therefore require extensive changes in our beliefs concerning the systematic relationships of snakes to one another and to the lizards, and the final conclusions will be of great interest to all students of evolution.

Mr. Bogert also continued his investigations of the temperature requirements and the body-temperature regulation of the so-called "cold-blooded" reptiles, adding many new observations to the available information on these subjects. It was found, for example, that the rattlesnakes living in the higher mountains can survive long exposure to temperatures near freezing that will kill the rattlesnakes of the lowlands.

John A. Moore, Research Associate of the Department and professor at Columbia University, spent a year in Australia studying the breeding behavior and the embryonic adaptations of the frogs of that continent. A vast amount of data and collections have been obtained, and the information gathered by Dr. Moore concerning the life histories of Australian frogs exceeds all that had previously been known on the subject.

In addition to Dr. Moore's field work in Australia the Department also had expeditions in other parts of the world. Mr. Bogert conducted a research party in mountain regions of Texas, Arizona, and Mexico, and spent some time at the Mountain Lake Biological Station in Virginia. Archie F. Carr, Jr., spent the summer months in Nyasaland collaborating with the British engineering group responsible for a survey of the Shire Valley region, which is considered for further colonization.

Among the outstanding gifts received by the department were a large collection from Trinidad contributed by Edwin

H. McConkey, material from Nyasaland presented by Dr. Carr, collections from Great Abaco Island received from W. G. Hassler, and many specimens brought back from New Guinea by Mr. Gilliard of the Department of Birds.

In the *Department of Fishes and Aquatic Biology* the Chairman, Charles M. Breder, Jr., continued his work on the role of pigmentation in social and non-social fishes. This is closely related to the study of the functions of the pineal organ undertaken some time ago by Dr. Breder jointly with Priscilla Rasquin of the department. Miss Rasquin also carried forward the investigation of the functions of the pituitary in relation to the presence or absence of light in the environment of the Mexican blind cave fishes and of their relatives and possible ancestors living in the open. Successful experimental methods were developed that make possible new approaches to the fundamental problem of the establishment of fishes in dark caves.

Francesca R. LaMonte has been preparing a revision of the swordfishes and sail-fishes for "The Fishes of the Western North Atlantic," a comprehensive reference work being published by the Sears Foundation for Marine Research at the Bingham Oceanographic Laboratory of Yale University.

Several contributions to our knowledge of aquatic invertebrates were published by Libbie H. Hyman.

A long-time interest on the part of Dr. Breder in speculations on the nature of the initial events leading to the fossilization of fishes has finally led to data which may eventually illuminate the nature of these processes starting immediately after the death of a fish. In one of a series of old aquaria left over from some experiments a fish died, evidently of senility. Here it rested for some time before being discovered, as it did not decompose, and a companion fish went on as before, and snails in the aquarium did not attack it. Experiments which followed showed that other freshly killed fish did not decompose in this tank but did so in all others tried.

Samples of this water were submitted to a bacteriologist, Dr. C. Grant of Brooklyn College. The phenomenon is of considerable interest both in regard to possible antibiotic effects and with reference to the processes leading to fossilization and is now being studied from both points of view by Dr. Grant and by Dr. Breder in consultation with Bobb Schaeffer of the Department of Geology and Paleontology.

The second Glazier Andros Expedition, conducted by William S. Glazier, was notably successful in perfecting a technique for under-water motion picture photography of exceptional color quality. The third expedition left in June, 1953, to apply this technique to the purpose of obtaining motion picture sequences of under-water life under natural conditions for the Museum's educational and other uses.

The Lerner Marine Laboratory at Bimini, Bahamas, found a larger use for its research facilities than in any previous year and was placed on the approved list of the National Science Foundation for a grant-in-aid as soon as funds become available. The laboratory was visited by 44 scientists representing 11 different universities and other research organizations, such as the Sloan-Kettering Institute for Cancer Research and the Woods Hole Oceanographic Institution. The average stay of each investigator was 42 days. Nineteen scientific reports were published as a result of work done at the laboratory, covering a wide range of subjects from physiology and biochemistry to the hydrodynamics of swimming fishes, from problems in the normal development of fishes to cancer, and on the taxonomy of various elements of the local fauna.

Mont A. Cazier, Chairman of the *Department of Insects and Spiders*, completed a review of the tiger beetles of Mexico and published a revision of a genus of scarab beetles. C. H. Curran continued his research on the control of mosquitoes, houseflies, and other pests, with very good results, and also pursued his studies of other insect groups. Willis H. Gertsch completed several papers on crab-spiders and other spiders,

partly in collaboration with Ralph V. Chamberlin. Frederick H. Rindge made good progress in his study of the moths of the family Geometridae and published a revision of one of its genera. Various contributions to our knowledge of Mexican beetles were published by John C. Pallister and by Patricia Vaurie, in large part as a result of the David Rockefeller Mexican Expedition of 1947.

Dr. Cazier, Dr. Gertsch, and Mr. Schrammel spent four months collecting insects in Texas, New Mexico, Arizona, California, northern Mexico, and Baja California on the David Rockefeller-American Museum Expedition to the southwestern United States and Mexico. About 96,000 specimens were collected.

Dr. and Mrs. Charles Vaurie spent two and a half months collecting insects and spiders in the state of Sonora, Mexico, and Mr. Pallister made a three months' collecting trip into the state of Yucatan, aided by a grant from the Vose Fund made available by the Explorers Club.

With the support of Horace Van Voast the department was able to send into the field an expedition covering most of the islands of the Bahamas which offer some very interesting problems in zoogeography. A rich collection was gathered, from which interesting results may be expected.

Bernard Heineman made valuable collections of butterflies on a trip to Ceylon undertaken in the interest of the department.

It is difficult to make a selection of subjects for special emphasis from the rich and varied program of the *Department of Animal Behavior*.

Lester R. Aronson, Chairman of the department, completed a study at the Lerner Marine Laboratory of the peculiar behavior and ecology of the West Indian pearl fish, which uses for its shelter the interior of the water lung of living sea cucumbers. Dr. Aronson and his co-workers carried forward a broad program of research on problems of sex, for which the

Department has received continued financial support from the National Research Council since 1940. Among the most interesting investigations in progress during 1952-1953 was the study by Dr. Aronson and Jay S. Rosenblatt of the role of experience in the sexual behavior of the domestic cat, which should lead to conclusions of broad general significance.

In February, Dr. Aronson left for Nigeria, West Africa, under a Fulbright Fellowship, to conduct field investigations of various mouth-breeding fishes which have already been the subject of interesting experimental research under laboratory conditions at the Museum. On this trip he will also have the opportunity to make comparisons with related species that choose more conventional methods of rearing their young and to make many other observations and collections for the Museum.

The fascinating investigations on the behavior of the army ants, which have already attracted a good deal of public attention, were continued by T. C. Schneirla and his co-workers, supported by grants from the Office of Naval Research and by the Rockefeller Foundation, and many papers were published on special aspects of these investigations. Dr. Schneirla also participated in the study of problems of sex and made many contributions on a variety of subjects, such as the development of family life and social adjustments among animals. An interesting investigation by Dr. Schneirla and Ethel Tobach on the resistance of various rodents to "nervous breakdown" under artificial stress was in progress during the year.

William Tavolga was supported by the United States Public Health Service in the study of various problems related to the behavior and biology of fishes.

Perhaps the outstanding accomplishment of the Department of Animal Behavior was the completion of two specific studies forming part of the research program on ring doves. Through the investigations of Daniel Lehrman it was shown

that the feeding of the young is not an "instinctive" action on the part of the parent bird but one that must be learned by experience. It was found by experiments that the feeding performance of the adult is developed only as a result of a rather elaborate process of mutual reactions between parent and nestlings and does not represent an inherited pattern of activity laid down in the nature of the parent. The process of learning to feed the young was analyzed in detail.

In another investigation Arthur Siegel established that the ring dove also must learn the use of eyesight. To the young birds the sensations of vision are useless and without meaning until their significance and usefulness have been learned by experience. Birds permitted to see light for the normal development of their eyes but not allowed to distinguish shapes through a translucent hood were found to be greatly inferior to normal birds in their ability to learn in tests based upon the discrimination of seen objects.

Richard H. Pough, Chairman of the *Department of Conservation and General Ecology*, has very actively pursued the Museum's interests in conservation, through cooperation with many civic groups and public agencies interested in the subject, through the sponsorship of research, and through participation in the planning of Museum exhibits, notably the new Hall of North American Forests of which the department has charge.

The monthly Conservation Round Table, arranged by the department for conservation chairmen of local civic groups, was better attended than ever before and has resulted in Mr. Pough's participation as a consultant and collaborator on a wide range of local conservation projects. On behalf of the Museum he has similarly served as an advisor and consultant to the Garden Club of America, the Federated Garden Clubs of New York State, the General Federation of Women's Clubs, and many other organizations. Mr. Pough also serves as President of the Nature Conservancy.

Frank A. Egler carried on his field research on the proper use of herbicides for the control of woody vegetation, and the department continued its co-sponsorship of a research project on the Pacific walrus at the University of Alaska.

In the *Department of Geology and Paleontology* research on fossil vertebrates in the Museum laboratories was much curtailed by the demands of the exhibition program, and a temporary vacancy in the curatorship of minerals resulted in a complete suspension of research in that subject during the year of this report. Towards the end of the year the vacancy was filled by the appointment of Brian H. Mason as Curator of Physical Geology and Mineralogy, with provisions made for the modernization of the research facilities of this division of the department.

George Gaylord Simpson, Chairman of the Department, completed two studies of early (Paleocene-Eocene) primates and primate-like insectivores. Dr. Simpson's popular book on paleontology, "Life of the Past," was published by Yale University Press, and a major technical work on the principles of evolution is in proof with Columbia University Press. A French translation of Dr. Simpson's earlier book on "The Meaning of Evolution" was published in Paris, and an Italian translation is being prepared.

During the summer of 1952 a field party under the supervision of Dr. Simpson, after a disappointing experience with a previously rich source of fossils in New Mexico, moved on to the Huerfano Basin in southern Colorado, where success was spectacular. The summer's work resulted in a collection from this geological formation larger than all previous ones put together. It provides incomparably better material for the study of crucial problems in regard to fossil faunas, evolution, and geological stratigraphy. Dr. Simpson also made collections in the Green River Valley of Wyoming and continued his collaboration with the University of Wyoming on the study of the stratigraphy of that region. Both the

work in Colorado and that in Wyoming were again taken up in the late spring of 1953.

Edwin H. Colbert was temporarily unable to carry on a full research program owing to his heavy duties in connection with the department's exhibition program, but several reports resulting from his previous work were published during the year, notably a description of an important new reptile among the ancestral forms of the dinosaurs and a large monograph on "Pleistocene Mammals from the Limestone Fissures of Szechwan, China," written jointly with D. A. Hooijer.

In the summer of 1952 extensive collections from the Cretaceous, Paleocene, and Eocene of Kansas, Wyoming, and Montana were made under the leadership of Bobb Schaeffer of the department. A splendid fossil skull of the flying reptile *Pteranodon* was obtained, together with many fossil fishes and aquatic reptiles.

Norman D. Newell organized and led a seven-man expedition to Raroia Atoll in the Tuamotu Archipelago for the National Research Council during the summer of 1952. The purpose of this undertaking was to make a comprehensive ecological survey of the natural conditions and resources available on a Pacific island as a basis for appraising the potentialities of such island environments for human use and habitation. The work involved base mapping, geology, botany, zoology, and anthropology. Aside from the general administration of the project, Dr. Newell also worked personally on the geological aspects of the problem, thus adding to his series of studies of organic reefs, both fossil and recent. The results are embodied in a written report to the Pacific Science Board.

The outstanding research publication of the department for the year was Otto H. Hass's great monograph of late Triassic gastropods from Peru. This work has occupied Dr. Haas for years and represents a real milestone in the advancement of our knowledge concerning the life of the Triassic

period. Dr. Haas also published several other contributions to science and spent part of the summer of 1952 doing field work mainly in Wyoming, which resulted in an outstanding collection of fossil ammonites from the Sundance formation of the Jurassic.

Another publication of great general interest, "The Problem of Land Connections across the South Atlantic, with Special Reference to the Mesozoic," was issued by the Museum as a result of a symposium organized by Dr. Newell, with contributions by Drs. Colbert, Schaeffer, and Simpson of the Department of Geology and Paleontology, and by many others, with Ernst Mayr of the Department of Birds as editor.

Among the outstanding gifts received by the Department of Geology and Paleontology were several specimens of fossil giant sloths from Mexico and other material donated by Childs Frick. A large collection of mammal teeth and jaws from the Eocene age of Wyoming was gathered and presented by Dr. and Mrs. Horace E. Wood, 2nd. Brea (asphalt) containing many bones, mostly of fossil birds, was received from Talara, Peru, through the International Petroleum Company, Ltd., and Walter Youngquist.

The *Department of Micropaleontology*, under the chairmanship of Dr. Brooks F. Ellis, issued to its subscribing members two supplements to the "Catalog of Foraminifera," comprising 1432 pages of text and illustrations. An event of special significance was the publication of the first volume of the new "Catalog of Ostracoda," which will further increase the value of the department's services to geology and to the petroleum industry.

The signing of an agreement with two petroleum companies to work on fossil material for their geological departments was another significant step in the Micropaleontology Department's own progress.

EXHIBITION

The outstanding public event in the exhibition program of the Museum was the final opening of the completed Whitney Memorial Hall of Pacific Bird Life on January 29, 1953. Among the many fascinating new exhibits in this hall not previously available to the public, a complete life-like reconstruction of one of the extinct moas of New Zealand is perhaps of particular interest.

Another event of great importance for the development of the Museum's future exhibition plans was the gift by John D. Rockefeller, 3rd, of the funds necessary for the preparation of a new Hall of the Biology of Man in which the Department of Anthropology will attempt to explain the anatomy, functions, and development of the human body, some of its basic responses to external conditions and events, and some of the biological aspects of the association of human beings in populations and communities.

The year 1952-1953 was one of marked progress in the development of better organization and procedures for the planning, presentation, and execution of the Museum's exhibition program, under the administration of M. F. Harty, General Manager of Exhibition and Buildings, with Katharine Beneker as Chief of Exhibition, and L. Brooks Freeman appointed as Chief Designer in July, 1953. Attention is being given both to the design and preparation of new exhibits and to the necessity for keeping all exhibits in a more attractive state of maintenance, in surroundings of a more pleasing decor. The results are already beginning to show in a marked improvement of the appearances of many of our public exhibition areas, as well as in the production of new exhibits.

Among the tasks completed during the year was the modernization of the Jurassic fossil hall, with the large *Brontosaurus* skeleton among many other interesting examples of the great reptile age. The project involved a completely new lighting system, new color scheme, new murals, and a new

arrangement of the exhibits, which has all received a very favorable response from our visitors, after the hall's re-opening on May 22, 1953.

Good progress was made on the installation of the new Hall of North American Forests, aided by the very generous support of several of the trustees of the Museum. The remaining small mammal groups in the Hall of North American Mammals were brought near completion. Fifteen models were completed and added to the exhibits of living invertebrates, and preparation was started on a series of more than thirty new models for the new fossil fish exhibit.

Nineteen temporary exhibitions were arranged in the Corner Gallery on the second floor, and elsewhere in the Museum, and the Museum served as host for eight temporary exhibits by outside groups in Education Hall.

The exhibition staff also developed the technique for, and executed, the new luminescent dark-light murals mentioned in the report on the Planetarium.

PUBLIC INSTRUCTION

The various educational services extended by the Department of Public Instruction, under the chairmanship of John R. Saunders, reached a total of nearly sixteen and a half million (16,461,704) persons through lectures and teaching at the Museum, the study of its circulating loan collections, and attendance at the showings of its circulating lantern slides and educational films.

One hundred and seventy-one thousand and fifty-seven different individuals met in 3055 class or lecture sessions at the Museum itself. This represents a total of more than 400,000 student hours under direct instruction by the Department. The persons participating in this manner represented 724 different organizations of all kinds, including public, private, and parochial schools; colleges and universities; libraries; youth organizations; adult groups; local, national, and foreign

governmental agencies; religious, social, and industrial educational bodies; and many other community institutions as well as the general public.

The department offered five different courses for teachers-in-service, with the approval of Jacob Greenberg, Deputy Superintendent of Schools, City of New York. Four of these courses were accredited by either Hunter College or the City College of New York, or both.

The teaching staff was substantially increased by additional grants from the City of New York to meet the increasing demand for its services.

THE PLANETARIUM

The American Museum-Hayden Planetarium had the highest attendance it has experienced since the first year of its operation. During the year 1952-1953, 509,378 visitors paid admission to the shows, an increase of more than 50,000 over the year before. It is difficult to determine the exact reasons for such an increased attendance, but one can safely assume that the diligent efforts of the staff to relate the contents of the shows to current astronomical events and to topics of public discussion have contributed substantially to the stimulation of interest. A keen realization of the Planetarium's educational responsibility for bridging the gap between astronomical research and common knowledge keeps the staff alert to new developments and the program flexible and adaptable to new trends in public interest.

The installation of the first large-scale astronomical murals in luminescent paint under ultraviolet ("dark") illumination, in replacement of the conventional, small, black and white, photographic transparencies, also attracted widespread attention. The murals already installed during 1952-1953 cover nearly 4000 square feet of wall space in the exhibition corridors and deal with such subjects as solar eclipse and corona, sunspots, aurora borealis, the planets Mars and Saturn, and

various nebulae. Further murals will be added under our over-all plan for the modernization of the Planetarium's permanent exhibits.

GENERAL ADMINISTRATION

The most significant advance in administrative procedure was that of the continued development of the functions of the Controller, Walter F. Meister, who now exercises general supervision over all budgetary, contractual, business, and special activities, over the general operation of the business offices, and of office services throughout the Museum, and over the Museum's personnel management. Aided by the findings and recommendations of the Management Survey, further developed, modified, or refined by his own judgment and experience, Mr. Meister was able to establish an economic and efficient organization assuring an effective control of the Museum's affairs and increased service to all units.

These improvements in the Museum's own administration also made it possible to integrate the administration of the Planetarium with that of the Museum itself, to mutual benefit. This integration was also extended to exhibition and building operations under M. F. Harty.

The services rendered by William A. Burns, as Assistant to the Director, were also greatly broadened in a manner that has helped to facilitate and expedite work not only in the Director's office but on administrative matters generally.

THE AMERICAN MUSEUM OF NATURAL HISTORY
AND THE AMERICAN MUSEUM OF NATURAL HISTORY
PLANETARIUM AUTHORITY

Financial Statements

For the Fiscal Year ended June 30, 1953

THE AMERICAN MUSEUM BALANCE

June 30,

ASSETS:

Endowment and other funds:				
Cash			\$	11,020.02
Investments (Notes 1 and 2):				
Marketable securities:				
	At Market	Book Amounts		
	Quotations			
Bonds	\$ 7,626,643.87	\$ 7,842,600.51		
Preferred stocks	2,413,525.00	2,453,225.07		
Common stocks	8,726,158.00	6,786,683.74		
	<u>\$18,766,326.87</u>	<u>\$17,082,509.32</u>		
Other investments (market				
quotations not readily				
available):				
Real estate securities		61,568.75		
Promissory notes (unsecured)		33,253.16		
		<u>94,821.91</u>	17,177,331.23	\$17,188,351.25
Investment in The American Museum				
of Natural History Planetarium				
Authority, at cost (Note 3):				
Bonds (\$570,000 face amount)			425,000.00	
Promissory notes			<u>50,000.00</u>	475,000.00
Current funds:				
Cash			769,066.60	
	At Market	Book Amounts		
	Quotations			
Temporary investments (Note 1):				
U. S. Government bonds	\$ 561,709.99	\$ 573,000.00		
Common stock	<u>8,750.00</u>	<u>10,000.00</u>	583,000.00	
Accounts receivable			178,557.96	
Inventories, principally				
publications			66,637.67	
Prepaid expenses and deferred				
charges			<u>51,699.29</u>	1,648,961.52
Agency funds:				
Pension funds:				
Cash			94,595.09	
Investments, at cost:				
	At Market	Book Amounts		
	Quotations			
Bonds	\$ 2,868,100.63	\$ 2,935,805.27		
Preferred stocks	620,112.50	653,887.55		
Common stocks	388,840.00	358,271.63		
	<u>\$ 3,877,053.13</u>	<u>3,947,964.45</u>		
Real estate mortgages		3,998.33	3,951,962.78	
Loans receivable			<u>170.00</u>	4,046,727.87
Total assets				<u>\$23,359,040.64</u>

The accompanying notes are an integral part of this balance sheet.

OF NATURAL HISTORY SHEET

1953

FUNDS AND LIABILITIES:

Endowment and other funds:

Endowment funds, income available for:

Restricted purposes	\$8,252,967.91	
Unrestricted purposes	<u>4,402,567.16</u>	\$12,655,535.07

Funds functioning as endowment, both principal and income available for:

Restricted purposes	345,363.76	
Unrestricted purposes (Notes 2 and 4)	<u>4,187,452.42</u>	<u>4,532,816.18</u> \$17,188,351.25

Funds invested in the indebtedness of The American Museum of Natural History Planetarium Authority (Note 3)

475,000.00

Current funds:

General funds:

Accounts payable, payroll taxes withheld, etc.	41,086.46	
Deferred income consisting principally of unearned dues and subscriptions	<u>209,627.24</u>	250,713.70
Less, Deficit		<u>76,432.43</u>
		174,281.27

Appropriated funds available for:

Outstanding commitments, general funds	25,090.99	
Exhibition hall rehabilitation	<u>781,673.26</u>	806,764.25

Special funds:

Contributions from donors, restricted endowment income, etc. (Note 5)		<u>667,916.00</u> 1,648,961.52
--	--	--------------------------------

Agency funds:

Pension funds

Total funds and liabilities

4,046,727.87
\$23,359,040.64

STATEMENT OF ENDOWMENT AND OTHER FUNDS
for the year ended June 30, 1953

Balance, June 30, 1952			\$16,537,578.60
Additions:			
Gifts and bequests		\$226,838.67	
Net profit on sales of investments		<u>589,089.98</u>	<u>815,928.65</u>
			17,353,507.25
Deductions:			
Expenditures, for custodian fee		5,000.00	
Transfers to general funds:			
For honorariums and consultant fees	\$ 9,602.64		
To dispose of general funds operating deficit for the year ended June 30, 1952	<u>150,553.36</u>	<u>160,156.00</u>	<u>165,156.00</u>
Balance, June 30, 1953			<u><u>\$17,188,351.25</u></u>

The accompanying notes are an integral part of this statement.

STATEMENT OF GENERAL FUNDS
for the year ended June 30, 1953

Income:

Appropriations from the City of New York	\$1,226,387.86	
Income from endowment and other funds	764,019.18	
Income from Planetarium Authority and temporary investments	27,625.00	
Portion of royalties from mining properties (Note 2)	50,000.00	
Income from outside trusts and foundations	62,937.10	
Income from bequests pending settlement	358.90	
Contributions of trustees, members and friends	150,423.17	
Membership dues	44,825.00	
Sales and services	34,043.50	
Income from special educational activities	29,898.27	
Other income	6,823.39	\$2,397,341.37
Museum enterprises:		
Natural History Magazine	273,649.01	
Junior Natural History Magazine	121,099.44	
Man and Nature Publications	36,836.99	
Museum Shop	141,471.34	
Museum Cafeteria	19,525.58	592,582.36
		<u>2,989,923.73</u>

Expenses:

Administrative and general	\$ 685,476.06	
Care and use of collections, supervision of exhibitions, scientific publications and library	601,938.98	
Exhibition and architecture	30,646.03	
Operation and maintenance of physical plant	1,000,465.19	
Public instruction	145,867.59	
Special educational activities	85,575.00	2,549,968.85
Museum enterprises:		
Natural History Magazine	251,968.53	
Junior Natural History Magazine	118,409.74	
Man and Nature Publications	34,933.64	
Museum Shop	121,483.70	
Museum Cafeteria	19,908.39	546,704.00
Excess of expenses		3,096,672.85
		<u>106,749.12</u>

Transfer from appropriated funds available for promotion and development of Museum enterprises

45,805.04

Add, Transfer from unrestricted funds functioning as endowment to cover certain expenses included above

9,602.64

55,407.68

Less, Appropriation provided for outstanding commitments

25,090.99

30,316.69

76,432.43

Deficit, general funds, June 30, 1952

150,553.36

Less, Transfer from unrestricted funds functioning as endowment

150,553.36

—

Deficit, June 30, 1953

\$ 76,432.43

The accompanying notes are an integral part of this statement.

STATEMENT OF APPROPRIATED FUNDS

for the year ended June 30, 1953

	Outstanding Commitments, General Funds	Available For Promotion and Development of Museum Enterprises	Exhibition Hall Rehabilitation
Balances, June 30, 1952		\$47,551.79	\$774,060.10
Add:			
Appropriation from general funds for outstanding commitments at June 30, 1953	\$25,090.99		31,642.78
Adjustment of prior year's transfer to special funds			805,702.88
	<u>25,090.99</u>	<u>47,551.79</u>	<u>805,702.88</u>
Deduct:			
Transfers to special funds		1,746.75	24,029.62
Transfer to general funds to apply as reduction of current year's operating deficit		45,805.04	
		<u>47,551.79</u>	<u>24,029.62</u>
Balances, June 30, 1953	<u>\$25,090.99</u>	<u>—</u>	<u>\$781,673.26</u>

STATEMENT OF SPECIAL FUNDS

for the year ended June 30, 1953

Balance, June 30, 1952 (Note 5)		\$ 558,499.88
Income:		
Income from endowment and other funds	\$ 70,975.87	
Income from temporary investments	3,367.50	
Contributions of trustees, members and friends	583,020.04	
Sales and services	87,644.93	
Other income	3,210.41	
		<u>748,218.75</u>
		1,306,718.63
Expenditures:		
Administrative and general	9,960.99	
Care and use of collections, preparation and supervision of exhibitions, scientific publications and library	469,476.02	
Exhibition and architecture	999.84	
Public instruction	2,188.18	
Special educational activities	126,281.57	
	<u>608,906.60</u>	
Exhibition hall rehabilitation	24,029.62	
		<u>632,936.22</u>
		673,782.41
Transfer to appropriated funds:		
Exhibition hall rehabilitation:		
Adjustment of prior year's transfer	31,642.78	
Less, Amount to cover expenditures made in current year	24,029.62	
	<u>7,613.16</u>	
Less, Transfer from promotion and development of Museum enterprises	1,746.75	
		<u>5,866.41</u>
Balance, June 30, 1953 (Note 5)		<u>\$ 667,916.00</u>

The accompanying notes are an integral part of this statement.

STATEMENT OF PENSION FUNDS
for the year ended June 30, 1953

Balance, June 30, 1952		\$3,815,341.71
Income:		
Contributions by subscribing members	\$ 95,206.37	
Contributions by trustees and others	113,116.72	
Income from investments	145,467.55	
Net profit on sales of investments	<u>71,089.57</u>	<u>424,880.21</u>
		4,240,221.92
Expenditures:		
Payments to members and beneficiaries:		
Pension allowances	134,538.31	
Death benefits	1,493.20	
Refunds of contributions and interest thereon	<u>53,516.80</u>	
	189,548.31	
Custodian fees, etc.	<u>3,945.74</u>	<u>193,494.05</u>
Balance, June 30, 1953		<u><u>\$4,046,727.87</u></u>

NOTES TO FINANCIAL STATEMENTS

1. The land, buildings and equipment utilized by the Museum are either owned by the City of New York or were charged off at the time of purchase and, therefore, are not reflected in the balance sheet. Also, no valuation of exhibits, collections, library, etc., has been established for balance sheet purposes.

Investments are recorded at cost in respect of those purchased and in respect of those acquired by gift, bequest or otherwise at market valuations at the dates of acquisition, probate court valuations or valuations established by the trustees.

2. The Museum owns an interest in certain mining properties acquired through a bequest. No valuation has been recorded on the books for the interest in these properties and, therefore, it is not reflected in the balance sheet. However, the Museum receives royalties from this source and such royalties are recorded, when received, as additions to unrestricted funds functioning as endowment (as bequests) or to current general funds. During the current fiscal year royalties received aggregated \$99,288.00 of which \$50,000.00 was credited to general funds; in addition the Museum credited unrestricted funds functioning as endowment with \$138,888.89 received from sale of a portion of the mining properties.
3. The Planetarium Authority is operated under the supervision of the Museum's management and its corporate charter continues only until all its liabilities, including all its bonds (\$570,000 face amount), have been paid in full or have otherwise been discharged. At that time, title to its real property passes to the City of New York to be maintained and operated in the same manner as other city property occupied by the Museum and title to its personal property passes to the Museum for its corporate purposes. Its real property, including donated land carried at no value, is stated in the Planetarium Authority's balance sheet at a cost of \$569,209.64 (provision for depreciation is considered unnecessary because of the nature of the ownership of the property). At June 30, 1953, other net assets of the Authority, before consideration of its bonded debt and its liability on advances from the Museum, amounted to \$81,441.67, including \$31,254.48 equipment at cost, less depreciation. Its income for the year ended June 30, 1953, before interest on its bonds and debt to the Museum and before \$5,682.48 provision for depreciation on its equipment, amounted to \$105.44. During the year the Authority paid the Museum \$11,375.00 on account for interest on its bonds and advances. These amounts were credited by the Museum to general fund income.
4. Unrestricted funds in the amount of \$800,000 have been conditionally appropriated for the construction of additional buildings subject to appropriation of a like sum by the City of New York.
5. The balances shown for special funds are net of expenditures (\$35,784.75 at June 30, 1952; \$92,698.14 at June 30, 1953) on projects for which contributions are pending or are to be solicited. To the extent such contributions are not received the amounts will be charged against general or appropriated funds.

LYBRAND, ROSS BROS. & MONTGOMERY

Certified Public Accountants

To the Board of Trustees,
The American Museum of Natural History,
New York, N. Y.

We have examined the balance sheet of THE AMERICAN MUSEUM of NATURAL HISTORY as of June 30, 1953 and the related statements of funds for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the accompanying balance sheet and related statements of funds present fairly the financial position of the Museum at June 30, 1953 and the results of its operations for the year then ended, on a basis consistent with that of the preceding year.

Lybrand, Ross Bros. & Montgomery

New York, September 14, 1953.

THE AMERICAN MUSEUM
PLANETARIUM
BALANCE

June 30,

ASSETS:

Cash in bank and on hand	\$ 39,813.33
Accounts receivable	1,454.73
Inventory of publications	10,363.72
	<u>51,631.78</u>
Land, building and equipment at cost, less reserves for depreciation:	

	<u>Assets</u>	<u>Reserves</u>	
Land (donated by the City of New York)	—		
Building	\$569,209.64	(note)	
Plant equipment, machinery and tools	70,221.75	\$ 40,357.50	
Furniture and fixtures	38,870.07	37,481.84	
Zeiss planetarium instrument	126,433.73	126,432.73	
Copernican planetarium instrument	30,435.54	30,434.54	
	<u>\$835,170.73</u>	<u>\$234,706.61</u>	600,464.12

Prepaid expenses	<u>2,512.25</u>
	<u>\$654,608.15</u>

Note: The Authority's corporate charter terminates when all its liabilities, including its bonds, have been paid in full or have otherwise been discharged. At that time title to its real property and to its personal property passes to the City of New York and to The American Museum of Natural History, respectively. Because of the nature of the ownership of the property, provision for depreciation of the building is considered unnecessary.

OF NATURAL HISTORY
AUTHORITY
SHEET

1953

LIABILITIES:

Accounts payable		\$ 3,956.84
4½% Refunding Serial Revenue Bonds and interest thereon (held by The American Museum of Natural History):		
Interest:		
Unpaid coupons, past due	\$232,425.00	
Interest accrued on bonds not yet due	1,305.00	
Interest accrued on past due unpaid bonds	<u>116,820.00</u>	
	350,550.00	
Less, Payments on account (\$10,125 per annum)	<u>50,625.00</u>	299,925.00
Principal:		
Past due	396,000.00	
Due May 1, 1954	29,000.00	
Due in annual instalments from May 1, 1955 to May 1, 1959	<u>145,000.00</u>	570,000.00
		873,881.84
Advances from The American Museum of Natural History (interest at 2½% per annum paid through June 30, 1953)		<u>50,000.00</u>
		923,881.84
Deferred income consisting of special funds, contributions, etc.		<u>1,432.68</u>

CONTRIBUTED CAPITAL AND DEFICIT*:

Contributed capital, June 30, 1953:			
Charles Hayden	\$156,869.27		
Charles Hayden Foundation	<u>130,924.55</u>	287,793.82	
Deficit*, June 30, 1953, as annexed		<u>558,500.19*</u>	270,706.37*
			<u>\$654,608.15</u>

STATEMENT OF INCOME AND DEFICIT

for the year ended June 30, 1953

Income:			
Admission fees less allowances and commissions		\$224,704.58	
Fees from special courses and lectures		5,779.80	
Net income from publications (as annexed)		9,405.68	
Miscellaneous		342.19	\$240,232.25
Operating expenses:			
Salaries:			
Scientific and lecturing	\$ 35,364.16		
Technical	20,422.45		
Operating	50,524.78		
Heating, lighting and ventilation	5,935.60		
	<u>\$112,246.99</u>		
Other:			
Technical supplies, etc.	\$ 9,377.39		
Maintenance	13,286.69		
Cleaning	4,693.39		
Heating, lighting and ventilation	8,447.33		
Special improvements and renovations	38,274.41		
	<u>\$ 74,079.21</u>	186,326.20	
Administrative expenses:			
Salaries:			
Box office	\$ 10,611.01		
Financial	4,250.00		
	<u>\$ 14,861.01</u>		
Other:			
Pension fund	\$ 5,451.58		
Group life, health and hospital insurance	1,474.60		
Social security taxes	1,484.50		
Workmen's compensation insurance	1,998.90		
Office equipment	1,111.22		
Management survey	2,920.38		
Insurance, other	905.97		
Telephone service	1,700.00		
Auditing	400.00		
General and miscellaneous	4,336.13		
	<u>\$ 21,783.28</u>	36,644.29	
Promotional salaries and expenses		<u>17,156.32</u>	
Total operating, administrative and other expenses			<u>240,126.81</u>
Income before interest and depreciation			105.44
Interest expense:			
On 4½% Refunding Serial Revenue Bonds:			
Coupons due November 1, 1952 and May 1, 1953		7,612.50	
Accrued on bonds not yet due		1,305.00	
Accrued on past due bonds		16,732.50	
On advances from The American Museum of Natural History		<u>1,250.00</u>	26,900.00
Loss before provision for depreciation			26,794.56
Provision for depreciation (see note to accompanying balance sheet)			<u>5,682.48</u>
Net loss for the year ended June 30, 1953			<u>32,477.04</u>
Deficit, June 30, 1952			526,023.15
Deficit, June 30, 1953			<u>\$558,500.19</u>

STATEMENT OF INCOME FROM PUBLICATIONS

for the year ended June 30, 1953

Net sales	\$50,361.78	
Cost of sales	<u>29,748.31</u>	
Gross profit on sales		\$20,613.47
Sales booth expenses:		
Salaries	9,977.52	
Other expenses	<u>1,230.27</u>	11,207.79
Net income		<u>\$ 9,405.68</u>

LYBRAND, ROSS BROS. & MONTGOMERY

Certified Public Accountants

The Members of The American Museum of
Natural History Planetarium Authority,
New York, N. Y.

We have examined the balance sheet of THE AMERICAN MUSEUM of NATURAL HISTORY PLANETARIUM AUTHORITY as of June 30, 1953 and the related statement of income and deficit for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the accompanying balance sheet and related statement of income and deficit present fairly the financial position of the Authority at June 30, 1953 and the results of its operations for the year then ended, on a basis consistent with that of the preceding year.

Lybrand, Ross Bros. & Montgomery

New York, September 14, 1953.

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