modern museums, but does not enlist the full support of the people if the endowment is drawn from a single individual. The fourth is a reasonably satisfactory source, but subject to the usual weaknesses of government activities. The most successful foundation for the modern museum, broadly speaking, seems to be the combination of private endowments from many sources for the creation of the museum and municipal support for its operating expenses—the Charleston plan.

About fifty per cent. of American museums are devoted exclusively, or chiefly, to natural history; about twenty-five per cent. to history, and about ten per cent. to art. Approximately thirty-eight per cent. of these museums derive their financial support from schools, colleges and universities; thirty-five per cent. from societies or associations; fifteen per cent. from city governments; seven per cent. from private individuals or endowments exclusively; four per cent. from state government, and one per cent. from the national government.

These statistics do not indicate the relative importance at the present time of the subjects treated by museums, or the importance attached to museums by the various organizations that support them. It is not those museums that reflect past conditions, but those that hold promise of future service that are most significant. The half century in which we live may be confidently expected to see the expansion of the museum ideas that germinated during the second half of the Nineteenth Century. It should be our goal and our determination to secure national recognition of the sentiment expressed ninety-nine years ago in the editorial in the Charleston *Courier,* previously quoted: "A public museum is as necessary an appendage to a city as a public newspaper or a public library."

PAUL M. REA

CLEVELAND MUSEUM OF NATURAL HISTORY

FIELD EXPLORATIONS OF THE AMERICAN MUSEUM DURING THE YEAR 1922

THE American Museum of Natural History, deeply concerned with the rapid disappearance of the natural life and beauty of the world, among both the native races of men and the mammals of land and sea, is pushing exploration very hard at the present time, especially in Africa, Australia, southern and northern Asia and Polynesia. In the fifty-fourth annual report, issued May first, there is set forth a statement and summary of the scientific achievements and expenditures of the museum during the year 1922 which is recast in condensed form for the readers of SCIENCE.

These expeditions of 1922 represent an expenditure of more than a half million dollars for purely scientific work and about a half million for the extension of the results to educational institutions of the city and country; they represent 194,475 miles of travel during the single year; above all, they represent devotion and self-sacrifice in the interests of the museum on the part of the explorers and collectors which are beyond all praise. The work was made possible through extreme generosity on the part of members and friends of the museum, who in some instances financed the entire cost of an expedition and in others supplemented the funds of the museum which are devoted to this work.

The Third Asiatic Expedition, now in its third year, started in the spring of 1921 under the leadership of Roy Chapman Andrews, and results obtained thus far have exceeded expectations. In April of 1922 the expedition left Kalgan for Mongolia to continue work in zoology, geology, paleontology and geography as far as Urga, westward to the eastern extension of the Altai and Tian Shan Mountains and south to the frontier of Chinese Turkestan, a region including the most arid section of the Gobi Desert and rolling meadow-lands and foothills at the base of high mountains, some of which are covered with perpetual snow. On the way to Urga, about 260 miles northwest of Kalgan, fossil remains comparable to fossils found in Wyoming were unearthed—an epoch-making discovery because it throws light on the migration of animal life from Europe to America *via* Asia. While the fossil hunters were studying these beds, leader Andrews and the zoological branch pushed on to Urga and completed arrangements for the journey west of Urga into the region which was to occupy them for the summer.

In India two parties are enthusiastically

making collections of great value for the museum; in the historic fossil-bearing formation of the Siwalik Hills Barnum Brown, under great difficulties, has secured fossil material, including mastodon and elephant skulls, of such importance as to raise the museum collection to the third position in this respect in the world. In the southwest the big game animals are being hunted for the museum by Colonel J. C. Faunthorpe, an A. D. C. to King George and a resident commissioner at Lucknow, and Mr. Arthur S. Vernay, who are responsible for the Faunthorpe Indian Expedition. The museum has provided a taxidermist, John Jonas, of Montana, and will defray the expense of transporting the material collected.

Carl E. Akeley's fourth expedition to Africa, from which he returned in March of 1922, yielded five specimens of gorillas of the Kivu country, the largest weighing 360 pounds, which will be mounted in a habitat group for the African Hall. James L. Clark, with Kenyon V. Painter, visited the Tanganyika country to procure material for a rhinoceros group, and R. T. Burge, of Los Angeles, is also expecting to collect for the museum on his present trip to Africa and India.

Extensive exchanges with various museums in Australia are enriching the museum collections through relations established by William K. Gregory during his visit to Australia. Among such material are a collection of skulls of Australian aborigines, a cast of the skeleton of the marsupial elephant *Diprotodon* and a rare nectar-eating phalanger *Tarsipes*. The field collecting was continued by Harry C. Raven, who with the cordial cooperation of government officials and museum and university men secured a representative collection of Australian mammals—kangaroos, wallabies, native bear, etc. Mr. Raven also collected mammals and marine birds in Tasmania..

During the year N. C. Nelson spent several months in western Europe studying prehistoric collections in the museums and in private hands and collecting material of the Paleolithic period. He also visited a number of new archeological sites in England, France and Belgium, making some excavations. Through previous journeys of Mr. Nelson, three journeys of President Osborn and one of Dr. McGregor, beginning in 1913, the museum has secured splendid collections of the archeology and prehistory of man in Europe, which will be displayed in the Hall of the Age of Man and the Hall of the Prehistory of Man.

The museum is hunting in Württemberg for the ancestors of the dinosaurs; in southern Württemberg Dr. F. von Huene is excavating for fossils at Trossingen and his results will be shared jointly by the Tubingen Museum and the American Museum.

Through field work conducted in the Azores and the Cape Verde Islands by José G. Correia the museum bird collections are enriched by several hundred specimens, particularly marine birds, including petrels, boobies, tropic birds and some of the rare insular species of land birds. The bird collections also continue to benefit by the Whitney South Sea Expedition in Polynesia, under the leadership of Rollo H. Beck. In the two years that the expedition has been in the field 3,851 specimens have been collected, nearly all new to the museum collections and many new to science, with 562 photographs and extensive field notes.

Southern Alaska was visited by P. E. Goddard, accompanied by Lieutenant G. T. Emmons and Dr. C. F. Newcombe of Victoria, B. C., for the purpose of collecting Indian totem poles and wood carvings for the Jesup Hall and for obtaining first-hand information for a handbook on the tribes of that region. A number of interesting specimens were secured.

South America contributed largely during the year to the museum collections and information. Herbert Lang made an extensive study of the fauna of British Guiana and later went up the Mazaruni River as far inland as Mount Roraima, making comparisons between the South American forests and savannahs and those of Africa, which he had previously studied. G. H. H. Tate and Herbert E. Wickenheiser collected mammals in Ecuador, where also Messrs. Chapman, Cherrie and O'Connell made a successful reconnaissance of the coast and mountains, collecting several species new to science and about a dozen not hitherto recorded from this locality. About six hundred specimens were collected and arrangements were made with native collectors to secure other birds from little-known parts of eastern Ecua-

dor. The biological survey of Amazonian waters was continued by Harry Watkins in Peru, while Ernest Holt collected birds in the mountains of eastern Brazil.

G. K. Noble spent three months in Santo Domingo collecting reptiles and amphibians and studying their life histories. He secured several thousand specimens, including nine new species. He observed the life histories of many species and procured specimens and material for habitat groups of the largest tree frog in the world and the largest lizard in the Americas.

Within the United States geological studies were carried on by E. O. Hovey in Colorado, California and Oregon; by C. A. Reeds in New York state; and by E. A. Foyles in the Lake Champlain region. A reconnaissance trip during the summer was conducted through northwestern Nebraska southward to Pawnee Buttes by W. D. Matthew and Childs Frick, who observed chiefly the stratigraphy of these formations and secured a few specimens of rare fossil animals. A valuable collection of fossil mammals was secured by Albert Thomson near Agate, Nebraska; Messrs. Olsen and Miller collected fossils in the Bridger formation of Wyoming; Messrs. Mook and Kaisen worked in the Cretaceous of New Mexico, from which they obtained a new type of Horned Dinosaur discovered by Charles H. Sternberg. Valuable exchanges were arranged with the Colorado Museum of Natural History, and through the visit of Charles Lang to the museum of the University of California material to complete a mounted skeleton of the Giant Ground Sloth *Mylodon* from the Rancho La Brea deposits was secured.

Roy W. Miner, in cooperation with Frank J. Myers, continued his field studies in southern New Jersey in connection with the new Rotifer group, which will show the animals and plants of a half-inch portion of pond bottom magnified to an area five feet square. F. E. Lutz spent the summer near Boulder, Colorado, continuing the field work which he has been doing in connection with the wild bees of Colorado and carrying on investigations as chairman of the National Research Council committee on the biological relations between flowers and insects. Seven species, two new to science, were added to the list of about eight hundred different kinds of wild bees in Colorado. Through the generous cooperation of B. Preston Clark, Frank E. Watson collected about 11,000 specimens of insects, lower invertebrates, fishes and reptiles in Haiti and also enriched the museum exhibition and study series of insects by field work near New York City.

Work on the anthropology of the Southwest, which was commenced in 1909, was continued by Earl H. Morris, especially in Aztec, New Mexico. This work has followed exploration of the Pueblo Bonito through the gift of Mr. Frederick E. Hyde and Mr. B. T. B. Hyde, the results of which were published in 1920 in the volume on the Pueblo Bonito and furnish important data for comparative study of these cultures. This work has yielded results of great interest and the ruins have proved in many ways the most complete record of the past history of this region. It was early decided not to destroy these ruins but to preserve them and the excavation was carried on with utmost care, preservation proceeding step by step with the digging. As a result, the museum was able to present this monument of Aztec to the United States, in the name of Archer M. Huntington. Clark Wissler examined some archeological sites in New York State along the Hudson, where evidences of prehistoric occupation were discovered and some curious stone works uncovered. Arrangements have been made for more extensive excavation. Earl H. Morris, accompanied by Charles L. Bernheimer, explored part of southern Utah, located a number of heretofore unknown prehistoric ruins there which will be thoroughly examined in the near future and made a general reconnaissance of the Navajo Mountain region of New Mexico.

HENRY FAIRFIELD OSBORN
AMERICAN MUSEUM OF NATURAL HISTORY
MAY 29, 1923

THE EDWARD K. DUNHAM LECTURESHIP FOR THE PROMOTION OF MEDICAL SCIENCE

EDWARD KELLOGG DUNHAM died on April 15, 1922. He was a pathologist and bacteriologist whose training, as subsequent events were to show, was much in advance of his period.