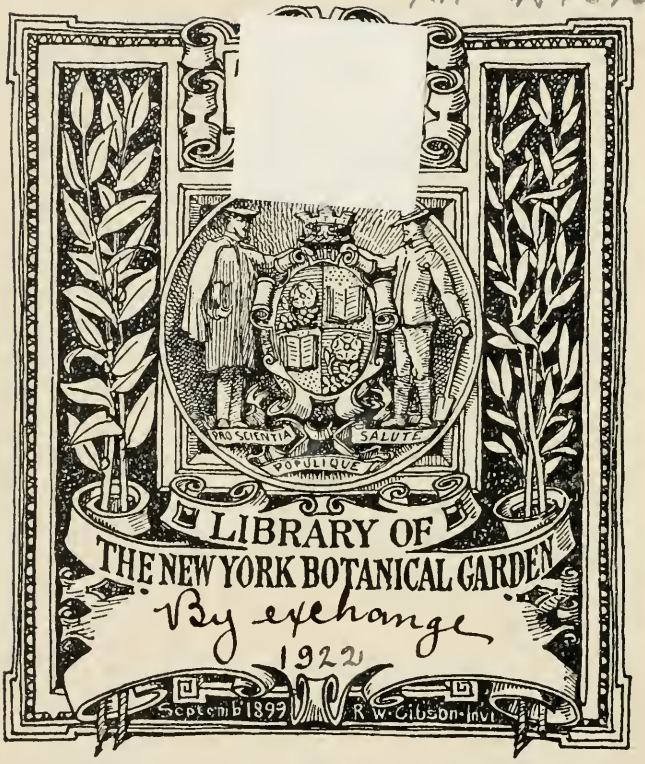
FOR·THE·INCREASE
AND·DIFFVSION·OF
KNOWLEDGE·AMONGMEN
PER ORBEM
SMITHSONIAN
INSTITVTION
WASHINGTON·1846

XA N7896


PRO SCIENTIA
SALUTE
POPULIQUE
LIBRARY OF
THE NEW YORK BOTANICAL GARDEN
By exchange
1922
Septemb 1899
R. W. Gibson Invt.

South Front of Natural History Building, United States National Museum.

SMITHSONIAN INSTITUTION

UNITED STATES NATIONAL MUSEUM

REPORT ON THE PROGRESS AND CONDITION OF THE UNITED STATES NATIONAL MUSEUM FOR THE YEAR ENDING JUNE 30, 1921

WASHINGTON
GOVERNMENT PRINTING OFFICE
1921

XA
.N7896
1921

UNITED STATES NATIONAL MUSEUM,
UNDER DIRECTION OF THE SMITHSONIAN INSTITUTION,
Washington, D. C., September 30, 1921.

SIR: I have the honor to submit herewith a report upon the present condition of the United States National Museum and upon the work accomplished in its various departments during the fiscal year ending June 30, 1921.

Very respectfully,

WILLIAM DEC. RAVENEL,
Administrative Assistant to the Secretary,
In charge of the United States National Museum.

Dr. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

CONTENTS.

	Page.
Staff of Museum	7
Inception and history	9
Operations of the year	15
Appropriations	15
Buildings and equipment	16
Collections	18
Freer collections	19
Loeb collection of chemical types	20
Cooperation of the executive departments	20
Partello bequest	20
Visitors	21
Publications	23
Library	23
Photographic laboratory	24
Meetings and congresses	24
Organization and staff	32
Necrology	34
Reports on the collections:	39
Department of biology, by Leonhard Stejneger, head curator	47
Department of geology, by George P. Merrill, head curator	81
Department of arts and industries, W. deC. Ravenel, director:	
Textiles, medicine, woods, and foods, by F. L. Lewton	97
Mechanical technology, by Carl W. Mitman	115
Mineral technology, by Carl W. Mitman	121
Graphic arts, by R. P. Tolman	123
Division of history, by T. T. Belote, curator	131
List of accessions	143
List of publications	199

ILLUSTRATIONS.

South front of Natural History Building of the Museum ..... Facing title

Skeleton of smallest horned dinosaur, Brachyceratops montanensis, from Montana. Collected in 1913; mounted during 1920 and 1921. Facing page 90

Skeleton of an extinct bear from a Pleistocene Cave deposit near Cumberland, Md. Collected in 1915; mounted during 1920 and 1921. Facing page 90

STAFF OF THE UNITED STATES NATIONAL MUSEUM.

[June 30, 1921.]

CHARLES D. WALCOTT, Secretary of the Smithsonian Institution, keeper *ex officio*.
WILLIAM DEC. RAVENEL, Administrative assistant to the Secretary, in charge of the United States National Museum.

SCIENTIFIC STAFF.

DEPARTMENT OF ANTHROPOLOGY:

Walter Hough, acting head curator.

Division of Ethnology: Walter Hough, curator; J. W. Fewkes, collaborator; Arthur P. Rice, collaborator.

Section of Musical Instrument: Hugo Worch, custodian.

Division of American Archeology: Neil M. Judd, curator; R. G. Paine, aid; Philip A. Means, collaborator.

Division of Old World Archeology: I. M. Casanowicz, assistant curator.

Division of Physical Anthropology: Aleš Hrdlička, curator.

Associates in Historic Archeology: Paul Haupt, Cyrus Adler.

DEPARTMENT OF BIOLOGY:

Leonhard Stejneger, head curator; James E. Benedict, assistant curator.

Division of Mammals: Gerrit S. Miller, jr., curator.

Division of Birds: Robert Ridgway, curator; Charles W. Richmond, associate curator; J. H. Riley, aid; Edward J. Brown, collaborator.

Section of Birds' Eggs: Bradshaw H. Swales, custodian.

Division of Reptiles and Batrachians: Leonhard Stejneger, curator; Doris M. Cochran, aid.

Division of Fishes: Barton A. Bean, assistant curator.

Division of Insects: L. O. Howard, honorary curator; J. M. Aldrich, associate curator; B. Preston Clark, collaborator.

Section of Hymenoptera: S. A. Rohwer, custodian; W. M. Mann, assistant custodian.

Section of Myriapoda: O. F. Cook, custodian.

Section of Diptera: J. M. Aldrich, in charge; Charles T. Greene, assistant custodian.

Section of Muscoid Diptera: C. H. T. Townsend, custodian.

Section of Coleoptera: E. A. Schwarz, custodian.

Section of Lepidoptera: Harrison G. Dyar, custodian; William Schaus, assistant custodian.

Section of Orthoptera: A. N. Caudell, custodian.

Section of Hemiptera: Edmund H. Gibson, custodian; W. L. McAtee, acting custodian.

Section of Forest Tree Beetles: A. D. Hopkins, custodian.

Division of Marine Invertebrates: Waldo L. Schmitt, curator; C. R. Shoemaker, assistant curator; H. K. Harring, custodian of the rotatoria; Mrs. Harriet Richardson Searle, collaborator; Max M. Ellis, collaborator.

Division of Mollusks: William H. Dall, honorary curator; Paul Bartsch, curator; William B. Marshall, assistant curator; Mary Breen, collaborator.

Section of Helminthological Collections: C. W. Stiles, custodian; B. H. Ransom, assistant custodian.

Division of Echinoderms: Austin H. Clark, curator.

DEPARTMENT OF BIOLOGY—Continued.

Division of Plants (*National Herbarium*): Frederick V. Coville, honorary curator; W. R. Maxon, associate curator; J. N. Rose, associate curator; P. C. Standley, assistant curator; Emery C. Leonard, aid; Ellsworth P. Killip, aid.

Section of Grasses: Albert S. Hitchcock, custodian.

Section of Cryptogamic Collections: O. F. Cook, custodian.

Section of Higher Algae: W. T. Swingle, custodian.

Section of Lower Fungi: D. G. Fairchild, custodian.

Sections of Diatoms: Albert Mann, custodian.

Associates in Zoology: C. Hart Merriam, W. L. Abbott, Mary J. Rathbun, David Starr Jordan.

DEPARTMENT OF GEOLOGY:

George P. Merrill, head curator.

Division of Physical and Chemical Geology (systematic and applied): George P. Merrill, curator; E. V. Shannon, assistant curator.

Division of Mineralogy and Petrology: F. W. Clarke, honorary curator; W. F. Foshag, assistant curator; Frank L. Hess, custodian of rare metals and rare earths.

Division of Paleontology: R. S. Bassler, curator; Charles E. Resser, assistant curator; Jessie G. Beach, aid.

Section of Invertebrate Paleontology: T. W. Stanton, custodian of Mesozoic collection; William H. Dall, associate curator of Cenozoic collection; T. Wayland Vaughan, custodian of Madreporarian corals.

Section of Vertebrate Paleontology: Charles W. Gilmore, associate curator; James W. Gidley, assistant curator of fossil mammals.

Section of Paleobotany: David White, associate curator; F. H. Knowlton, custodian of Mesozoic plants.

Associates in Paleontology: Frank Springer, E. O. Ulrich.

Associate in Petrology: Whitman Cross.

DEPARTMENT OF ARTS AND INDUSTRIES:

William deC. Ravenel, director.

Division of Textiles: Frederick L. Lewton, curator; Mrs. E. W. Rosson, aid.

Section of Wood Technology: William M. N. Watkins, assistant curator.

Division of Medicine: Charles Whitebread, assistant curator.

Divisions of Mineral and Mechanical Technology: Carl W. Mitman, curator; Chester G. Gilbert, associate curator: Paul E. Garber, aid: George W. Spier, custodian of watches.

Division of Graphic Arts: R. P. Tolman, assistant curator.

Section of Photography: A. J. Olmsted, custodian.

DIVISION OF HISTORY:

T. T. Belote, curator; Charles Carey, assistant; J. B. Leavy, philatelist.

ADMINISTRATIVE STAFF.

Chief of correspondence and documents, H. S. Bryant.
Superintendent of buildings and labor, J. S. Goldsmith.
Editor, Marcus Benjamin.
Engineer, C. R. Denmark.
Disbursing agent, W. I. Adams.
Photographer, A. J. Olmsted.
Property clerk, W. A. Knowles.
Assistant librarian, N. P. Scudder.
Shipper, L. E. Perry.

REPORT ON THE PROGRESS AND CONDITION OF THE UNITED STATES NATIONAL MUSEUM FOR THE YEAR ENDING JUNE 30, 1921.

By William deC. Ravenel,

Administrative Assistant to the Secretary,
In charge of the United States National Museum.

INCEPTION AND HISTORY.

The Congress of the United States in the act of August 10, 1846, founding the Smithsonian Institution recognized that an opportunity was afforded, in carrying out the large-minded design of Smithson, to provide for the custody of the museum of the Nation. To this new establishment was therefore intrusted the care of the national collections, a course that time has fully justified.

In the beginning the cost of maintaining the museum side of the Institution's work was wholly paid from the Smithsonian income; then for a time the Government bore a share, and during the past 40 years Congress has voted the entire funds for the expenses of the Museum, thus furthering one of the primary means "for the increase and diffusion of knowledge among men" without encroaching upon the resources of the Institution.

The museum idea was inherent in the establishment of the Smithsonian Institution, which in its turn was based upon a 10 years' discussion in Congress and the advice of the most distinguished scientific men, educators, and intellectual leaders of the Nation of 75 years ago. It is interesting to note how broad and comprehensive were the views which actuated our lawmakers in determining the scope of the Museum, a fact especially remarkable when it is recalled that at that date no museum of considerable size existed in the United States, and the museums of England and of the Continent of Europe were still to a large extent without a developed plan, although containing many rich collections.

The Congress which passed the act of foundation enumerated as within the scope of the Museum "all objects of art and of foreign and curious research and all objects of natural history, plants, and geological and mineralogical specimens belonging to the United States,"

thus stamping the Museum at the very outset as one of the widest range and at the same time as the Museum of the United States. It was also appreciated that additions would be necessary to the collections then in existence, and provision was made for their increase by the exchange of duplicate specimens, by donations, and by other means.

If the wisdom of Congress in so fully providing for a museum in the Smithsonian law challenges attention, the interpretation put upon this law by the Board of Regents within less than six months from the passage of the act can not but command admiration. In the early part of September, 1846, the Regents took steps toward formulating a plan of operations. The report of the committee appointed for this purpose, submitted in December and January following, shows a thorough consideration of the subject in both the spirit and letter of the law. It would seem not out of place to cite here the first pronouncement of the board with reference to the character of the Museum:

"In obedience to the requirements of the charter,[1] which leaves little discretion in regard to the extent of accommodations to be provided, your committee recommend that there be included in the building a museum of liberal size, fitted up to receive the collections destined for the Institution. * * *

"As important as the cabinets of natural history by the charter required to be included in the Museum, your committee regard its ethnological portion, including all collections that may supply items in the physical history of our species, and illustrate the manners, customs, religions, and progressive advance of the various nations of the world; as, for example, collections of skulls, skeletons, portraits, dresses, implements, weapons, idols, antiquities, of the various races of man. * * * In this connexion your committee recommend the passage of resolutions asking the cooperation of certain public functionaries and of the public generally in furtherance of the above objects.

"Your committee are further of opinion that in the Museum, if the funds of the Institution permit, might judiciously be included various series of models illustrating the progress of some of the most useful inventions; such, for example, as the steam engine from its earliest and rudest form to its present most improved state; but this they propose only so far as it may not encroach on ground already covered by the numerous models in the Patent Office.

"Specimens of staple materials, of their gradual manufacture, and of the finished product of manufactures and the arts may also, your

[1] Since the Institution was not chartered in a legal sense, but established by Congress, the use of the word "charter" in this connection was not correct.

committee think, be usefully introduced. This would supply opportunity to examine samples of the best manufactured articles our country affords, and to judge her gradual progress in arts and manufactures. * * *

"The gallery of art, your committee think, should include both paintings and sculpture, as well as engravings and architectural designs; and it is desirable to have in connexion with it one or more studios in which young artists might copy without interruption, being admitted under such regulations as the board may prescribe. Your committee also think that, as the collection of paintings and sculpture will probably accumulate slowly, the room destined for a gallery of art might properly and usefully meanwhile be occupied during the sessions of Coongress as an exhibition room for the works of artists generally; and the extent and general usefulness of such an exhibit might probably be increased if an arrangement could be effected with the Academy of Design, the Arts Union, the Artists' Fund Society, and other associations of similar character, so as to concentrate at the metropolis for a certain portion of each winter the best results of talent in the fine arts."

The important points in the foregoing report are (1) that it was the opinion of the Regents that a museum was requisite under the law, Congress having left no discretion in the matter; (2) that ethnology and anthropology, though not specially named, were yet as important subjects as natural history; (3) that the history of the progress of useful inventions and the collection of the raw materials and products of the manufactures and arts should also be provided for; (4) for the gallery of art the committee had models in existence, and they proposed, pending the gathering of art collections, which would of necessity be slow, to provide for loan exhibitions by cooperating with art academies and societies.

In the resolutions which were adopted upon the presentation of the report, a museum was mentioned as "one of the principal modes of executing the act and trust."[2] The work was to go forward as the funds permitted, and, as is well known, the maintenance of the Museum and the library was long ago assumed by Congress, the Institution taking upon itself only so much of the necessary responsibility for the administration of these and subsequent additions to its activities as would weld them into a compact whole, which together

[2] *Resolved,* That it is the intention of the act of Congress establishing the Institution, and in accordance with the design of Mr. Smithson, as expressed in his will, that one of the principal modes of executing the act and the trust is the accumulation of collections of specimens and objects of natural history and of elegant art, and the gradual formation of a library of valuable works pertaining to all departments of human knowledge, to the end that a copious storehouse of materials of science, literature, and art may be provided which shall excite and diffuse the love of learning among men, and shall assist the original investigations and efforts of those who may devote themselves to the pursuit of any branch of knowledge.

form a unique and notable agency for the increase and diffusion of knowledge, for the direction of research, for cooperation with departments of the Government and with universities and scientific societies in America, and likewise afford a definite correspondent to all scientific institutions and men abroad who seek interchange of views or knowledge with men of science in the United States.

Since that early day the only material changes in the scope of the Government museum have been the addition of a department of American history, intended to illustrate by an appropriate assemblage of objects the lives of distinguished personages, important events, and the domestic life of the country from the colonial period to the present time, and provision for the separate administration of the National Gallery of Art as a coordinate unit under the Smithsonian Institution. From 1906 to 1920 the Gallery was administered as the department of fine arts of the Museum.

The development of the Museum has been greatest in those subjects which the conditions of the past three-quarters of a century have made most fruitful—the natural history, geology, ethnology, and archeology of the United States, supplemented by many collections from other countries. The opportunities for acquisition in these directions have been mainly brought about through the activities of the scientific and economic surveys of the Government, many of which are the direct outgrowths of earlier explorations, stimulated or directed by the Smithsonian Institution. The Centennial Exhibition of 1876 afforded the first opportunity for establishing a department of the industrial arts, of which the fullest advantage has been taken, but the department or gallery of the fine arts made little progress, though not from lack of desire or appreciation, until 1906, when circumstances led to its definite recognition. The historical collections have been greatly augmented within the past few years by large collections illustrative of the World War, including a comprehensive series of aircrafts and their accessories.

While it is the primary duty of a museum to preserve the objects confided to its care, as it is that of a library to preserve its books and manuscripts, yet the importance of public collections rests not upon the mere basis of custodianship nor upon the number of specimens assembled and their money value, but upon the use to which they are put. Judged by this standard, the National Museum may claim to have reached a high state of efficiency. From an educational point of view it is of great value to those persons who are so fortunate as to reside in Washington or who are able to visit the Nation's Capital. In its well-designated cases, in which every detail of structure, appointment, and color is considered, a selection of representative objects is placed on view to the public, all being carefully labeled individually and in groups. The child as well as the adult has been

provided for and the kindergarten pupil and the high-school scholar can be seen here supplementing their class-room games or studies. Under authority from Congress the small colleges and higher grades of schools and academies throughout the land, especially in places where museums do not exist, are also being aided in their educational work by sets of duplicate specimens, selected and labeled to meet the needs of both teachers and pupils.

Nor has the elementary or even the higher education been by any means the sole gainer from the work of the Museum. To advance knowledge, to gradually extend the boundaries of learning, has been one of the great tasks to which the Museum, in consonance with the spirit of the Institution, has set itself from the first. Its staff, though chiefly engaged in the duties incident to the care, classification, and labeling of collections in order that they may be accessible to the public and to students, has yet in these operations made important discoveries in every department of the Museum's activities, which have in turn been communicated to other scholars through its numerous publications. But the collections have not been held for the study of the staff nor for the scientific advancement of those belonging to the establishment. Most freely have they been put at the disposal of investigators connected with other institutions, without whose help the record of scientific progress based upon the material in the Museum would have been greatly curtailed. When it is possible to so arrange, the investigator comes to Washington; otherwise such collections as he needs are sent to him, whether he resides in this country or abroad. In this manner practically every prominent specialist throughout the world interested in the subjects here well represented has had some use of the collections and thereby the National Museum has come to be recognized as a conspicuous factor in the advancement of knowledge wherever civilization has a foothold.

OPERATIONS OF THE YEAR.

APPROPRIATIONS.

The maintenance and operations of the National Museum for the fiscal year from July 1, 1920, to June 30, 1921, were provided for by the following amounts appropriated in the sundry civil bill approved June 5, 1920, and in the first and second deficiency bills approved on March 1 and June 16, 1921, respectively:

Preservation of collections	$312,620.00
Furniture and fixtures	20,000.00
Heating and lighting	74,000.00
Building repairs	10,000.00
Books	2,000.00
Postage	500.00
Printing and binding	64,202.70
	483,322.70

The item for preservation of collections, from which are paid the administrative, scientific, preparatorial, and clerical staff, the watch, labor, and cleaning force, and the cost of all preservatives, has remained at $300,000 from 1911 until the present time. The additional $12,620 this year was given for the extension of the service to cover an additional building—the Freer Gallery of Art—for which it provided watchmen, cleaners, and clerical help and the necessary miscellaneous supplies needed in connection therewith. It afforded no cessation of the strictest economy by means of which only is it possible to continue the operations of the Museum. Present conditions can perhaps best be realized when it is mentioned that 10 years ago the item of $300,000 was considered insufficient to cover the needs of the Museum in these lines. Within this half decade, with its tremendous decrease in the purchasing power of the dollar, over 3,000,000 specimens have been added to the collections, the scope of the Museum has been materially enlarged, and an additional building has been added to the Museum group, aside from the Freer Gallery. The appropriation alone has remained stationary.

During this period increases have been granted, however, in the items for heating and lighting and for printing and binding, owing to the increased cost of coal and the tremendous increase in the cost of labor, paper, and other materials used in printing. On the other hand, even with the greatly extended service, the item for building

repairs is now $5,000 less that it was 10 years ago, when the Natural History Building was new and naturally required comparatively little in the way of repairs. The amount for furniture and fixtures is likewise $5,000 less than it was for a number of years prior to the war when prices of labor and material were from 50 to 75 per cent lower.

Of the $64,202.70 appropriated this year for printing, $37,500 was the regular item, and $26,702.70 a deficiency item for the completion during the year of an unusual accumulation of work at the Government Printing Office. The Museum printing had for several years been held back for lack of sufficient available funds.

A comparison of the operating expenses of the United States National Museum with museums of similar size and scope in this country and abroad is extremely interesting, and brings out very strongly the inadequacy of the appropriations, especially with reference to the salaries paid to all classes of its employees. The scientific staff is paid from 40 to 50 per cent less than scientific men of the same grade in similar museums elsewhere.

BUILDINGS AND EQUIPMENT.

The Aircraft Building was opened to the public on October 7, 1920, whereby the Museum added about 14,000 square feet of floor space to its exhibition halls. This metal structure, erected by the War Department on the Smithsonian Reservation in 1917 for the use of the United States Signal Service, was transferred to the custody of the Smithsonian after the close of the war. In it has been assembled a collection of aircraft and accessories in production during the war period.

In the upkeep of the buildings the more important work performed in the Natural History Building included the construction of a locker room for the engineer force at the east entrance, ground floor; the painting of the ceiling and side walls of the corridor and the rooms in the east hall, ground floor, and of the corridor around the south, east, and west sides of the auditorium; the laying of cork flooring in the west and northwest ranges, ground floor; installing rubber interlocking tile flooring in two elevators at the north entrance; and the painting of all concrete floors in corridors of the west hall, ground floor; also, the painting of the exterior surfaces of all metal window frames on the first and second floors and the wooden frames and sashes on the ground and third floors, and the preparation of the east court and planting the same with lawn grass.

In the Arts and Industries Building the interior work included the pointing up and painting of walls and ceilings in several exhibition halls and office rooms and, in the latter, the replacing of worn-out floors with new ones of pine. On the exterior, the snow brakes

on the roofs were repaired, the roofs painted, and a beginning made of painting the exterior woodwork of all windows of the building. On the Smithsonian Building the only work of importance was the painting of the exterior woodwork of the windows in the east end.

When the Freer Building was planned, arrangements were made to procure heat, light, and power from the central heating plant, which the Institution was assured would be in a position to supply the same before needed. In the absence of such service, however, the Freer Gallery was connected with the Museum power plant, which necessitated the operation of the old boilers in the Arts and Industries Building during the coldest portion of the heating season. During this year the use of bituminous coal in these boilers was made possible by the removal of the old flat grates and the installation of hand-operated stokers. The antiquated blow-off valve combination on the boilers in the Natural History Building was also replaced.

Though the winter was a comparatively mild one, heat was furnished the buildings from October 6, 1920, to May 20, 1921, with a consumption of 3,224 tons of coal. While the cheapest grade is used, the cost of coal averaged $9.59 a ton. At one time it reached $10.70 a ton, about three times the contract price of 1916. The amount of electric current generated was 367,875 kilowatt hours, at a cost of 3.285 cents a kilowatt hour. The ice plant, in operation for 4,017 hours, produced 324.7 tons of ice, supplying all the buildings under the Smithsonian Institution on the Mall. The increasing demand for ice will necessitate a new machine within a few years.

The power plant remained shut down during July and August, 1920, and from June 4 to 30, 1921. It is more economical to purchase needed electric current than to operate the Museum plant, since current can be bought during the summer months at 2½ cents a kilowatt hour by Government departments owning generating plants. This closing down of the plant permits also its operation during the year with fewer men—as the employees then take the greater portion of their leave—and allows a general overhauling of the machinery, obviating trouble during the heating season.

Less trouble was experienced during the year than in the past four years in procuring the necessary labor, and for the first time in several years all of the men employed met the civil-service requirements. While the quality of service rendered was not as high standard as desired, it proved fairly satisfactory. This can be readily understood when it is considered that the salaries of the assistant engineers and electricians are from 75 to 90 per cent less than those paid in private business in Washington.

There were acquired during the year 62 exhibition cases (50 steel and 12 wooden), and 165 pieces of storage, laboratory and office furniture. Of the exhibition cases, 12 were made in the Museum, the other 50 transferred to the Museum by the Department of the Interior, having been used at the Panama-Pacific International Exposition at San Francisco in 1915.

Of the 165 pieces of storage, laboratory and office furniture, 96 pieces were manufactured in the Museum workshops and 69 were purchased. It is becoming more and more the policy of the Museum to manufacture its own furniture, as in most cases it can be done more economically, owing to the difference in the cost of labor.

At the close of the fiscal year, there were on hand 3,647 exhibition cases and bases and 11,508 pieces of storage, laboratory and office furniture. In addition to these, there were 46,650 wooden unit drawers, 4,712 metal unit drawers, 1,047 wooden unit boxes, 224 double unit boxes, and 11,244 insect drawers; also 752 winged frames, 5,885 special drawers with paper bottoms, and 11,445 special drawers with compo bottoms.

COLLECTIONS.

The total number of specimens acquired by the Museum during the year was approximately 338,120. Received in 1,730 separate accessions, they were classified and assigned as follows: Anthropology, 3,824; zoology, 196,077; botany, 55,436; geology, mineralogy, and petrology, estimated, 21,772; paleontology, estimated, 50,000; textiles, wood, medicine, foods, and other miscellaneous organic products, 943; mineral technology, 466; mechanical technology, 162; graphic arts, 2,296; and history, 7,144.

Additional material, to the extent of 794 lots, mainly geological, was received for special examination and report. While this free determination of material sent in from all parts of the country requires considerable time on the part of specialists, it is not without advantage to the Museum in furnishing occasional desirable specimens and in recording new localities.

About 25,000 specimens were sent out in exchange, for which the Museum received much valuable material specially desired for the collections.

The distribution of specimens for educational work was broadened this year to include objects from the department of anthropology. Of the 6,000 specimens distributed as gifts in aid of education during the period of this report, over 5,000 were comprised in classified and labeled sets of specimens prepared for schools and colleges, nearly 2,000 being ores and minerals. The other subjects represented were rocks, rock weathering and soil formation, mollusks, marine in-

vertebrates, fishes, birds and birds' eggs, insects, pottery, basketry, and prehistoric implements. Another 10,000 specimens left the Museum temporarily as loans to students and investigators in many fields of science.

The reports of the head curators in the natural history departments and of the curators in the other branches of the museum, beginning on page 39, give in detail the additions to and the work upon their collections during the year.

FREER COLLECTIONS.

In the 1920 report it was noted that the building for the Freer collections was nearing completion and the collections were being shipped to Washington from Detroit. On April 31, 1921, the final work in the construction of the building was completed by the George A. Fuller Co., and the structure was formally transferred to the Smithsonian Institution, being accepted on May 3, 1921, just four years and seven months after ground was broken for its erection. That this result was not reached earlier, as was anticipated at the beginning, was largely due to unforeseen delays incident to the World War, but the work was at all times conducted with that deliberation and attention to details necessary to stability and permanency of structure, and these it is believed have been obtained. Planned with special reference to accommodating a collection whose various units were known and of affording unusual facilities for study and research, the building is an object of art in itself and is bound to become a mecca for art lovers from all over the world.

This year witnessed also the construction, under the officer in charge of public buildings and grounds, of the driveways and walks leading to the Freer Gallery and the seeding of the land immediately surrounding it, which has now been brought up to the standard of the balance of the Smithsonian Reservation.

During the summer and autumn of 1920 the remaining portions of the Freer collections were brought to Washington from Detroit and stored in the building. The work of unpacking and installing the specimens was begun in the late autumn, under the able direction of Miss Katharine N. Rhoades, who had been associated with Mr. Freer in their care for some years. It is anticipated that some time must elapse before the exhibits are all in readiness and the halls can be opened to visitors.

In December, 1920, Mr. John E. Lodge, curator of the department of Chinese and Japanese art in the Boston Museum of Fine Arts, was appointed curator of the Freer Gallery and placed in charge. The Freer Gallery is being administered as an independent unit of the National Gallery of Art, but the heating, lighting, and guarding of the building continues to be carried on in connection with the

National Museum system, since the Freer Gallery is dependent upon the Museum plant for heat, light, and power.

LOEB COLLECTION OF CHEMICAL TYPES.

Practically no progress was made this year in establishing the Loeb collection of chemical types owing to the difficulty experienced in moving to Washington the steel storage cabinet and other property purchased from the Morris Loeb fund, and which are still in the library of the Chemists' Club of New York City.

Numerous specimens for the type collection have been promised and will be turned over to the National Museum as soon as the storage cabinet, especially built to protect delicate specimens from deterioration, has been received and installed in its permanent place.

COOPERATION OF THE EXECUTIVE DEPARTMENTS.

Belonging as it does to the Nation, the National Museum receives important assistance from other governmental agencies. Particularly was this true during the fiscal year 1921. Credit is due to the Navy Department for transporting and installing in the Museum building many attractive exhibits in the World War collections; to the War Department for similar service, including the detail to the Museum of one officer for several months; to the Departments of Agriculture, Commerce, and the Interior and the Bureau of American Ethnology for many valuable contributions of specimens and much assistance in classifying and labeling objects in the Museum; to the Interior Department also for transferring exhibition cases no longer needed by it; and to the Post Office Department for large series of postage stamps.

This cooperation is not entirely one-sided. The Museum renders aid to the executive departments whenever possible, as evidenced by the work of Dr. Aleš Hrdlička for the Department of Justice, by which over a million of dollars in land and money was saved for the Indians.

PARTELLO REQUEST.

Under the terms of the will of Dwight J. Partello, who died on August 13, 1920, the Museum is bequeathed his collection of musical instruments, bows, and cases, gathered during many years of collecting, 37 paintings, a gold and silver box or casket presented to Mr. Partello by the Czar of Russia, and a diploma and medal awarded him for his exhibit of violins at the Chicago Exposition in 1893. The unique collection illustrating the Italian school of violins is well known and of great intrinsic value. It numbers 25 instruments of the violin family, made by the best masters in pure construction, including Amati, Stradavari, Bergonzi, Guarnerius, and others. At the end of the fiscal year Mr. Partello's estate had not been settled.

The present tendency of museums to aid in the appreciation of the art of music, as evidenced by the lecture-recitals and concerts, now forming a regular feature in many museums of the country, makes it incumbent upon the National Museum to administer this collection so as best to benefit the public. The Museum has already a large and diversified collection of the musical instruments of both aboriginal and civilized peoples, exhibited under such conditions at present, however, that its true value can not be appreciated. It is expected that a better installation can be provided when more space becomes available which will undoubtedly lead to additional contributions needed to fill existing gaps.

VISITORS.

As customary the Museum exhibition halls were open free to the public from 9 a. m. to 4.30 p. m. on all week days during the year (holidays included), with one exception. On May 21, 1921, the various Museum buildings were closed all day out of respect to the late Chief Justice Edward Douglass White, for 10 years a Regent and for 8 years the Chancellor of the Smithsonian Institution.

The Natural History Building was also opened to visitors every Sunday afternoon from 1.30 to 4.30. To accommodate strangers in Washington at inaugural time, this was extended on Sunday, March 6, to all-day service. The exhibition halls in the Smithsonian Building were likewise open on Sunday afternoon, March 27, to afford added opportunity for inspecting the collection of exquisite water-color paintings of wild flowers by Mrs. C. D. Walcott. Sunday opening of all the buildings, though highly desirable, will only be possible when funds are available to provide additional watchmen and other attendants required.

The number of visitors to the Natural History Building during the year aggregated 364,281 for week days and 103,018 for Sundays, being a daily average of 1,167 for the former and 1,981 for the latter. At the Arts and Industries Building the total attendance was 286,397, a daily average of 917. The Aircraft Building, opened to the public for the first time on October 7, 1920 (though subsequently closed from October 14 to November 3, to permit of the installation of a naval airplane) had an attendance of 31,235, an average of 147 persons daily. The total attendance in the Smithsonian Building on week days was 90,097, an average of 288, and on the one Sunday 138.

The following tables show, respectively, the attendance of visitors during each month of the past year, and for each year since 1881, when the building devoted to arts and industries was first occupied.

Number of visitors during the year ending June 30, 1921.

Year and month.	Museum buildings.			Smithsonian Building.
	Arts and Industries.	Natural History.	Aircraft.	
1920.				
July	27,485	37,817	.....	8,891
August	37,645	47,936	.....	10,963
September	32,167	47,813	.....	9,729
October	26,757	43,001	693	7,340
November	17,773	36,251	2,841	5,409
December	15,306	30,044	2,616	4,606
1921.				
January	13,319	27,055	2,541	4,391
February	12,858	26,351	3,157	4,235
March	30,488	54,221	6,382	11,323
April	21,494	37,868	4,316	7,478
May	22,384	42,201	3,795	7,145
June	28,721	36,741	4,894	8,725
Total	286,397	467,299	31,235	90,235

Number of visitors to the Museum and Smithsonian buildings since 1881.

Year.	Museum buildings.			Smithsonian Building.	Year.	Museum buildings.			Smithsonian Building.
	Arts and industries.	Natural History.	Aircraft.			Arts and industries.	Natural History.	Aircraft.	
1881	150,000	.....	.....	100,000	1901–2	173,888	.....	.....	144,107
1882	167,455	.....	.....	152,744	1902–3	315,307	.....	.....	181,174
1883	202,188	.....	.....	104,823	1903–4	220,778	.....	.....	143,988
1884 (half year)	97,661	.....	.....	45,565	1904–5	235,921	.....	.....	149,380
1884–85 (fiscal year)	205,026	.....	.....	105,993	1905–6	210,886	.....	.....	149,661
1885–86	174,225	.....	.....	88,960	1906–7	210,107	.....	.....	153,591
1886–87	216,562	.....	.....	98,552	1907–8	299,659	.....	.....	237,182
1887–88	249,665	.....	.....	102,863	1908–9	245,187	.....	.....	198,054
1888–89	374,843	.....	.....	149,618	1909–10	228,804	50,403	.....	179,163
1889–90	274,324	.....	.....	120,894	1910–11	207,010	151,112	.....	167,085
1890–91	286,426	.....	.....	111,669	1911–12	172,182	281,887	.....	143,134
1891–92	269,825	.....	.....	114,817	1912–13	173,858	319,806	.....	142,420
1892–93	319,930	.....	.....	174,188	1913–14	146,533	329,381	.....	102,645
1893–94	195,748	.....	.....	103,910	1914–15	133,202	321,712	.....	40,324
1894–95	201,744	.....	.....	105,658	1915–16	146,956	381,228	.....	48,517
1895–96	180,505	.....	.....	103,650	1916–17	161,700	407,025	.....	86,335
1896–97	229,606	.....	.....	115,709	1917–18	161,298	401,100	.....	67,224
1897–98	177,254	.....	.....	99,273	1918–19	266,532	[1]132,859	.....	101,504
1898–99	192,471	.....	.....	116,912	1919–20	250,982	422,984	.....	86,013
1899–1900	225,440	.....	.....	133,147	1920–21	286,397	467,299	31,235	90,235
1900–1	216,556	.....	.....	151,563	Total	8,854,641	3,666,796	31,235	5,012,244

[1] Building open only three months of the year.

PUBLICATIONS.

The publications of the year comprised 9 volumes and 60 separate papers. The former consisted of the Annual Report of the Museum for 1920 and Bulletins Nos. 106 (plates), 109, 110, 111, 112, 115, 116, and 117.

Of the 60 papers issued in separate form, three were parts of volume 1 of Bulletin 100; one part of Bulletin 104; one part of volume 20, three of volume 22, and one of volume 23, "Contributions from the United States National Herbarium"; while five were from volume 57, twenty-nine from volume 59, and seventeen from volume 59 of the Proceedings.

In addition to the Museum publications, many contributions based on material in its collections were printed by other bureaus of the Government. All of the publications above referred to are cited in the bibliography forming part of this report. The editorial office, besides supervising the printing of the Museum publications, also has charge of all miscellaneous printing and binding.

The distribution of volumes and separates to libraries and individuals on the regular lists aggregated 75,546 copies, in addition to which some 13,367 copies of the publications of last and previous years were supplied in response to special applications.

LIBRARY.

The library of the Museum is assembled almost exclusively with reference to the working up of the collections, and embraces a wide range of subjects in the sciences and arts, owing to the exceptional diversity of the specimens. The main library is housed in the Natural History Building, while the publications on the useful arts are provided for in the Arts and Industries Building. Moreover, each of the divisions and principal offices has its own sectional library, consisting of the books relating wholly to its subject, which are withdrawn from the main branches and so distributed in order to facilitate the progress of the work. The use of the library and its sections is not, however, restricted to members of the staff, being extended to all properly qualified persons, and this privilege is extensively availed of by the Government scientific bureaus and other establishments in Washington.

The increment during the year, largely obtained through gift and exchange, amounted to 2,041 completed volumes and 2,719 pamphlets, increasing the number of books in the library to 150,067, of which 58,658 are bound volumes and 91,409 pamphlets and unbound papers.

The most important single acquisition to the geological section of the library since the foundation of the department in 1880 was received this year in the gift through Mrs. Francis D. Cleveland of

the library of her brother, the late Dr. Joseph Paxson Iddings, comprising upward of 1,000 books and pamphlets, chiefly on geological subjects. Doctor Iddings, as is well known, was one of America's leading petrologists, and his 40 years' accumulation of author's excerpts in this branch of science was unusually large.

PHOTOGRAPHIC LABORATORY.

In illustrating Museum objects, largely for reproduction in the publications and in copying plans, diagrams, etc., required in connection with the work of the Museum, there were made in the photographic laboratory during the year 1,954 negatives, 11,267 black and white prints, 42 bromide enlargements, 162 panoramas, and 144 lantern slides, besides developing 467 field negatives and mounting 1,008 prints. A number of improvements in the apparatus and equipment make it much easier to handle the work in the laboratory.

MEETINGS AND CONGRESSES.

As customary the National Academy of Sciences held its annual meeting in the Natural History Building of the Museum on April 25, 26, and 27, 1921, using the auditorium for the scientific sessions, open to the public, on the afternoon and evening of the 25th, and on the morning and afternoon of the 26th; while the adjoining committee room, No. 42–43, was used for the business meetings extending through the forenoon of the 27th.

The evening session was devoted to an address by His Serene Highness Albert I, Prince of Monaco, Agassiz medalist, and was followed by a reception to the Prince in the halls assigned to the National Gallery of Art. Other speakers before the academy and their subjects included: Gilbert N. Lewis, "Ultimate rational units"; William Duane, "The quantum law and the Doppler effect"; P. W. Bridgman, "Preliminary measurements of the effect of high pressures on the thermal conductivities of liquids"; C. E. Mendenhall and Max Mason, "The stratification of suspended particles"; J. R. Carson, "Radiation from transmission lines"; J. R. Carson and J. J. Gilbert, "Transmission characteristics of the submarine cable"; W. F. Durand, "Application of the principle of similitude to the hydraulic problem of the surge chamber"; E. H. Hall, (1) "Theories of osmotic pressure," and (2) "Comments on the Borelius space-lattice theory of the metallic state"; G. P. Merrill, "Metamorphism in meteorites"; W. M. Davis, (1) "The Island of Tagula, New Guinea, its satellites and coral reefs," and (2) "The shallow seas of Australasia"; A. G. Webster, (1) "On the radiation of energy from coils in wireless telegraphy," (2) "On the vibration of gun barrels," and (3) "On the problem of steering an automobile around a

corner"; Edward Kasner, "A model of the solar gravitational field"; George D. Birkhoff, "On the problem of three or more bodies"; L. E. Dickson, (1) "Quaternions and their generalizations," and (2) "Investigations in algebra and number theory"; H. F. Blichfeldt, "On the approximate solutions in integers of a set of linear equations"; H. N. Russell, "A provisional theory of new stars"; F. Schlesinger, "The compilation of star catalogues by means of a doublet camera"; Vernon Kellogg, "The National Research Council"; W. S. Adams, "The order of the stars"; C. G. Abbot, "Cooking with solar heat on Mount Wilson"; F. W. Clarke, "The evolution of matter"; Albert Einstein, "Relativity"; Austin H. Clark, "The classification of animals"; L. O. Howard, "Attempts to acclimatize *Aphelinus mali* in France, South Africa, New Zealand, and Uruguay"; C. D. Walcott, "Note on structure of the trilobite"; J. C. Merriam, "Origin and history of the Ursidae or bears in the Western Hemisphere, with particular reference to the bearing of this question on problems of geographical history"; H. F. Osborn, "The evolution, phylogeny, and classification of the Proboscidae"; Simon Flexner, "Experiments in epidemiology"; Graham Lusk, "Effect of administering various simple metabolites upon the heat production of the dog"; Jacques Loeb, "The physical and chemical behavior of proteins"; Francis G. Benedict, Edward L. Fox, and Marion L. Baker, "The skin temperature of Pachyderms"; L. R. Jones, "The temperature factor in phytopathology"; T. B. Osborne and L. B. Mendel, "Results of feeding experiments with mixtures of foodstuffs in unusual proportions"; C. B. Davenport, "Population"; and E. L. Thorndike, "Measuring higher grades of intelligence." The following papers were presented by title only: J. M. Clarke, "Life of James Hall, of Albany, geologist and paleontologist, 1811–1890"; Franz Boas, "The difference between variable series"; Raymond Pearl and Charmian Howell, "A study of specific forces of mortality."

The National Research Council used the auditorium on the evening of February 21, 1921, for a lecture by Dr. C. H. Herty on fundamental chemistry, illustrated by a small exhibit displayed in the adjoining foyer.

To afford the many men and women throughout the country interested in venereal disease control work an opportunity of hearing lectures by leading authorities on the subject, the Bureau of Public Health Service, Treasury Department, conducted an Institute on Venereal Disease Control in the auditorium and committee rooms, from November 22 to December 4, including motion-picture demonstrations on the evenings of November 26 and 29 and December 1, and a meeting of the American Association of Women in Public Health on the evening of November 24. Rooms 45 and 46 and the

auditorium lobby were devoted to the accompanying exhibits. The institute was followed by an All-American Conference on Venereal Diseases, held in Washington from December 6 to 11, 1920, the large public meetings being in the Museum auditorium, while rooms 44 and 45 were given over to registration, exhibits, etc.

For showing moving pictures of various subjects the Public Health Service also had the use of the auditorium on the afternoon of November 12 and on the mornings of January 31, March 9, 10, and 25, and of rooms 42–43 for a noontime meeting on February 21.

The Department of Agriculture, because of its proximity, made frequent use of the facilities afforded by the Museum. On the evening of March 21, four Department of Agriculture motion pictures were shown to an audience composed principally of department employees. The auditorium was again used on the afternoon of March 2, when the Southern Commercial Congress presented to the Department of Agriculture a replica of the painting by Szeldaties of the late David Lubin, the founder of the International Institute of Agriculture, with headquarters at Rome, Italy, under which 53 nations were federated. Mr. Lubin, from the time of the organization until his death, was the American delegate appointed by the State Department. The leadership of Mr. Lubin in directing the activities of the Southern Commercial Congress resulted in the Federal farm loan act and other vital State and Federal legislation relating to the economic stability of the country. Through his creative genius he federated the world, based on agriculture, and it was the only tie that held during the World War. The International Institute of Agriculture was the only international body where the belligerent countries did not recall their delegates. Dr. Clarence J. Owens, director general of the Southern Commercial Congress, presided at the meeting and made the presentation. Other speakers were the Hon. Edwin T. Meredith, Secretary of Agriculture; Hon. D. N. Fletcher, of Florida; Hon. James Duval Phelan and Hon Julius Kahn, of California; and the Italian ambassador, Senator Vittorio Rolandi Ricci, who spoke in his native tongue, being interpreted by Madame Olivia Rossetti Agresti, secretary to David Lubin. A message from the King of Italy was read at the meeting.

For the benefit of the members of the department's staff who missed this opportunity to hear Madame Agresti, a special lecture by this interesting speaker was arranged in the auditorium on the evening of April 14, when she spoke on international economic problems.

The Federal Horticultural Board held an all-day meeting in Room 42–43 on December 20, to consider the advisability of restricting importation of fruits and vegetables in raw or unmanufactured state from Cuba, the Bahamas, Jamaica, Canal Zone, India, Philippines,

etc., on account of the citrus black fly. On May 16 and 17 the board had the auditorium for an important conference of persons interested in the cotton industry with reference to damage threatened by the pink boll worm.

The Forest Service had the auditorium on four forenoons—on January 25 and February 16, for general meetings of the employees of the service, for showing lantern slides; on March 25, for a meeting of employees in connection with official work; and on June 10, for a meeting of employees to dedicate a memorial tablet in memory of the 19 employees of the Forest Service who lost their lives in the World War, the presentation being made by Mr. Herbert A. Smith, and the address of acceptance by Lieut. Col. William B. Greeley, Forester and Chief of the Forest Service. Music was furnished by the band of the Third United States Cavalry from Fort Myer. This Italian renaissance tablet of Sienna marble, following closely the style of certain old tablets in Italian cathedrals, is believed to be the only work of its kind in America.

The Bureau of Plant Industry showed motion-picture films to the scientific staff of the bureau in the auditorium on the afternoon of November 18, and held its phytopathological seminar in room 42–43 on the afternoon of March 10.

States Relations Service used the auditorium on three occasions, as follows: On the morning of November 17 and on the afternoon of April 13, for showing motion and stereopticon pictures relating to its activities, to the employees of the service, and on the forenoon of May 28, for an illustrated lecture by Dr. B. Sjollema, of the Veterinary University of Utrecht, the Netherlands, on some of the unique features of the agriculture of his country. The Potomac Garden Club, cooperating with the United States Department of Agriculture, held its annual meeting there on the evening of January 17.

The members of the staff of the Bureau of Markets were called together in the auditorium on the afternoon of September 24, and an all-day conference of United States game wardens, under the auspices of the Biological Survey, occupied room 42–43 on January 6.

Twice was the auditorium at the disposal of the Army Medical School—on the afternoon of November 17, 1920, for a lecture by Dr. Hideyo Noguchi, of the Rockefeller Institute of Medical Research, delivered before the student officers of the school and members of the Medical Corps of the Army on duty in Washington, and on the afternoon of May 26, for the closing exercises of the 1920–21 session of the school.

On April 21 Mr. D. F. Garland, on behalf of The National Cash Register Co., demonstrated welfare work to a group of employees of the Post Office Department. Other governmental agencies making

use of the meeting facilities were the Commission of Fine Arts, on January 20 and 21, and the Federal Board of Vocational Education on June 13.

The eleventh annual meeting of the American Farm Economic Association occupied the auditorium and committee room with afternoon and evening sessions on December 30, morning and afternoon sessions on December 31, and a morning session on January 1. On December 30 room 42–43 was utilized for a conference of representatives of national organizations engaged in rural social work with day and evening sessions.

The annual convention of the Northern Nut Growers' Association convened in the auditorium, with morning and evening sessions on October 7, and morning and afternoon sessions on October 8, and an exhibit of nuts and mats in room 42–43.

The American Institute of Architects was granted the auditorium, committee rooms, and the central portion of the foyer for the fifty-fourth annual convention of the institute, from May 11 to 13, and the Second National Architectural Exhibition, from May 12 to 19, inclusive, for the purpose of promoting and encouraging a wider public interest in architecture. In connection with this convention the Association of Collegiate Schools of Architecture met in room 42–43, on May 9 and 10, with an evening session in the auditorium on the latter date. The sessions of the institute included, besides meetings each day in the auditorium and room 42–43, one evening session in the auditorium on May 11 and a morning session on May 14 in room 42–43. The exhibition was inaugurated with a formal view on the evening of May 12, when the foyer and north lobby were opened to the invited guests of the institute and the public from 8.30 to 11 p. m. The drawings, photographs, etc., of this collection were installed on temporary floor screens placed either side and down the central portion of the foyer. A number of the exhibits of the war collections were inclosed by the screens, some of the cases being moved between the piers, and screens built on either side of them. The walls in the auditorium lobby were also used for exhibiting drawings and photographs, and a special exhibit belonging to the Architects' Small House Service Bureau, of Minnesota, was installed on portable screens against the south wall of the north lobby, either side of the entrance to the foyer.

The twelfth annual convention of the American Federation of Arts convened in Washington on May 18, 19, and 20, 1921. The afternoon session on the 18th was held in the Museum auditorium and was devoted to the general subject of art and the people. It was opened with a demonstration by Mr. Ross Crane, of the Better Homes Institute of the Art Institute of Chicago, of "Art in the home." The stage was set as a living room, with mantel, windows,

and doors; and the furniture, lent by one of the local dealers, was brought in piece by piece until the room was complete. Thus was shown how the Better Homes Institute, by the use of stage set and actual objects of everyday use, is demonstrating to the people of the Middle West the relation of art to life, creating a popular demand for better art in house furnishings and helping to induce a larger market for industrial art products. Mr. Allen Eaton, of the Sage Foundation, spoke on "Pictures for the schoolroom," exhibiting a number of prints he had selected for a schoolroom print exhibition for circulation by the federation. Mr. L. M. Churbuck, director of the art department of the Massachusetts State Fair, presented an excellent paper on "Art in State fairs." Miss Mary Powell, of the art department of the St. Louis Public Library, presented the subject, "Art in the public library," and Mr. John L. Braun, president of the Philadelphia Art Alliance, made a telling plea for "The alliance of the arts."

On the evening of the same date the Regents and Secretary of the Smithsonian Institution tendered the members of the federation and their friends a reception, with a special view of the exhibition of war portraits in the National Gallery of Art, Dr. Charles D. Walcott, Mrs. Walcott, Mr. Robert W. de Forest, and Mrs. John W. Alexander receiving the visitors.

This collection, brought together by the National Art Committee, comprised 21 canvases by American artists, portraits of distinguished leaders of America and of the Allied Nations during the World War, and is to form the nucleus for a National Portrait Gallery. As such it will be shown by the American Federation of Arts in the various cities of the country before being permanently deposited in Washington. In planning the circuit it was arranged to have the collection temporarily in the National Gallery of Art at the time of the convention for the benefit of the members of the federation.

The main hall of the National Gallery was given over to the portrait collection (which was on exhibition from May 5 to May 22), small portions of the halls of ethnology, to the northeast, being screened off to display paintings from the Evans collection temporarily displaced. Opportunity was offered the delegates to see not only the National Gallery exhibits but also those of the Museum in other fields, as the foyer and west ranges of the ground floor and the entire first floor of the building were open for inspection from 8 to 11.

The Madame Curie committee of Washington arranged a meeting in the auditorium on the evening of May 20, in honor of Madame Marie Curie, the codiscoverer of radium. Madame Curie was welcomed by Secretary Walcott, honorary chairman of the committee, and by Miss Julia Lathrop, on the part of the women of Washington,

after which Dr. R. A. Millikan, of the University of Chicago, delivered an address on radium. A large number of floral bouquets, contributions from local women's organizations and others, were presented to Madame Curie. The Museum exhibits on the ground and first floors were open to inspection during the evening. In connection with Madame Curie's visit, a special exhibit of radium ores, radioactive minerals, and radiographs was prepared by the department of geology and placed in the main passage of the Art Gallery, being removed later to a permanent location in the east end of the mineral hall on the second floor.

Another reception in the Natural History Building, on the evening of October 19, enabled the delegates to the convention of the American Bankers' Association, and their friends, to inspect the exhibition halls, as a part of the program for acquainting the bankers with governmental activities in Washington.

The American Society of Mammalogists held its annual meeting in the Museum, with day sessions in room 42–43 on May 2, 3, and 4, and an evening session on May 2 in the auditorium. At the latter Mr. Arthur H. Fisher gave a talk on animals in zoological gardens, illustrated with many wonderful motion pictures recently made in the National Zoological Park and in the Philadelphia Zoo. From November 9 to 11 the auditorium was used during the daytime for the thirty-eighth stated meeting of the American Ornithologists Union.

Under the auspices of the Geological Society of Washington, Mr. William T. Lee lectured in the auditorium on November 20, on the use of aerial photographs in geography. This was illustrated by stereopticon views of natural scenery and of objects of geographic interest and of submarine objects as seen from an airplane, and by a series of motion pictures taken from hydroplanes showing scenes on the Potomac, the Pacific fleet passing through the Panama Canal, and scenes along the coast of California.

The regular annual meeting of the Audubon Society of the District of Columbia, held in the hall on the evening of January 26, featured two illustrated addresses on bird life.

The Washington Academy of Sciences arranged a lecture by Dr. E. B. Rosa, of the Bureau of Standards, on "A reorganization of the civil service," on the evening of October 21, and, under the auspices of the Osteopathic Association of the District of Columbia, Dr. A. G. Hildreth spoke on the evening of November 15 on "How to escape insanity and nervous disorders."

Of timely interest also was a series of evening lectures in the auditorium arranged by the School of Foreign Service of Georgetown University on the "History and nature of international relations,"

the principal phases of the history of relations between sovereign states from the earliest antiquity down to our own day being treated by acknowledged masters in their respective fields, some of the speakers being permitted two evenings to develop their themes. The topics and speakers were as follows: October 21 and 22, 1920, "The concept of international relations in antiquity," by Dr. Michael I. Rostovtseff; November 19, "Medieval diplomacy," by Dr. Carlton J. H. Hayes; December 3 and 17, "The development of diplomacy in modern times," by Dr. James Brown Scott; January 7, 1921, "The Far East and Africa as factors in the development of international relations," by Hon. Paul S. Reinsch; January 21, "Latin America as a factor in the development of international relations," by Hon. L. S. Rowe; February 11, "Economic factors in international relations," by Dr. James Lawrence Laughlin; March 11, "The effect of the development of juristic science upon international relations," by Dr. Roscoe Pound; March 18 and April 8, "The United States as a factor in the development of international relations," by Dr. Edwin M. Borchard; April 22 and May 6, "Arbitration and other agencies for the proper conduct of international relations," by Hon. John Bassett Moore; May 19, "Elements for the scientific study of diplomacy," by Dr. Stephen P. Duggan.

The university also had the auditorium on the evening of January 14, when "The future significance of the Slavic world, and particularly Russia, in economic affairs," was the topic of short addresses before the School of Foreign Service by Rev. E. A. Walsh, Mr. John Hays Hammond, and Mr. Oscar T. Crosby. The Anthropological Society of Washington and the Entomological Society of Washington held their regular meetings of the season in room 42–3, Natural History Building.

First Pan Pacific Scientific Congress.—At the First Pan Pacific Scientific Congress, held in Hawaii from August 2 to August 20, 1920, the Museum was represented by the following members of the staff of the Smithsonian Institution: Mr. John B. Henderson, regent of the Smithsonian, Dr. Paul Bartsch, Mr. Gerrit S. Miller, jr., Mr. T. Wayland Vaughan, and Mr. Gerard Fowke.

The meetings were held in Honolulu, excepting those from August 7 to 12, when an excursion was made to the island of Hawaii to visit the wonderful active volcano Kilauea, various volcanological problems being discussed during the stay there. The rest of the program consisted of a general session each morning, held in the throne room of the capitol, and sectional sessions in the afternoon, the conference being divided into the following sections: Anthropology, biology, botany, entomology, geography, and seismology.

ORGANIZATION AND STAFF.

At the close of the year the Museum organization comprises, besides an administrative office, 4 scientific and technical departments and 1 independent division, as follows: The department of anthropology, with 4 divisions and 3 sections; the department of biology, with 9 divisions and 16 sections; the department of geology, with 3 divisions and 3 sections; the department of arts and industries, with 5 divisions and 4 sections; and the division of history, which, while independent of these departments, has not yet reached the dignity of a department. History has one section, making a total of 49 recognized subdivisions of the Museum.

The scientific staff of the Museum consisted of 1 keeper ex officio, 1 director, 3 head curators, 12 curators, 4 honorary curators, 6 associate curators, 13 assistant curators, 23 custodians, 4 assistant custodians, 8 aids, 10 associates, 7 collaborators, 1 philatelist, and 1 assistant, a total of 94 persons, of whom less than half received pay from the Museum. This by no means represents all the scientific workers on the collections, for the Museum also has much regular assistance from employees of various other governmental agencies in Washington, particularly the Department of Agriculture and the Geological Survey, in classifying and arranging, and placing on exhibition the specimens in their respective fields of investigation.

A synopsis of the work attaching to each position in the Museum was prepared this year and forwarded to the Bureau of Efficiency in connection with a bill before Congress on the subject of the reclassification of the employees of the Government.

The changes in organization during the year were numerous. The National Gallery of Art, which had for a number of years been administered as the fine arts department of the Museum, became an independent bureau under the Smithsonian Institution on July 1, 1920, through provision for its separate maintenance in the sundry civil appropriation act for the year 1921. To the new bureau were transferred such of the Museum's collections as had been in the custody of the curator of the National Gallery of Art, consisting of paintings, sculptures, and a few miscellaneous pieces. For the present the gallery continues to be housed in the Natural History Building of the Museum.

Dr. William H. Holmes severed his connection with the Museum on July 1, 1920, to become director of the National Gallery of Art, and carries with him to his larger field the good will of the entire Museum staff. Doctor Holmes has long been associated with the Institution and Museum. In the latter he served as curator of aboriginal pottery from 1882 to 1893, as head curator of the department of anthropology from its organization in 1897 to 1902, when he

resigned to become chief of the Bureau of American Ethnology, returning to the Museum as head curator of anthropology in 1910. The present excellent condition of the anthropological exhibits is a monument to his taste and ability. When, in 1906, it became necessary to provide a somewhat definite organization for the department of fine arts of the Museum, the curatorship of the National Gallery of Art was tendered to Mr. Holmes and accepted by him, in addition to his duties at the Bureau of American Ethnology. During all the intervening time Doctor Holmes has given freely of his time and strength for the National Gallery without financial return.

Dr. Walter Hough, curator of ethnology, was made acting head curator of the department of anthropology upon Doctor Holmes's resignation.

On July 1, 1920, the division of graphic arts was transferred from the department of anthropology to that of arts and industries, where it more properly belongs, and Mr. Ruel P. Tolman was promoted to assistant curator and placed in charge.

At the same time the division of history was removed from the department of anthropology and made an independent division, reporting directly to the administrative assistant in charge of the Museum. Capt. J. J. Hittinger, of the Quartermaster Corps of the United States Army, on detail from the War Department to assist in the installation of the World War collections, severed his association with the Museum in December, 1920, upon retirement from the Department. Captain Hittinger rendered valuable service to the Museum in this connection. The aid in history, Miss Marie V. Schiffer, resigned on August 26, 1920, and Mr. Charles Carey was appointed an assistant in the division on November 2, 1920, giving special attention to the World War collections.

In line of better administration, the collections of mollusks were removed from the division of marine invertebrates on February 1, 1921, and the division of mollusks was reestablished, with Dr. Paul Bartsch in charge as curator, and Mr. Waldo L. Schmitt was advanced to be curator of the division of marine invertebrates. The rotatoria and the helminthological collections went with the division of mollusks. Mr. Charles R. Shoemaker was promoted from aid to assistant curator in marine invertebrates on March 16, 1921, and Miss Pearl L. Boone's connection as aid in that division ceased on April 7, 1921.

Mr. Carl W. Mitman, curator of mechanical technology, was appointed curator also of mineral technology and placed in charge, with the title "curator, divisions of mineral and mechanical technology." He will be aided by an assistant curator in each of the divisions. Mr. Mitman's early connection with the Museum

was with the collections of mineral technology, of which he was aid and later assistant curator. The aid in mechanical technology, Miss Barbara E. Bartlett, resigned in October, being succeeded on April 1, 1921, by Mr. Paul E. Garber.

Beginning May 1, 1921, Mr. Neil M. Judd, curator of American archeology, was granted leave of absence for five months to conduct explorations for the National Geographic Society, and Mr. John L. Baer was appointed acting curator for the period.

Mrs. Lucile Simpson Stelle, aid in paleobotany, resigned on July 31, 1920, and Miss Jessie G. Beach, having met the civil-service requirements, was promoted from the position of typist to that of aid in paleontology on October 16, 1920. Mr. Ellsworth P. Killip, who at the beginning of the year was serving a temporary appointment as aid in the division of plants, was given permanent status as such on August 27, 1920.

The combination of the property office and the shipping office effected August 1, 1919, was discontinued August 1, 1920, the two offices being separated, Mr. W. A. Knowles remaining in charge of the former as property clerk, and Mr. L. E. Perry taking over the latter as shipper.

On November 12, 1920, in recognition of his activity in building up the collection of pianos in the Museum, Mr. Hugo Worch was given an honorary appointment as custodian of musical instruments. Other honorary members added to the staff during the year were Dr. Whitman Cross, as associate in petrology, on October 19, 1920; Dr. David Starr Jordan, as associate in zoology, on January 13, 1921; Mr. Max M. Ellis, collaborator in marine invertebrates, April 25, 1921; and Mr. W. L. McAtee, acting custodian of Hemiptera, on December 21, 1921.

Under the provisions of the retirement act of May 22, 1920, the Museum was deprived of the services of five members of its force in August, 1920, all of whom had reached the age limit and three had had over 30 years of service each. They were Miss S. E. Latham, and Messrs. A. B. Thorne, W. O. Stricker, W. H. Haney, and D. R. Jameson.

The Museum lost by death during the year Dr. J. P. Iddings, associate in petrology; Messrs. Nelson R. Wood and William Palmer, taxidermists; and Mr. T. W. Reese, watchman.

NECROLOGY.

Dr. Joseph Paxson Iddings, associate in petrology, died on Wednesday morning, September 8, 1920. Although not actively engaged in museum work, Professor Iddings's connection with the department of geology of the Museum was of more than ordinary importance. He was one of the most widely and favorably known of

American petrologists, and took a deep interest in the development of this particular branch of the science. His large collections of volcanic rocks, made during his extensive trips throughout the principal volcanic districts of the world, were installed among the collections of the Museum, where they remain accessible for reference and study, and form an important addition to the already large series of studied material in the department.

During the early portion of his career, from 1880 to 1895, Doctor Iddings was connected with the United States Geological Survey, and was the author of several publications of importance by that organization. Among the most important may be mentioned:

The Obsidian Cliffs of the Yellowstone National Park.

On the Development of Crystallization in Igneous Rocks.

On a Group of Volcanic Rocks from the Tewan Mountains.

The Microscopic Petrography of the Eruptive Rocks of the Eureka District of Nevada.

The Eruptive Rocks of Electric Peak and Sepulchre Mountains, and the chapters on petrography in part 2 of the monograph of the Yellowstone National Park.

His best known personal publications are his translation of H. Rosenbusch's Physiography of the Rockmaking Minerals (1898); Rock Minerals (1906); Igneous Rocks, 2 volumes (1909); and The Problem of Vulcanism (1914). He was also one of the most active and influential of the authors of the Quantitative Classification of Igneous Rocks (1903). A striking feature of his work was his accuracy and careful attention to detail.

From 1895 to 1908 he was professor of petrology in the University of Chicago, since which time he lived for the most part at Brinklow, Md., devoting himself largely to private work, and particularly to the petrology of the Pacific and South Sea Islands.

He was a man of broad culture, dignified and gentlemanly bearing, and his loss will be everywhere most deeply felt.

By the death of Mr. N. R. Wood, on November 8, 1920, the National Museum lost one of its most skilled preparators, a man well known over the country as the most expert of bird taxidermists. Mr. Wood was born in New York State in 1852. When about 27 years of age he was employed by Ward's natural history establishment at Rochester, N. Y. Here, for the first time, his work was congenial and he made rapid advances in the general work which was assigned him. It was soon observed that he was especially interested in the mounting of birds, at which he would work in his own time after hours, and he was assigned as assistant to their best bird taxidermist. Deficient in natural mechanical ability, it was only after the most persistent effort that he finally reached the point where he could make

the bird skin take the form which he had mentally determined to be the natural and best position. While at Ward's establishment he made advances in the methods, but it was not until he had been in the National Museum for some time that he was at his best. His work on dry skins and dismounting and remounting old birds was perfected here.

Mr. Wood came to the Museum in 1888, and at first was employed to assist Mr. William T. Hornaday in taking care of the live animals in the shed adjoining the Smithsonian Building—the beginning of the National Zoological Park collections. After a little time he began to mount birds for the Chicago Exposition, and his work won the approval of Mr. Robert Ridgway, and when there was a vacancy in bird taxidermy he was placed there and continued in this work until his death.

In years to come, as now, Mr. Wood will be known by his fine work displayed in the mounted bird collection on exhibition in this Museum. The hawks and owls, parrots, and game birds, the greater number remounted by him, show the quality of his work and point to the loss which the Museum has sustained in his death.

William Palmer, for many years a valued member of the Museum force, died in New York City on April 8, 1921. He was born at Penge, England, August 1, 1856, and came to this country with his father, the late Joseph Palmer, in 1868. The elder Palmer became connected with the Museum in 1873 as its preparator, and was particularly skillful in all matters pertaining to modeling, casting, the coloring of reproductions, and taxidermy. William Palmer, under the tutelage of his father, became, in time, equally adept in these subjects. He joined the Museum force in 1874 as an assistant to his father. In 1883 he was sent to New Haven, Conn., to prepare the large models of the giant squid and octopus exhibited at the Great International Fisheries Exhibition in London, and later transferred here, where they, and many other examples of his art, still remain. With Messrs. Lucas and Scollick, of the Museum force, he went to Newfoundland, in the spring of 1903, and took part in the preparation of a mold and skeleton of a 78-foot sulphur-bottom whale. A year later he accompanied Dr. G. P. Merrill to the State of Sinaloa, Mexico, for the purpose of making a mold of the great Bacubarito meteorite.

Mr. Palmer was an excellent general naturalist, and was particularly well versed in the local fauna and flora, in which he had specialized for many years. He began a collection of birds in the spring of 1874, which in time became a very important one, and contained many local rarities and records, some of which are still unique. In the course of his ornithological work he had the

distinction of adding two species of birds to the known avifauna of this continent, in addition to describing several previously unrecognized subspecies.

Palmer's skill and knowledge as a natural history collector caused him to be detailed on various expeditions where the best results were required, and in this capacity he visited Funk Island in 1887 with Doctor Lucas in a very successful search for remains of the extinct great auk. In 1890 he was detailed to make collections on the Pribilof Islands, and in 1900, 1902, and 1916 to visit Cuba. He accompanied Mr. Owen Bryant on a very productive collecting expedition, though one fraught with numerous privations, to western Java, in 1909 and 1910. In the aggregate, he collected many thousands of specimens of animals and plants, as well as fossil remains and miscellaneous material, not only on official expeditions but on those prosecuted on his own account, and most of this material has found its way into the National Museum series over a long period of years. By the terms of his will, Mr. Palmer has also bequeathed his private collection of birds to the Museum.

In recent years Mr. Palmer had become much interested in vertebrate fossil remains in the deposits at the Calvert Cliffs, near Chesapeake Beach, Md., and made many trips there in search of material, both officially, and in his own time. He was engaged in studies of cetacean remains from this locality at the time of his death.

Mr. Palmer was a Fellow of the American Ornithologists' Union, a member of several scientific socities, and the author of over 50 papers and notes on ornithological and other biological subjects.

REPORTS ON THE COLLECTIONS.

REPORT ON THE DEPARTMENT OF ANTHROPOLOGY.

By Walter Hough, *Acting Head Curator.*

On the appointment of Dr. W. H. Holmes as director of the National Gallery of Art on July 1, 1920, the curator of ethnology was appointed acting head curator of anthropology.

A consistent growth is observed in the department year by year. Relieved of responsibilities lately connected with divisions of the museum not germane to its work, it has moved forward more rapidly. The department as now administered comprises the divisions of physical anthropology, ethnology, American archeology, and Old World archeology, which are closely knit sciences, and the sections of musical instruments, ceramics, and art textiles. These branches record commendable progress during the period of this report.

Administration of the division of ethnology and the sections of art textiles, musical instruments, and ceramics was continued by the acting head curator, also cooperation with the division of history in respect to installations and anthropological laboratory preparations in the section of period costumes.

ACCESSIONS DESERVING SPECIAL NOTICE.

The accessions generally were of diversified character and tending to improve the collections. They were acquired at negligible expense. The crowded condition of the museum, necessitating the acceptance of desirable collections only by gift or bequest without conditions, has limited the accession of loans. The accessions of the year, therefore, are mainly a permanent gain to the museum.

Of exceptional value and interest to the division of ethnology is the collection of California Indian baskets from the Missions, a supplementary gift from Miss Ella F. Hubby, of Pasadena and New York. A blanket robe of dog and mountain goat hair, woven by the Cowichan Indians of Vancouver Island, British Columbia, decorated with a Chilkat totemic painting in soft colors, is a unique specimen gift of Mrs. Charles C. Hyde of Washington, D. C. A single specimen of ancient Hawaiian wood carving in form of an image of a god can probably not be duplicated. It was collected by Rear Admiral J. V. B. Bleecker, United States Navy, many years ago. The image is of the Easter Island type. A collection of the very scarce ma-

terial from the Flathead Indians of British Columbia, consisting of carved horn bowls, spoons, fishhooks, etc., was presented by Dr. E. A. Spitzka, Washington, D. C. Twenty-four ancient ivory carvings designed as fetishes, mostly from the Walaka and Baluba Negroes, Lower Congo, Africa, were purchased.

The following accessions to American archeology are deserving of special notice: A collection of 128 archeological specimens, many of which appear to exhibit contact with non-Pueblo peoples, gathered by Mr. J. A. Jeancon for the Bureau of American Ethnology from an ancient ruin near Taos, N. Mex., and transferred by the bureau; a collection of 114 antiquities from cliff dwellings and other prehistoric ruins northwest of the Rio Colorado, made for the Bureau of American Ethnology by Mr. Neil M. Judd and subsequently transferred by the bureau; a bronze ax blade and a highly embellished, cylindrical earthenware vase from Salvador, presented by Sr. Emilio Mosonyi; a series of 183 specimens from prehistoric ruins in the Chaco Canyon National Monument, N. Mex., collected by Neil M. Judd under the auspices of the National Geographic Society, which later presented the material to the national collections; a carved jade tiki or fetish from New Zealand, secured through exchange with Mr. Louis C. G. Clarke; and two collections of Mexican antiquities obtained by Maj. Harry S. Bryan. The first of these is a gift of 12 specimens; the second, a loan, includes 64 specimens. Dr. Walter Hough presented an interesting series of shell beads and pendants and stone fetishes from Keetseel Ruin, Arizona, and the Zuni region, New Mexico. A carved wooden Floridian image, found in reclaimed soil which Lake Okeechobee formerly covered to a depth of 6 feet, was given to the Museum by Mr. M. A. Millar, Venus, Fla.

A most noteworthy accession to the division of Old World archeology is a valuable collection of Buddhist religious art, consisting of old bronze statues and figures, lacquered shrines, and exquisitely painted kakemonos from China and Japan, gift of Mrs. Murray Warner; another small collection of Buddhist bronze figures deserves notice, inasmuch as, besides its intrinsic artistic value, it filled some gaps in the Museum collection of the Buddhist pantheon, gift of Mrs. John Van Rensselaer Hoff. Mention is also made of a small collection of finely worked embroideries with Christian themes, gift from the estate of Mrs. Mary E. Pinchot; and the collection of Jewish ceremonial, which includes a considerable number of artistically worked silver vessels from Palestine, lent by Mr. Ephraim Deinard.

Of the accessions in physical anthropology which deserve special notice, the foremost place belongs to the "Huntington collection" of skeletal material. This collection is received formally as an "exchange," but is really in the main a gift from the College of Physicians

and Surgeons of Columbia University, New York City, through Prof. George S. Huntington. Small portions of this material were already in our possession as the result of exchanges in previous years; it consists of the identified skeletal remains of upward of 1,500 individuals of known sex, age, color, nationality, and cause of decease. It includes in ample number for all desired information representatives of the different parts of the white race which are entering into the composition of the American people, and as such will have a constantly increasing value for mutual comparisons. The scientific importance of this material can hardly be estimated, and it is not too much to say that it practically doubles the value of our collection. No other collection of equal extent is in existence. Another collection of importance is that of 27 human brains donated to the Museum by Dr. Edward Anthony Spitzka, Washington, D. C. The next collecttion of note is that of 10 Arikara skulls and 3 skeletons donated by the University of South Dakota, through Prof. Freeman Ward, in return for a report on their collections. These specimens are in good condition and fill what was almost a complete void in our collections. Mention should also be made of a quantity of skeletal material collected in Tennessee by Mr. W. E. Myer, of Nashville, Tenn., and transmitted to the Museum by the Bureau of American Ethnology.

In addition to the above there were a series of smaller accessions of crania and skeletons from various parts of this continent.

A loan collection of rare oriental rugs was received in art textiles, replacing those hung last year. This collection was sent by a public-spirited Washingtonian to be exhibited for the benefit of the public. The weavings number 38 and typify the chief varieties of these artistic textiles.

The section of musical instruments reports that the Worch collection of pianos has been enriched by the gift of a copy of the harpsichord used by Johann Sebastian Bach, the great composer. The original is in the Museum at Stuttgart, Germany. Two copies were permitted to be made and one of these is now displayed in the Worch collection in the National Museum. The instrument has four pedals and four stops, a surprising mechanical equipment for the period. A dulcitone, an instrument whose sounding apparatus is a succession of graded tuning forks, was procured by Mr. Worch from Glasgow, Scotland. Eleven other valuable pianos, illustrative of the history of this instrument, were added to the collection by Mr. Worch. A piano handsomely decorated by Cottier of New York was given by Mrs. Gouverneur Morris, Washington, D. C.

The collection of master violins bequeathed to the Museum by the late Dwight J. Partello and whose disposition has attracted wide

public interest is subject to litigation, and its acquisition by the Museum depends upon action by the courts.

A set of 169 pieces of heavy porcelain with blue decoration was received by the section of ceramics as a bequest from Miss Caroline Henry. This porcelain was given to Prof. Joseph Henry by the first Japanese minister to the United States. The ware is interesting as representative of the first somewhat crude attempts to adapt European forms in Japanese ceramic art; Mr. Grosvenor B. Clarkson, Washington, D. C., presented two Japanese porcelain vases in blue and white; Miss Freeman and Mrs. B. H. Buckingham, Washington, D. C., presented six large Japanese and Chinese plaques with rich decoration in colors and a Japanese bronze statuette.

EXPLORATIONS AND EXPEDITIONS.

Dr. W. L. Abbott is a constant contributor of the results of his numerous explorations east and west. At present his material is coming from Haiti and Santo Domingo. The major expéditions of a scientific nature have contributed little material for anthropology. Special archeological explorations in Arizona and New Mexico directed by the Museum, the Bureau of American Ethnology, and the National Geographic Society added much excellent material. The expedition of the National Geographic Society to the Chaco Canyon ruined cities in New Mexico, directed by Mr. Neil M. Judd, of the National Museum, is expected to produce important results. This expedition, which set off in April, contemplates five years researches in Chaco Canyon. The preliminary work on this expedition was carried on during the summer and a large collection of artifacts sent in. Dr. J. Walter Fewkes's epoch-making investigations on Mesa Verde, Colo., for the Bureau of American Ethnology and the Department of the Interior were productive of distinctive scientific and educational results.

WORK OF PRESERVING AND INSTALLING THE COLLECTIONS—PRESENT CONDITION OF COLLECTIONS.

It is difficult to characterize the multifarious and intricate work accomplished by any department of the Museum. The high standards of the National Museum embrace every feature from the minute to the greatest. The visible Museum must be kept to the highest point of perfection and the work this necessitates is constant and exacting. In the background is the tremendous routine of occupational activities which the Geologist Lesley called "deadwork," and which must be completed before specimens are brought to public view.

The care of specimens in ethnology presents many problems on account of the character and variety of the material. Some of the

older collections which were not cared for under present Museum standards were worked over and tickets and marks restored. Among the installations mention is made of two cases of rare California Mission Indian baskets of the Ella F. Hubby collection and two cases of Chinese minor art displays. The lay figure of a Nez Perce Indian chief was reconstructed and placed on exhibit, and the model of an early Iroquoian stockaded village repaired and again put in place. Hundreds of labels were put on specimens, and the effort to attach a card to every exhibit object was brought close to completion. Plans were also drawn up for the preparation of a series of handbooks describing certain important classes of exhibits in the division of ethnology.

The American archeology collection has approximately reached the limits of expansion as to exhibition. By selection and elimination, the exhibit was improved. The collection from the Otto T. Mallery expedition, under the auspices of the Washington branch of the Archeological Institute of America, to the Rio Chama, N. Mex., a locality not heretofore represented in the Museum, was installed. The State collections exhibit received a number of additions. These collections, which are of interest especially to visitors from the various States, were also improved by additional labels and by consolidation with a view to clearness of presentation. The archeological collection as now presented may be considered in a satisfactory state of completeness as to arrangement, and with the addition of more labels will take its place as one of the most instructive exhibits. Especial attention was given to the prevention of decay, which frequently occurs in pottery taken from burials, and almost complete success was achieved in halting the disintegration. Repairs of broken articles and other routine work in connection with cleaning, numbering, and like duties occupied much time. The records of the division, which had fallen behind in former years, were worked upon with the view of bringing them up to date. It is hoped within a short time to complete indexes which will render it possible to locate each unit without loss of time.

Old World archeology, which embraces biblical and other objects connected with ancient religions and art, reports an active year. The chief work was the reinstallation of the collections illustrating Christianity, Buddhism, and Mohammedanism, which were disarranged in removal previously from the Arts and Industries Building. A number of objects of silver, illustrating Jewish ceremonial, were installed, forming an attractive exhibit. Specimens were added to the archeologic exhibits from Great Britain and India and some examples of ancient sculpture and glass placed in cases. Printed labels to the number of 140 were placed on exhibits.

The most advanced methods employed in the division of physical anthropology for the cleaning, repair, cataloguing, identification, etc., were applied to the old collections from the Army Medical Museum and from other sources. The collection in general is constantly improving in all respects through intensive work continued from year to year. It is the endeavor to keep abreast of the improvements in the methods of museum science and to maintain the material in a state of effectiveness. Necessarily the rapid increase in specimens received by the division required better facilities for storage which will provide easier access to the accumulating material.

The rearrangement of the cases in art textiles greatly benefited the appearance of the hall. The exhibit of laces was also much improved by the arrangement of the specimens following the reconstruction of the cases to eliminate as far as possible the entrance of dust. On the south and west walls a splendid collection of oriental rugs was hung.

Plans were made for improving the installation of the collection of musical instruments and dust proofing the cases. Steps were taken to prepare a catalogue and handbook, which should render the exhibit of greater value to the public.

The ceramic collection shows the results of several years' work on improving the character of the exhibit. Efforts were made to eliminate material not needed in the collection, much of which had been collected in a haphazard manner. Noteworthy is the exhibit of two cases of rare old Bohemian ruby glass donated by Mrs. C. E. Danforth, of San Diego, Calif.

The varied and important work performed in the anthropological laboratory contributed materially to the benefit of the public exhibition. Work was carried on here which could not be performed in the divisions. The necessities of the department occupied the time of the laboratory except for occasional jobs of expert work for other sections of the Museum. Aside from current tasks. original work in modeling lay figures was continued and new methods for expediting the work were tried out. The joining of broken pottery vessels, skeletons, and other specimens by means of adhesive cements and such materials has been subject to a long investigation, and satisfactory results have been reached. Many specimens which require a degree of restoration were sent to the laboratory for special attention.

RESEARCH WORK.

The devotedness to scientific work by the personnel of the department, a feature shared by the entire personnel of the National Museum, is shown by the amount of research work prosecuted by the staff. It is also evident that this work is not limited to the legal hours of labor.

The curator of ethnology finished and handed in papers on the racial groups in the National Museum and on the series of specimens illustrating the history of inventions. He also began the preparation of an account of the stoves and other heating devices in the Museum. A summary of his exploration of 1920 was prepared and an account written on Museum specimens germane to the Pilgrim Tercentenary.

The examination for publication of the several collections of archeological remains collected in Utah and Arizona by the curator of the division of American archeology for the Bureau of American Ethnology during the past five years was continued.

The curator of Old World archeology completed a study of Parsee religious ceremonial objects. He also completed a descriptive catalogue of Buddhist art, which was published during the year by the Museum. The plan of the curator is to continue this series of instructive handbook catalogues.

The materials in the division of physical anthropology are constantly drawn upon for comparisons as well as for new observations. During the year the most important piece of research done on the collections was that relating to the finer modeling of teeth; but much work was done also on Indian and other bones in connection with the preparation of the pending reports on the Sioux Indians and the anthropology of Florida and neighboring regions. In addition measurements for future use were begun on the valuable Mongolian collection and on the skeletal material from Alaska, the latter in connection with the curator's studies on the origin and affinities of the Indian.

Doctor Hrdlička performed services for the Department of Justice in differentiating full-blood from mixed-blood Chippewa Indians in important land cases, thereby saving over a million dollars in land and money for the Indians, in accordance with the statement of the department. This is a good illustration of the practical value of studies of recondite subjects.

Dr. J. Walter Fewkes, Chief of the Bureau of American Ethnology, as collaborator in the division of ethnology, has assisted materially in the acquisition of specimens through collections made by himself and members of the bureau.

Dr. Arthur P. Rice, also a collaborator, sent in data, photographs, and ethnological material from Yucatan.

The department was called upon daily to give information to visitors on many subjects of more or less importance; but little material, and that in the form of photographs with descriptions and publications, was sent to researchers elsewhere.

It is difficult to estimate the benefits growing out of personal contacts with visitors desiring information, but in many cases it is known to have produced results of importance to the Museum.

DISTRIBUTION AND EXCHANGE OF SPECIMENS.

The department began in a systematic way the distribution of duplicate material to educational institutions. Despite the limited variety of duplicates available, series of ethnology were selected with the view of conveying concrete facts of value in culture studies, and sent out to deserving schools. An intelligent distribution of the duplicate materials in anthropology is prospectively of great educational benefit to many institutions in the United States, especially to smaller schools with limited facilities. An increasing number of schools teach art, and such collections as are sent out are adapted for instruction in designing, using Indian art as a basis for the coming American school.

Besides the gifts noted above, several exchanges were made in the division of ethnology which added valuable specimens to the collection. The division supplied Rev. Dr. James M. Magruder, Annapolis, Md., with two model arrows of the southern Maryland Indians of 1750, to be sent by the Patriotic Society of the Ark and Dove of Baltimore to the King of England as a reminder of the tribute of arrows sent by the colony of Maryland during the colonial period.

From the division of physical anthropology a quantity of unidentified skeletal material was prepared for the George Washington University, at their request, as a gift.

The department of anthropology sent out 7 gifts, comprising 151 specimens, and 10 exchanges, comprising 237 specimens. There were received in the department, for examination and report, 36 lots of specimens, diversified in character.

NUMBER OF SPECIMENS ADDED TO THE DEPARTMENT.

During the year there were received 149 accessions comprising 2,324 specimens, in addition to the major portion of the Huntington collection of skeletal material, which has not yet been completely catalogued. Of these, 24 accessions, containing 691 specimens, were loans and deposits. The total number of specimens were assigned as follows: Ethnology, 586 specimens; American archeology, 861 specimens; Old World archeology, 414 specimens; physical anthropology, 115 specimens besides the skeletal material mentioned above; art textiles, 133 specimens; musical instruments, 16 specimens; and ceramics, 199 specimens. In addition, 6 accessions, comprising 84 specimens, were entered in the department before the transfer of the recording for the section of period costumes to the division of history and are not included in the figures given.

REPORT ON THE DEPARTMENT OF BIOLOGY.

By Leonhard Stejneger, *Head Curator.*

IMPORTANT CHANGES IN ORGANIZATION AND STAFF.

The hope expressed in my last annual report that "in the near future" it might be possible to subdivide further the large division of marine invertebrates was partly realized, when, on February 1, 1921, the old division of mollusks was reestablished, which since October 16, 1914, had been combined with the division of marine invertebrates for economical and administrative reasons in a single division under the latter title. By the new arrangement the curator of the combined division, Dr. Paul Bartsch, remained curator of the division of mollusks, while the associate curator, Mr. Waldo L. Schmitt, was promoted to curator of marine invertebrates. For administrative reasons the collection of living, madreporarian corals, and the helminthological collections remain for the present under the curator of mollusks. The name "division of marine invertebrates" has thereby become a misnomer more than ever; but as there is no satisfactory collective term for the heterogeneous collections consisting of crustaceans, worms, sponges, etc., all together or in part, and including fresh-water as well as terrestrial animals in addition to the truly marine forms, it has been thought best to retain the old designation without qualification until further subdivisions in the future shall have made a more suitable nomenclature possible.

Unfortunately, this separation of the divisions could not be accompanied by any increase in the scientific staff. It is not only humiliating for the leading scientific institution of the Nation to have to depend upon the generosity of other museums and private individuals for aid in answering the numerous inquiries as to the identity of entire phyla of the lower animals and in classifying and reporting upon its own unsurpassed collections, but it is positively detrimental to the progress of science, applied as well as unapplied, that there are certain important groups of animals of which we have not a specialist in this country so situated that they can be worked up. It is not pleasant to have to confess that, to mention an example, we have in Washington no person who can classify and identify our spiders and our myriapods, but it seems almost incredible that, in spite of the efforts which have been made for fully 15 years, it has as yet been impossible to find the means for having the unrivaled collection of sponges in the National Museum named and described by an Ameri-

can zoologist. This collection, one of the finest of its kind, was received back during the present year from Europe where it was sent many years ago to be monographed by the then leading authority on that group of invertebrate animals. As the vicissitudes of this collection point a moral, it may be well in this connection to briefly outline their history: After negotiations, carried on for several years, the entire collection of sponges of the National Museum was shipped in 1906 to Prof. R. von Lendenfeld, at Prague, Bohemia, to be worked up, as it has been found impossible to find anybody in America capable of undertaking their study. The financing of this enterprise was assumed by the late Dr. Alexander Agassiz, who was greatly interested in the work. A small portion of the collection comprising specimens sent over previously was returned in 1908, and the result of their study published in 1910. In the meantime Doctor Agassiz's financial position required him to withdraw his subsidy for the working up of the Museum material, and he died shortly after. The negotiations with von Lendenfeld for the continuation of the work fell through, because the Museum, in spite of the endeavors of Dr. R. Rathbun, the assistant secretary of the Smithsonian Institution in charge of the National Museum, was unable to spare the necessary amount from the regular appropriation, and no other financial assistance was obtainable. The proposition to establish a position on the scientific staff of the Museum for the study of sponges and recall the collection was discussed, but had to be abandoned for lack of means. Prof. von Lendenfeld's death in 1913 caused the renewal of the negotiations with his successor, Prof. E. Trojan, but with no better result. Very reluctantly, and only after all efforts to find a satisfactory way had failed, Doctor Rathbun, in June, 1914, ordered the collection to be returned for the purpose of storing it until it should be possible to induce a capable American zoologist to devote himself to the important work of making this remarkable collection accessible to the scientific world. Later the World War broke out and nothing was heard from the collection for more than five years. It was scarcely to be expected that this priceless alcoholic collection, which in all these years had been in the enemies' country, should have escaped destruction in the general collapse of the Austrian Empire. Great relief was therefore felt when early in 1920 a letter was received from Professor Trojan announcing that he had taken care of the collection during the war, and that it was still intact and in good condition. Gratefully recognizing his efforts to preserve the specimens, a satisfactory arrangement was made with Professor Trojan to have the entire sponge collection packed and returned. It was finally received after an absence of 15 years. The specimens are here, it is true, but we are not one whit nearer the realization of the aim for

which these collections were brought together at the expenditure of much money, labor, and ingenuity, than we were before they were first sent abroad. They still represent a dead mass of material awaiting proper utilization in the service of scientific progress and must remain so until the Museum shall be financially able to support a specialist in this important branch of science. The moral of the above needs not to be pointed out; the danger and futility is too obvious.

The department sustained a very serious loss during the year in the deaths of Mr. Nelson R. Wood and Mr. William Palmer, both taxidermists of the first rank. Mr. Wood, who died on November 8, 1920, was undoubtedly the foremost bird taxidermist in this country. The bird exhibit is a lasting monument to his grasp of the character of each individual and his unsurpassed ability to give it lifelike expression. The technical skill with which he handled old and seemingly impossible skins and achieved results as if it had been fresh material was no less remarkable, and the saving and rejuvenescence of many rare and valuable old specimens is due to his thoughtful and loving care. The remounting of the great auk is a case in point. Mr. William Palmer, whose death occurred on April 8, 1921, in his 65th year, was an excellent all-around museum preparator. He was as skillful in mounting mammals and birds as in making plaster casts of whales, fishes, and reptiles; his ability to paint these and to fashion the accessories of the various biological groups was of no mean grade; and he was equally successful in handling the cleaning and mounting of a large whale skeleton as in preparing an exhibit of dainty butterflies. But Mr. Palmer was more. He had an extensive knowledge of the natural history of the animals and plants of this region; his special knowledge of certain groups of birds and their plumages was considerable; he had also paid particular attention to collection and studying the fossil remains of whales. In the Museum exhibition series the collection illustrating the fauna of the District of Columbia is almost exclusively his work, and to a great extent also the casts in the whale hall and in the fish and reptile hall.

COMPARISON OF INCREMENT OF SPECIMENS OF 1920–21 WITH THAT OF 1919–20.

From the numerical standpoint the collections of this department show a healthy growth during the past year, no less than 251,485 specimens having been received as against 136,765 during the previous year. This increase is observable in almost all the divisions. It is even more satisfactory to be able to report that all the curators express themselves as highly pleased with the scientific importance of the new accessions, in instances characterizing the collections received as "of greatly increased value" (mammals), or "of far greater value" (fishes), or "greatly surpassing in value last year's acces-

sions" (insects). In this connection I wish to emphasize what I alluded to in last year's report, namely, that an increase in the number of specimens received means additional demands on the time and labor of the staff and that this means less time and chance for scientific work unless additional help can be obtained. The showing this year is gratifying because it seems to indicate a return to normal growth interrupted by the war, but normal growth in the quantity and quality of the accessions requires also a normal growth in the staff and in the appropriations for the maintainance of the ever-growing collections.

ACCESSIONS DESERVING SPECIAL NOTICE, AND WHY.

The outstanding features of this year's accession, like those of last year's, are the Australian collections made by Dr. Charles M. Hoy, which we owe to the continued generosity of Dr. W. L. Abbott, and those resulting from the Smithsonian African expedition. To Doctor Abbott we are furthermore indebted for a valuable collection of mammals, birds, and reptiles, collected by C. Boden Kloss in Siam, Anam, and Cochin China, from which countries we have had but scant material before. Doctor Abbott, himself, collected numerous birds, reptiles, land mollusks, and, in conjunction with Mr. E. C. Leonard, about 10,000 plants in Haiti. Miscellaneous collections of great importance were also received from the Bureau of Fisheries, Department of Commerce, and the Biological Survey, Department of Agriculture, as will be detailed below.

The more important accessions, distributed among the various divisions, are as follows:

Mammals.—The most valuable single specimen received by the entire department was a fine skeleton of a whale, about 45 feet long, which was generously presented by Mr. James A. Allison, president of the Miami Aquarium Association, to the National Museum on behalf of the association. This specimen which was stranded some years ago at Pablo Beach, Fla., is of particular interest, as it belongs to a rare species, which hitherto has been represented from North American waters by fragments only. The individual bones are now being photographed and studied with a view to the publication of a monograph, and the skeleton will then be placed on exhibition in the whale hall. The Australian mammals collected by Mr. Hoy number 571 specimens, representing about 42 genera and 75 species. The material consists primarily of well-prepared skins, skulls, and skeletons, as well as of many embryos and pouch young preserved in alcohol. The 144 mammals from Siam, Anam, and Cochin China, collected by Mr. Boden Kloss, included 17 types. The 699 mammals from Africa, collected by Mr. H. C. Raven, of the

Smithsonian African expedition, in conjunction with the Universal Film Manufacturing Co., form a valuable general collection supplementing, in an important manner, the large African collections already in the Museum. The Bureau of Fisheries transferred to the division 40 skulls and one skeleton of the Alaskan fur seal from the Pribilof Islands. These skulls, which were collected by Dr. G. D. Hanna, are of very great importance, as they are supplemented with very detailed data as to age, size, etc., and form the basis of Doctor Hanna's studies of the development of this economically important species. Several large Canadian mammals, including mule deer and mountain goats, were collected by Secretary Walcott of the Smithsonian Institution for the Museum. Mr. A. F. Bearpark, of Cape Town, South Africa, donated a fetus of a whale from South Africa.

Birds.—That Dr. W. L. Abbott's interest in the fauna of the farther India is as keen as ever is evidenced by the fine collection of 496 birds made by Mr. C. Boden Kloss, of the Federated Malay States Museums, Kuala, Lumpur, in Siam, Cochin China, and Anam, which he presented to the Museum. The region was only slightly represented in our collection, so that naturally there are a considerable number of forms new to the Museum, approximately 90 species and subspecies and 3 genera. The collection also contains the types of 6 species recently described by Mr. Kloss. Hoy's Australian birds number 487 skins and 47 alcoholics and skeletons, and contains also a generous proportion of species new to the Museum, though no figures can be given at present. A genus of lyre birds (*Harriwhitea*) is new to the Museum, as well as a number of local forms from Kangaroo Island, South Australia. Of the several hundred birds personally collected by Doctor Abbott in Haiti and Santo Domingo, several are of particular interest. The thick-knee or stone-plover (*Oedicnemus dominicensis*) and the local form of the grasshopper-sparrow (*Ammodramus savannarum intricatus*) were new to the Museum; while a whippoorwill is apparently new to science. Mr. Raven, of the Smithsonian African expedition, collected 162 skins and 47 skeletons and alcoholics. As the collection has not yet been worked up, the number of new additions are not known, but at least one genus, *Megabias*, has been recognized as hitherto unrepresented in the Museum. An alcoholic specimen of *Smithornis* will be of great assistance in ascertaining the correct place of this genus in the system. From the Department of Agriculture several important additions were received, principally birds, alcoholics, and skeletons, the result of Dr. A. Wetmore's explorations in Argentina, Uruguay, and Paraguay. From the Swales fund, placed at the disposition of the division by Mr. B. H. Swales as mentioned in last year's report, 41 skins of foreign birds were obtained, representing about 38 species new to the Museum, including seven genera not hitherto contained in the national collec-

tion, among them *Sypheotis*, a genus of bustards, and *Ptilolaemus*, a genus of hornbills. Two rare Australian species new to the collections were generously donated by Capt. S. A. White, of Fulham, South Australia. The egg collection received a noteworthy addition by the gift of 8,344 eggs and 10 nests from Dr. Theodore W. Richards, United States Navy, from various parts of the world, among them a number of eggs of foreign species not previously present in the Museum. A single egg of the rare tooth-billed or dodo pigeon (*Didunculus strigirostris*) of Samoa, donated by Mr. Mason Mitchell, now American consul at Queenstown, Ireland, is particularly noteworthy because it is the first egg of this bird to come to the Museum, and thus represents a family, genus, and species new to the national egg collection.

Reptiles and amphibians.—The Hoy Australian collections contained 118 specimens, including many species new to the collection, and Raven's African material, 205 specimens of almost equal importance. The South American herpetological fauna is poorly represented in the national collections, and the specimens from Argentina and Paraguay collection of Dr. Alexander Wetmore were therefore very welcome. From China, also poorly represented, small but interesting collections were received from no less than three sources, as follows: Twelve from Suifu, Province of Sze Chuan, through Rev. David C. Graham; 16 from the southwestern part of Hunan Province, collected by Dr. Lewis R. Thompson; and 11 from Che-Kiang, donated by Mr. C. H. Barlow. Mr. C. T. Ramsden, of Guantanamo, Cuba, made the division a very acceptable gift of 24 specimens from that island, mostly representing very rare species. A very interesting addition was presented by the University of Michigan, namely, 4 tadpoles of the remarkable discoglossoid toad *Ascaphus truei* from Washington.

Fishes.—By far the largest and most important collection of fishes received in many years was transferred to the Museum by the United States Bureau of Fisheries. It consists of approximately 100,000 specimens, the result of the collecting by the Fisheries steamer *Albatross* in Philippine waters during the years 1907–1910. It is to be hoped that means may be found to work up within a reasonable time this unrivaled collection, which it has cost the Government such great efforts and outlay to acquire. The Fisheries Bureau also transferred 7 types and 16 cotypes of malacopterygian fishes collected by its schooner *Grampus*, as well as 8,367 specimens from the Potomac River and its tributaries. The Hoy Australian collection contained 52 specimens, including at least one genus, *Aracana*, new to the collection. Another Australian collection of 51 specimens was obtained in exchange with the Australian Museum in Sydney, containing 8 species new to the National Museum. By

exchange with the Indiana University Museum 250 specimens collected by the Irwin expedition to Chile and Peru, 1918–19, were acquired. The Smithsonian African expedition brought 48 specimens from Lake Taganyika, with at least 2 noteworthy additions to our collection. An interesting lot of 10 specimens of fishes, among which several new species, killed by a lava flow from Mauna Loa, Hawaii, into the ocean was presented by Dr. David Starr Jordan. They were collected by Tom Reinhardt and Carl S. Carlsmith about October 6, 1919.

Insects.—Several important collections made by private individuals have been donated during the present year. Among them the J. P. Iddings collection of butterflies and moths, presented by the heirs of Doctor Iddings, is in a way unique, since all the 2,500 named specimens, mostly from the Tropics, especially of the oriental region, were mounted in Riker and similar mounts ready for exhibition. They were at once placed in suitable cabinets, but the final arrangement and labeling are still in progress. Another collection of Lepidoptera, consisting of about 5,000 specimens, was donated by Mr. B. Preston Clark. The W. D. Richardson collection of Coleoptera, about 4,350 specimens, was presented to the Museum by the collector. Another welcome gift consisted of about 2,000 specimens of miscellaneous Philippine insects, chiefly Hymenoptera, from Dean C. F. Baker, Los Baños, P. I. Another noteworthy acquisition relates to the class Protura, animals similar to a very primitive wingless type of insects, but without antennæ. Of this group, of which only 26 species are known in the world, 12 species, 11 new, collected and described by Dr. H. E. Ewing, were donated by him. It should finally be mentioned that Mr. William Schaus, of the Bureau of Entomology, and an honorary assistant curator in the division of insects, has continued to make gifts of Lepidoptera from his private collection and by purchase, and has also donated much material which he has received from other lepidopterists by exchanging portions of his own collection with them. He has also purchased water-color paintings of more than 50 rare butterflies and donated them to the collection.

Marine invertebrates.—As usual, the Bureau of Fisheries was the largest single contributor, the principal accession being some 360 lots of sponges collected by the Fisheries steamer *Albatross* in 1902 (Hawaii) and 1904–5 (eastern Pacific) estimated at comprising more than a thousand specimens. These were included in the shipment from Prague by Doctor Trojan. They had originally been transmitted to Doctor von Lendenfeld by the bureau direct. Among the other specimens transferred by the Bureau of Fisheries may be noted a rather complete series of juvenile stages in the life history of *Uca pugilator*, one of the east-coast fiddler crabs, through Mr. O. W.

Hyman, acting director of the Beaufort station of the bureau. Such material is highly desirable, as the stages in the life histories of crustaceans present a field of investigation but little worked and about which little is known. A valuable lot of about 600 decapod and amphipod crustacea, part of the material secured by the American Museum Congo expedition, was received from that institution, Miss M. J. Rathbun and Mr. C. R. Shoemaker, both of the National Museum, having worked up and reported upon the collections of the expedition. Similarly, 87 specimens, representing 57 species of decapod crustaceans, were received from the Australian Museum, Sydney, being part of the material gathered by the *Endeavour* expedition upon which a report by Miss Rathbun is now in process of publication. By exchange, 28 specimens, 9 species of fresh-water shrimps, part of the material upon which Dr. R. P. Cowles based his paper on the "Palaemons of the Philippine Islands," published in 1914, were obtained from the department of zoology of the University of the Philippines, Manila. From Japan two collections of crustacea were received, namely, 56 from the Pescadores Islands, presented by the Institute of Science, Taihoku, Formosa, through Dr. M. Oshima, and 337 specimens from northern Japan, collected and donated by Dr. Madoka Sasaki, Hokkaido Imperial University, Sapporo. The types of several new species were also added as gifts by their discoverers or describers, thus two parasitic copepods described by Prof. C. B. Wilson, from the Venice Marine Biological Station, received through Prof. A. B. Ulrey; another parasitic copepod described by the same, and collected and presented by Prof. S. I. Kornhauser, Denison University; and one polychaete worm from Valdez Harbor, Alaska, described by Prof. A. L. Treadwell and collected by Lieut. Col. C. A. Seoane, United States Army, who donated the specimen.

Mollusks.—The most important accession of the year is a gift from Mr. Y. Hirase, Kioto, Japan, embracing 3,843 lots from the Japanese islands; in fact, according to Doctor Bartsch's report, it is one of the most valuable accessions that has ever come to the division of mollusks. Together with the Thaanum collection and the material dredged by the fisheries steamer *Albatross*, it places the National Museum collection of Pacific mollusks "above all other in the world." It is the product of a lifetime's efforts on the part of Mr. Hirase and a corps of private collectors employed by him. The actual number of specimens included in this splendid accession can not be given at the present time, as final unpacking awaits the receipt of printed blank labels and sufficient containers. About 2,500 mollusks from Hawaii, contributed by Dr. Paul Bartsch and Mr. John B. Henderson, make another valuable addition to our large collection from

those islands. Quite a number of individual collectors contributed to the Hawaiian series, among others, Miss Olga Smith, Mr. Irwin Spaulding, and Mr. Walter D. Giffard, all of Honolulu, and Mrs. Edna Bowen, of Hanalei, Kauai. To Dr. W. L. Abbott we owe 1,346 specimens of land shells from Haiti and a number of others from Santo Domingo, all of his own collecting, while several of the accessions from Australia are the results of Mr. Hoy's collecting, all of these collections containing large numbers of noteworthy mollusks. The Smithsonian African expedition also contributed several collections of mollusks, and from the Philippine Islands several welcome additions were received from Mr. C. F. Baker, P. I.; Dr. David T. Gochenour, Stuarts Draft, Va.; and Mr. H. N. Lowe, Long Beach, Calif.; the latter two containing types of new species. Our relatively small collection of South American mollusks has been increased by several individual collections, nearly all containing new species, from Dr. C. Wythe Cooke, Washington, D. C., specimens from Colombia; from Dr. H. Pittier, Caracas, Venezuelan mollusks; from Dr. F. Felippone, Montevideo, specimens from Uruguay and Brazil. Shipworms, material of which is always desirable, were received from the division of biology of the science and agricultural department of Demerara. Mr. Ralph W. Jackson, Cambridge, Md., contributed a number of marine shells, including types of two new species, and Dr. Mario Sanchez, Habana, Cuba, a similar collection containing five types.

Prof. A. S. Pearse, Madson, Wis., deposited a large number of types and other material of parasitic worms, and material transferred by the Bureau of Fisheries contained two of Doctor Linton's cestode types.

Echinoderms.—Through Prof. Max Weber the division obtained 267 specimens of unstalked crinoids, from the Dutch East Indies, including about 40 species new to our collection and many cotypes, all collected by the Dutch *Siboga* expedition. From the German South Polar expedition, through Prof. R. Hartmeyer, 23 specimens of unstalked crinoids from the *Gauss* expedition, all new to our collection, were similarly received. The State University of Iowa's Barbados-Antigua expedition, through Prof. C. C. Nutting, contributed 71 specimens of ophiurans, nearly all from localities unrepresented in our collection.

Plants.—The National Herbarium has been increased during the year by over 14,000 specimens from Haiti and Santo Domingo collected by Dr. W. L. Abbott, and Mr. Emery C. Leonard, of the division of plants. The Bureau of Plant Industry, of the Department of Agriculture, transferred 9,673 specimens, including 4,298 specimens of grasses. The collection contained about 3,000 specimens from Siam, Burma, and Assam, recently collected by Mr. J. F. Rock, be-

sides 660 specimens collected in Guatemala and Honduras by Dr. S. F. Blake, and 700 from the western United States collected by W. W. Eggleston. Another transfer from the Biological Survey of the same department, contained 1,198 specimens from Alaska, Canada, and various parts of the United States. The University of Minnesota presented the Museum with 749 specimens from several parts of South America, while the National Geographic Society similarly donated 1,180 Alaskan plants collected by the several Katmai expeditions under the leadership of Prof. Robert F. Griggs. Other gifts were 730 specimens from Venezuela, collected and donated by Mr. H. Pittier; 726 specimens of Louisiana plants presented by Brother G. Arsène, Covington, La.; and 1,614 miscellaneous specimens, the herbarium of the late Dr. F. L. J. Boettcher, a gift from Mrs. Boettcher. A large number of specimens were received in exchange, thus 2,308, mostly from the West Indies, with the New York Botanical Garden; 2,938 plants from Borneo and the Philippines, with the Bureau of Science at Manila; 400 specimens from China and New Caledonia, with G. Bonati, Lure, France; 483 specimens from Mexico, with the Direccion de Estudios Biologicos, Mexico; 1,160 specimens, chiefly European, with Riksmuseets Botaniska Avdelning, Stockholm; 2,019 United States plants, with the Arnold Arboretum; and 713 specimens, mainly from Quebec, with College de Longueuil.

EXPLORATIONS AND EXPEDITIONS.

From the standpoint of exploration and expedition the year just completed must be characterized as unusually poor. In fact, were it not for the expeditions still in the field at the beginning of the year, and for Dr. W. L. Abbott's unflagging interest and generosity, the showing would be very poor indeed. It must be set down as an indisputable proposition that a large museum, and most assuredly one aspiring to be among the leading museums, and, moreover, one representing the richest nation in the world, can not maintain its standing without being able to send out properly planned and properly fitted-out expeditions for the purpose of expanding, supplementing, and completing its collections. Take these away and the institution must infallibly sink down to an humble place among those striving for the purpose of science and the benefit of mankind, and, incidentally, the benefit and glory of the country they represent. The value of a national museum of natural history is not so much in the display it is able to make as in the opportunity for research and exploration. It is not too much to say that for such a museum exploration is the very breath of life. Even in countries impoverished by war, directly or indirectly, an honorable and, let it be said, not altogether vain struggle is being kept up to continue the work of adding to the world's knowledge as circumstances will best permit. If we look

back upon the past history of our own institution, is it not clear that the high achievement we have attained and the splendid position we have reached are due in a great measure to the surveys and explorations which have emanated from here, and the researches and studies of our men based on the material collected? The reputation of the Smithsonian Institution and its child, the National Museum, it is no exaggeration to say is largely based upon just that kind of work. To live up to that reputation, to keep from sliding down from this enviable position, it will be necessary to find means for future explorations maturely planned and energetically carried out.

At the end of the year, only one of the previous more ambitious expeditions is still in the field, namely, that of Mr. C. M. Hoy, in Australia, financed by Dr. W. L. Abbott. During the past year his reports in part relate to collections made at the following localities:

Farina, S. A.: Work in the Farina district was done at Lindhurst, 30 miles east of the town of Farina. Nineteen days were spent here, resulting in the collection of 110 birds and 64 mammals. A few reptiles and insects were also collected.

Kangaroo Island, S. A.: Twenty-six days were spent, in the field, on Kangaroo Island, with the result of 85 mammals, 51 birds, and miscellaneous reptiles, amphibians, and marine specimens collected.

Port Lincoln (Eyres Peninsula), S. A.: Twenty-two days were spent in the field resulting in the collection of 86 birds and but 15 mammals. A few miscellaneous specimens, including reptiles, crustacea, etc., were also obtained.

Busselton, W. A. (50 miles south): Camp was pitched 50 miles south of the town of Busselton, on the edge of the Government timber reserve. Forty days were spent in camp. The weather was the worst that I have experienced. During the while 40 days there were only 3 days free from rain. Over 18 inches fell in that time. It was impossible to keep things dry, and even the tent fly went green with mold. Despite these handicaps, however, a pretty fair collection was obtained. The collection contains 94 mammals, 46 birds, and a few miscellaneous alcoholic specimens (reptiles and land shells).

Derby, W. A. (32 miles southeast): Twenty-three days were spent in the above locality, August 7–29. The locality visited was very poor in both mammal and bird life, and a collection of only 43 mammals, 68 birds, and 10 reptiles secured.

Port Darwin, N. T. (100 miles south): Forty-four days were spent, in the field, in the Northern Territory of Australia. An area of country 30 miles in extent, running south by west from Brocks Creek to the Douglas River, was worked. On this trip 114 mamals, representing about 15 species, 106 birds, and 17 miscellaneous reptiles and amphibians, etc., were obtained.

Ebor District, N. S. W. (52 miles east of Armidale): Two camps were pitched, one near the highest point on the northern N. S. W. tableland, at an elevation of 5,000 feet and one a thousand feet lower. It was at the first camp that the most successful work was done. Forty-four days were spent in camp (Jan. 18–Feb. 27) and some very interesting results were obtained; 141 mammals, 34 birds, and 19 miscellaneous reptiles, land shells, etc., were collected. The weather was very much against me, as heavy, drizzling fogs and rain was an almost everyday occurrence, and there were seldom two fine days at a stretch.

During the year two shipments were received from Mr. Hoy. A total of 571 mammals, well prepared, several of which were hitherto unrepresented in our collection, together with a series of skeletal and embryological material. The birds numbered 534 specimens and represented considerably over 100 species and subspecies. A number of interesting reptiles, amphibians, fishes, and marine invertebrates were also collected.

The Smithsonian African expedition, the organization and starting out of which were detailed in my last year's report, completed its biological work on July 14, 1920.

In the vicinity of Cape Town, Mr. Raven was able to collect only insects and invertebrates, and from there he went to the Addo Bush, where 19 days were spent in collecting small mammals and birds. Going through Durban and Johannesburg, Mr. Raven spent two weeks collecting at Ottoshoop in the Transvaal, after which he proceeded to Victoria Falls, and from there he left for the Kafue River region, where he camped for several weeks. After spending some weeks along the Congo, he reached Lake Tanganyika, where camp was made for about a month. The next stop of any length was in Uganda, where a few days over a month were spent in collecting in the Budongo Forest.

Though not numerically large, the collections are of unusual interest on account of the manner in which they supplement those obtained by other expeditions in which the Smithsonian Institution has been interested. Among the most important material may be mentioned 699 mammals (including 272 specimens from South Africa, a region hitherto very imperfectly represented in our collection; 152 from Lake Tanganyika; the chimpanzee of Uganda); 567 birds, 206 reptiles, and 193 fishes, the latter from Lake Tanganyika. About 100 lots of mollusks were also collected.

A few new expeditions undertaken during the year have been instrumental in adding valuable material to our collections.

Late in 1920 Dr. W. L. Abbott undertook personally another expedition, this time visiting the north side of Santo Domingo (Villa Riva, Pimentel, Catui, Mao in the Yaqui Valley, and several points on the Samana Peninsula) and returning in May, 1921. He brought back a small but select collection of birds, but his main efforts were devoted to the collecting of plants, approximately 4,000 of which have been received and will doubtless prove of great value.

The Biological Survey, Department of Agriculture, anxious to obtain first-hand information concerning the movements of North American migratory birds in southern South America, in the spring of 1920 sent Dr. Alexander Wetmore to Argentina, where he collected information and specimens in the Provinces of Chaco and Formosa, as well as in the Paraguayan Chaco, during the winter season.

Returning to the pampas in the Province of Buenos Aires, he later proceeded to northern Patagonia. In January, 1921, he crossed to Montevideo, studying and collecting in Uruguay until the end of February, when he returned to Argentina, extending his explorations west to the foothills of the Andes. Crossing the Andes into Chile he returned from there to New York by way of the Panama Canal. Over 2,500 specimens of mammals and birds were brought home by Doctor Wetmore, besides reptiles and lower animals. A feature of his collection of particular importance is that, in addition to paying special attention to the main purpose of his expedition, he secured a large and valuable collection of anatomical material in the form of skeletons and alcoholics.

Incidental to his geological explorations in Canada during 1920, Dr. C. D. Walcott, Secretary of the Smithsonian Institution, as usual had the museum's need of good fresh material for the renewal of its large mammal groups in mind, and among other specimens collected two Rocky Mountain goats.

During August and September, 1920, Dr. Paul Bartsch, curator of mollusks, was delegated by the State Department to attend the first Pan-Pacific Scientific Congress at Honolulu. He was accompanied by Mr. John B. Henderson. While the meeting of the congress consumed the greater portion of their time, they still found opportunity to make a notable collection for the museum, among which were about 2,500 mollusks. These materially increase the value of our rapidly growing and exceedingly important collection of Hawaiian mollusks, and are remarkable for the fact that fully 80 lots contain few or no duplicates of Hawaiian material already in the collection. Reestablishing the heredity experiments which are being carried on under the joint auspices of the Smithsonian and Carnegie Institutions and which were interrupted by the hurricane in 1919, Doctor Bartsch, during a period of about six weeks in May and June, 1921, visited the Bahamas to secure new stock material and then established a new set of cages for Cerions on Loggerhead Key, Tortugas, in which the heredity work is conducted. Incidentally, he secured a collection of about 20,000 Bahama Cerions and other mollusks, as well as other invertebrates and a few birds, reptiles, and amphibians.

Excursions into South America by several experts connected with the Geological Survey resulted in the addition of noteworthy collections of land and fresh-water mollusks, by Dr. C. Wythe Cooke, from Colombia, and Mr. George L. Harrington from Argentina, Bolivia, and Chile.

Toward the end of the fiscal year it became possible to take advantage of certain facilities offered over the Government railroad now under construction in Alaska and have Dr. J. M. Aldrich, asso-

ciate curator of insects, proceed to the interior of Alaska for the purpose of making a general collection of insects from this entomologically almost unknown part of the country. The first step has thus been taken toward the realization of a plan which would eventually extend these explorations into the adjacent parts of Asia, and possibly the entire palearctic regions. Without thoroughly representative material from that part of the world it will be impossible to gain a satisfactory knowledge of our own subarctic and boreal province. When last heard from Doctor Aldrich's expedition had reached the field and begun collecting operations.

About the same time Dr. William M. Mann, of the Bureau of Entomology, and assistant custodian in the section of Hymenoptera, division of insects, joined the Mulford biological expedition to South America, which started on June 1, and which, it is hoped, will enrich the Museum's collections materially.

Allusion has already been made to Dr. W. L. Abbott's expedition to Santo Domingo, chiefly in the interest of plant collecting. The only other botanical expedition to be mentioned is that of Dr. A. S. Hitchcock, custodian of the grass herbarium, who left in April, 1921, upon an extended collecting trip in the Philippines, Japan, China, and the Indo-Malayan region. At the request of Dr. E. D. Merrill, director of the bureau of science, he will elaborate the grasses for a proposed flora of the Philippines. The primary object of the trip is to gather data for a revision of the bamboos of the world.

WORK OF PRESERVING AND INSTALLING THE COLLECTIONS. PRESENT CONDITION OF COLLECTIONS.

The conditions which at present hamper the development of the biological exhibition series and which were detailed in my report of last year have continued. What was then said about lack of space; the closing of most of the exhibits on the second floor; the inconvenience of the present arrangement to the specialists of the mammal division; all these features remain unrelieved and explain the apparent lack of progress in the exhibition halls, with the result that the renewal of the bird exhibit, on the one hand, and the development of the District of Columbia exhibit, on the other, have come to a temporary standstill. The aim has therefore been to improve, whenever possible, the quality of the specimens already on exhibition, by remounting such skins as are still in good condition or by substituting new material, whenever available, for the old, faded, or poorly mounted animals. Some of the older specimens, it must be remembered, date back to the early days when skins were literally "stuffed," while others have come to the Museum in later years ready mounted from dealers or other museums not practicing the most advanced methods of taxidermy. This art has under-

gone a wonderful transformation from the time Mr. Hornaday, as chief taxidermist of the National Museum, and his colleagues introduced modern ideas into the craft. By their knowledge of the living animals and improved technique, the National Museum achieved foremost rank, and a large number of lifelike mounts in the collection still testify to their skill and artistic sense. Naturally, however, not all the specimens from that time claim to be first class, and there is evident a tendency to exaggerate the bulk of many animals. Reacting against this tendency, the next generation of taxidermists went to the other extreme, by only considering the bony structure of the animals, with the result that quite a number of prominent specimens look as if the skins had been stretched over the dry skeleton without reference to the soft tissues and organs. Obviously the ideal method of mounting a skin of a dead animal is to model the body from a living specimen of the same species. When it was decided to remount an African leopard in the exhibition series, which, though being of average quality, showed certain obvious defects when compared with a living leopard at the National Zoological Park, arrangements were made with the superintendent, Mr. N. Hollister, to allow Mr. W. L. Brown, the taxidermist, to work at the park in front of the leopard case. The skin was stripped from the old manikin and tanned, and then the necessary alterations made as the living animal posed before the taxidermist. The experiment was highly successful, with the result that, instead of an indifferent specimen, there has now been placed on exhibition a lifelike leopard showing all the characteristics of this graceful, yet ferocious cat. In addition to this, a number of new mammals have been incorporated in the show collection during the year. As Mr. Hoy's Australian expedition has supplied a number of fine mountable skins representing the unique characteristics of the fauna of that far-away continent, a beginning has been made to renovate the entire Australian mammal exhibit.

In my last annual report I called attention to the fact that the closing of the north and west ranges on the second floor had made it necessary to display the miscellaneous collection of the animals of the District of Columbia in the whale hall. The insistence of the public to see at least part of the mounted insect collection made it desirable to further add to the heterogenous character of the exhibits in that hall, by installing there five slide screens holding 80 unit trays of insects, displaying many striking forms from various countries. When the splendid J. P. Iddings collection of butterflies and moths, nearly all beautifully displayed in Riker mounts, was given to the museum it was found expedient to install it, temporarily at least, in a couple of specially constructed cabinets so arranged that the visiting public could themselves pull out the

drawers, thereby guarding against the deterioration of the collection by continuous exposure to the light. This collection is not labeled as yet, but the work is a slow one, and the time which the custodian can give to this work so limited that it may be some time before the task can be completed.

The curatorial work in the various divisions has progressed as usual. In the division of mammals no cases for skins were received during the year, so that this part of the collection is rather overcrowded at the present time. The skulls are in much better condition, the improvement in the attic being notable. Additional cases in the latter storage have also been furnished for the rearrangement of the skeletons there, and considerable headway in their proper installation has been accomplished during the year. The alcoholic collection has been gone over and the condition, like that of the rest of the collections in this division, is considered good. All of the larger cetacean material, formerly stored in the northeast basement of the old museum has been removed to the new museum, where portions of it are now stored. The valuable collection of small and medium-sized cetaceans has been reinstalled in 30 quarter-unit cases, arranged and labeled, and is now in good condition.

The rearrangement in the division of birds, due to the respacing made necessary, was continued during the present year; that of the parrots being completed. The weaver birds (Ploceidae) were also rearranged. Otherwise most of the time has been occupied in labeling and distributing collections received during the year. A matter causing a great deal of work is the poor quality of the cards furnished for case labels, necessitating frequent renewals. During the year 260 cases thus requiring relabeling. One of the most important works of the associate curator consists in posting the old records for data, supplying missing data to entries in the old catalogues, searching out lost types and work of similar character, but the work is of necessity slow, and but little time is available from daily routine work. The search for old types was rewarded by finding the type of one of Peale's specimens, a nightjar (*Caprimulgus aequicauda*), and possibly also one of the Polynesian kingfishers, but its absolute identity has not yet been established. Some of the skins have been remade by the taxidermists, but more work of this character is needed. The accessioning this year of the large Richards egg collection of 8,354 specimens, with the necessary cataloguing and labeling, has occupied a good deal of the time of the division, but as yet it has been found impossible to number the individual eggs, a work absolutely necessary and for which special provision has been asked, as it can not be handled with the present force. The unusually large number of alcoholics and skeletons received this year also received proper attention, being catalogued and tin tagged, but the labeling

and placing of the larger specimens in separate containers had to be suspended toward the end of the year on account of lack of suitable jars. A considerable number of older skeletons were cleaned by the preparators, but have not as yet been card catalogued and distributed.

In the division of reptiles, the regular routine work of caring for the specimens has continued without interruption and the cataloguing brought up to date. The card cataloguing which had to be suspended for some time was resumed, arrangement being made for having part of the work done in the head curator's office. All the dry turtle material has now been transferred to the third story and placed in metal-covered quarter unit cases.

Similarly, in the division of fishes the collections have been regularly inspected, the containers refilled or changed when necessary, jars and shelves cleaned, labels restored, and much of the older undetermined material named and installed.

In the division of insects substantial progress has been made in the care of the collections, especially in introducing the tray system. Inability to obtain a sufficient number of drawers has been the limiting factor in this work. The associate curator reports that the collections, as a whole, are in as good condition as in any large modern museum, the loss from museum pests being exceptionally small, due to the excellent system of cabinets and drawers adopted.

The overhauling and putting in good order of the various lots of material in the alcoholic storage of the division of marine invertebrates has about kept pace with the requirements of the collection. Further sorting of miscellaneous lots of unidentified material into various major groups of invertebrates has been done. Only recently the sorting of the rather comprehensive collections of the *Fish Hawk* in Chesapeake Bay has been completed. Coincident with the great arrearages in cataloguing, there is considerable named material on hand waiting to be incorporated in the regular study series. Revision of the collection of brachyuran crustaceans is being carried along with Miss M. J. Rathbun's monographic reports, and the rearrangement of the entire alcoholic collections begun during the past fiscal year is being continued as time permits. Doctor Bassler, of the department of geology, in connection with his studies of the Bryozoa, is working up the greater part of the recent unnamed material and rearranging the entire collection of these forms.

From the division of mollusks the report is that the usual routine of naming, labeling, cataloguing, and putting in place in the series has been carried on as in former years. The arrangement and reinstallation of the west Atlantic Pelecypods has been completed. The west Atlantic mollusks are now arranged according to latest classifications and nomenclature and large quantities of new ma-

terial have been identified and incorporated. This places the east coast collection in good order and easily available for study. Much time has been devoted to classifying the Philippine collection according to genera and species and arranging it in systematic order. In the course of identifying material sent in by outside correspondents a considerable portion of the collections has been arranged according to most recent classifications. This is particularly true of the west coast mollusks. Rearrangement of the collection of American shipworms is well under way, with a view to a monograph in the near future. Since last February the time of one man for one day each week has been devoted to the alcoholic mollusk collection. In all cases where necessary new containers have been supplied and the older ones refilled. This work is progressing satisfactorily. Microscopic slides of molluskan odontophores to the number of 724, belonging to the Thaanum collection and prepared by the late Rev. R. Boog Watson, were registered and numbered by the use of a diamond point. All defective slides were put into good repair. As may be judged, the addition of so many slides has greatly enhanced the already valuable collection of anatomical preparations belonging to this division. A number of slides of odontophores and of the glochidia of several species of naiad have been made as an addition to our collection of microscopic slides. The reclassification and renovation of the general recent collection have been continued throughout the year. The North American fresh-water univalves and the great and difficult families Turbinidae and Trochidae, among the marine shells, were gone over in this way. The labeling and registering of the great Thaanum collection of shells, most of which came from the Hawaiian Islands, have been completed. Identification of Philippine marine mollusks secured by the *Albatross* during the cruise of 1907–1910 has been continued. As time goes on, more and more of our material is being thoroughly identified, and great progress in this respect has been made throughout the collection, especially in Hawaiian material, Philippine material, and in material from the east coast of North America and the West Indies and land and fresh-water mollusks from South America. The writing of head labels for the species in the collection has been progressing during the year until now a large part of all the collections in our charge is furnished with these labels, adding greatly to convenience in consulting them. It seems appropriate to mention at this time the vast amount of time and labor saved by the use of the label holders and blocking-sticks equipped with brass clips. Our collection is growing so rapidly it is estimated that the entire time of at least one person is saved by the use of these small inventions, making it possible for us to keep current the work of the division without asking, to date, for additional assistance. The economy of space in our storage cases

is also worthy of note. Approximately 5,000 cards have been written during the year, among them complete bibliographies of the South American Corbiculidae, the Ampullaridae of world-wide distribution, and the important genera of Philippine fresh-water shells. This saves an enormous amount of time when working with the collections mentioned. The card catalogue gazetteer of the Philippine Islands has been brought up to date. This is of material assistance in working with the Philippine mollusks.

In the division of echinoderms considerable progress has been made in overhauling the crinoid collection. The entire collection of dried ophiurans has been rearranged in accordance with the classification used by H. L. Clark in his Catalogue of Recent Ophiurans, and a synopsis of the new arrangement has been prepared and hung upon the cases so that anyone can now find any species or specimen of ophiuran in the collection regardless of whether they know anything about these animals or not. All of the specimens have been examined and checked up with the card catalogue. To bring the collection into line with present concepts it was found necessary to transfer many species to new genera and to rename many others which are now placed in synonymy. The entire collection of dried echinoids has also been rearranged in accordance with the classification used in Agassiz and Clark's Hawaiian and other Pacific Echini, and all of the specimens have been examined and checked up with the card catalogue; a number of the specimens have been reidentified, and the generic allocation of many of the species has been revised and brought up to date.

Curatorial work in the division of plants has proceeded satisfactorily during the past fiscal year. In particular, Mr. Standley, in the course of his work upon the Mexican trees and shrubs, has identified a large amount of Mexican material which had been mounted but not named beyond the genus, and has redetermined many specimens from the same region which had previously been misidentified. Similar important work of revision has been done in several other groups, notably in the composites by Dr. S. F. Blake, the willows by Dr. C. R. Ball, the grasses by Dr. A. S. Hitchcock and Mrs. Agnes Chase, and the ferns by Mr. Maxon. As in several recent years, material has been received more rapidly than it could be mounted and prepared for the herbarium. This fact and the need of economizing greatly in case room has led to the careful scrutiny of recent accessions and the elimination of much material which, under more favorable circumstances, would have been added to the herbarium. For similar reasons it has seemed desirable to select for immediate mounting and installation material in certain groups under investigation (for example, ferns, grasses, cacti) and from tropical America generally, in order to facilitate special investigations previously under

way. The limit of this sort of selection is quickly reached, however, and it is important that additional case room be provided without delay and that means be found of mounting promptly all material needed for permanent preservation. About 26,000 specimens have been mounted during the year. These have been recorded, chiefly through temporary clerical help. The segregation of type and duplicate type specimens from the main herbarium has been continued as opportunity offered, mainly in connection with other work, and 10,136 specimens have now been distinctively labeled, catalogued, and placed in individual covers in the so-called type herbarium.

At the beginning of this part of my report the general tendency of the work of the preparators has been mentioned. Apart from the specimens which found their places in the exhibition series much work was spent on study material for the various divisions. Skins of mammals and birds were made up or repaired for the study series, many dry preparations made for the division of reptiles; skeletons and skulls cleaned whenever needed for study. Mr. W. L. Brown, whose remounting of the African leopard I have already alluded to, also mounted a South American brocket deer and a mule deer, which were placed in the exhibition series. A large number of mammal skins were worked up, birds dismounted and made into study skins, etc. Some time before his death Mr. Wood had already begun to instruct Mr. Brown in his way of preparing dry bird skins, as well as in his own particular methods of mounting birds which had given him such a high rank among bird taxidermists. It is therefore felt that Mr. Brown and Mr. George Marshall in the future will be able to fully take care of this branch of the exhibits. Mr. Marshall, in addition to a large amount of repair work, skinning fresh material coming in from local collectors and the zoological park, tanning, etc., has mounted a number of smaller mammals, including several monkeys. Mr. J. W. Scollick, the osteologist, in addition to cleaning a number of turtle skulls and bones, prepared 179 whole skeletons, some exceedingly delicate. Among the lot were no less than 155 bird skeletons, and 10 skeletons of rats, which were mounted for the Bureau of Animal Industry, Department of Agriculture. Twelve skins of the same series of rats were also mounted by Mr. Marshall for the same bureau as an exhibit to illustrate the result of certain feeding experiments. The bone-cleaning work under Mr. Scollick's supervision resulted in the cleaning of 57 mammal skeletons and 130 large mammal skulls. Mr. C. E. Mirguet's time was to a great extent taken up with two tasks, the preparation and cleaning of the Florida whale skeleton, donated by the Miami Aquarium Association and mentioned above, and the building of a drum for the tanning of mammal skins. The

whale skeleton was being put in shape for photographing, measuring, and description as preliminaries for an extensive monograph, after which it will be hung in the exhibition whale hall. In addition he prepared a large number of reptile skins and skeletons for the study series, besides plaster casts, repairs, etc., Mr. C. R. W. Aschemeier has been assisting Mr. Brown in the mammal mounting when required, has worked up 105 mammal and 21 bird skins and gone over the entire exhibition collection of alcoholic invertebrates, refilling and otherwise caring for 672 jars. Mr. Palmer's work, up to his death, was mostly on the faunal exhibit of the District of Columbia.

Unfortunately the crowding of the collections in many of the divisions must of necessity increase from year to year until additional space shall be allotted to the department of biology. To that extent the condition of the collections must be considered unsatisfactory and must gradually grow worse. In other respects the conditions must be pronounced as generally good. Nevertheless, the results of the greater activity of the Museum since the stagnation period of the war, which were presaged in my previous report, are already beginning to make themselves manifest, inasmuch as the greater influx of material is consuming more and more of the time and efforts of the staff, which has remained practically stationary during the last 20 years. The mere physical care of the collections is all that can be accomplished in many instances.

The practice of sending the large mammal skins to the professional tanneries to be tanned has had to be given up because of definite losses and the general poor results. A rotary drum has been built in the taxidermist shop; and when the necessary motor shall have been received, it will be possible to handle the work and insure perfect results.

The reports of the various divisions generally emphasize the freedom the collections are now enjoying from the usual destructive museum pests. This is undoubtedly due to the systematic fumigation with bisulphide of carbon.

The crowding alluded to above might be relieved, as far as the division of plants is concerned, by the building of a balcony as advocated on previous occasions. The plan, although approved and accepted as the only practical solution of a nearly intolerable condition, awaits only the appropriation of sufficient means to be carried out. Otherwise the condition of the National Herbarium is satisfactory, but as far as the cryptogamic section is concerned it has been impossible with the small staff to incorporate in it the material received during the past year, and for several years past, though the specimens have been pocketed and prepared for the herbarium as soon as

possible after they are received, and held ready for installation whenever one or more specialists can be secured.

RESEARCHES FOR THE BENEFIT OF THE MUSEUM.

It is mainly by the quality and amount of its research work upon the material intrusted to its care that the reputation of this Museum rests and its existence is justified. I am happy to say that the past year in no way falls short of the traditions of the Institution. The appended bibliography clearly demonstrates this. It does not, however, fully represent the work accomplished during the current year, as of necessity many of the papers published in 1920–21 were prepared previously, nor does publication necessarily reveal the extent of the research work going on. Briefly, the scientific activities of the staff will be enumerated below, but before taking up the work in the divisions I wish to call attention to the signal honor which was bestowed by the National Academy upon a member of the staff for one of the publications issued by the Museum. During the April meeting of the academy this year, the Daniel Giraud Elliot gold medal, together with the honorarium, was voted to Dr. Robert Ridgway in recognition of the eighth volume of The Birds of Middle and North America, which forms part 8 of Bulletin 50 of the United States National Museum, an award which is open to the zoologists and paleontologists of the world. When announcing the award the chairman of the Elliot medal committee said:

> In undertaking this great work Ridgway was not only placing the crown on his labors of a third of a century, but was giving expression to a plan made by Baird a half century before. Ridgway was therefore doubly inspired when, in 1901, he undertook the stupendous task of preparing a 10-volume treatise on all the birds of the Western Hemisphere north of South America. With unremitting zeal, and always maintaining the standard of thoroughness and accuracy set by the first volume of the series, he continued his labors until eight volumes have appeared, the last in 1919. Each volume contains about 850 pages, a total of 6,800 pages in all. Nearly 900 genera are defined and over 3,000 species and subspecies described.
>
> While giving expression to his exceptional powers of analysis and description trained by years of experience and observation, Ridgway has produced a work which in method, comprehensiveness, and accuracy, as well as in volume, has never been surpassed in the annals of ornithology.

This will give you an idea of some of the work which is being quietly and unostentatiously performed in the divisions of this Museum. Taking them up one by one the work of the scientific staff may be epitomized as follows:

Mr. Gerrit S. Miller, jr., found but little time for scientific investigation during the past year. Some progress was made, in conjunction with the late William Palmer, in investigating the characters of the whale from Pablo Beach, Fla., and in conjunction with Mr.

N. Hollister, in making a preliminary examination of the Celebesian mammals collected several years ago by Mr. H. C. Raven and presented by Dr. W. L. Abbott. Dr. Robert Ridgway, curator of birds, continued his work on the ninth part of Bulletin 50, The Birds of North and Middle America. The matter relating to the higher groups, including genera of the Falconiformes, with the illustrations, was nearly finished. A large number of bibliographic references for the synonymies not only for part 9, but part 10 also, were collected. It is pleasant to be able to report that the manuscript for part 9 of this monumental work is nearing completion. Dr. Charles W. Richmond, associate curator, owing to the press of the routine curatorial work, found but little time for research. He made some progress, with Mr. B. H. Swales, in their proposed joint work on the birds of the island of Haiti, but not so much as they had hoped. Progress was also made on their proposed list of type specimens of birds in the National Museum, as mentioned in last year's report. Mr. J. H. Riley, aid, continued his studies of the birds of Celebes and also furnished the curator with certain data on generic characters of vultures and hawks. The study of the North American turtles by Leonhard Stejneger progressed but slowly, due to the lack of leisure from routine work. Miss Doris Cochran, aid, besides identifying the African and Malaysian snakes in the collection, devoted special attention to the reptiles and amphibians of Haiti with a view to a herpetology of that island. Mr. B. A. Bean, assistant curator of fishes, reports satisfactory progress of the report by himself jointly with Dr. Henry W. Fowler, of the Academy of Natural Sciences, Philadelphia, on the fishes of the Wilkes exploring expedition and other collections.

Dr. J. M. Aldrich, associate curator of insects, when not occupied with general routine duties, identifications, etc., devoted his time mostly to the study of the muscoid group of Diptera, publishing two short papers and nearly completing several others. Bulletin 116 of the Museum, being a monograph of the dipterous genus *Dolichopus*, the result of the joint labors of Mr. M. C. Van Duzee, Mr. Frank R. Cole, and himself, was completed and published during the year. The scientific activities of the honorary custodians of the various sections will appear from the appended bibliography.

Dr. Mary J. Rathbun, honorary associate in zoology, has completed the second paper in the series on crabs obtained by the fisheries investigation ship *Endeavour*, 1909–1914; it covers the Brachyrhyncha, Oxystomata, and Dromiacea, and, like the first paper on the Oxyrhyncha, will be published by the Commonwealth of Australia. Considerable progress has been made on a bulletin on the spider crabs of America. This is the second of her series of valuable monographs, which, when completed, will describe and figure all the species of

crabs known from North and South America. She has also named the crabs of various current accessions, notably of large collections from California and Japan, including Formosa. Mr. Waldo L. Schmitt, curator of marine invertebrates, has had but little time left from routine duties for research work. The first installment, or part, of a report on the Macrura and Anomura of the Australian Museum, collected by the *Endeavour*, covering the families Peneidae, Campylonotidae, and Pandalidae, has been completed. The reports on the Macrura and Anomura of the American Museum Congo expedition and the Barbados-Antigua expedition of the University of Iowa are still in progress. Mr. C. R. Shoemaker, assistant curator, has given much of his time to the working up of several large lots of Amphipods, which were sent to the Museum for identification. Several reports were completed and published as shown in the bibliography. Dr. Harriet Richardson Searle, collaborator, I am happy to report, has resumed her studies on the Isopoda and has recently completed a report on the collection of terrestrial isopods, secured by Dr. E. J. Jakobsen in Java. Mr. Harry K. Harring, custodian of rotatoria, has completed his report on the rotatoria of the Canadian Arctic expedition and the first part of a report on the rotifers of Wisconsin, which includes a revision of the Notommatid rotifers. Both of these papers are now in press. The second part of the report on Wisconsin rotifers is well under way. In addition, he has identified a number of interesting collections.

Dr. William H. Dall's completed summary of the West American collection from San Diego to the Polar Sea was published as Bulletin 112 of the United States National Museum. It includes the results of research and collections made by west-coast contributors and the honorary curator since 1865, amounting to more than 2,100 species and varieties. A number of interesting new forms, including a second species of the peculiar South American Felipponea, were received and described during the year, as indicated in the bibliographic list. Most of the time not occupied by routine matters has been given to a monograph of the marine shell-bearing mollusks of the Hawaiian Islands, based chiefly on the important collection donated by Mr. D. Thaanum, of Hilo, Hawaii, and on the fisheries steamer *Albatross* dredgings about the islands. This work is well advanced and only certain troublesome and prolific groups of minute shells remain to be worked up of the material in hand. Mr. John B. Henderson, a regent of the Smithsonian Institution, has been engaged on a monograph of the Antillean land and fresh-water mollusks. A list of the mollusks collected by the Barbados-Antigua expedition of the State University of Iowa has been begun. Considerable time was devoted to the identification of east-coast mollusks sent in by correspondents. In the little remaining time he and the curator

have continued work on the mollusk fauna of the vicinity of Beaufort, N. C. The report on New Operculate Landshells of Cuba, of which he is coauthor with Dr. Carlos de la Torre, is now going through press, while work on the monograph of American Tectibranchs has been slowly continued. Dr. Paul Bartsch, curator of mollusks, has given much time to routine work of the division. Besides devoting attention to numbers of groups of mollusks, as shown by a reference to the bibliography, considerable work was accomplished toward a monograph of the American shipworms, the small east American marine mollusks of the genera *Triphora*, *Bittium*, *Cerithiopsis*, and *Metaxia;* likewise the family Vitrinellidae. In the latter case particular stress has been laid on the examination of the anatomic characters. A little time has also been given to the Philippine Nudibranch mollusks and the west American Caecidae, as well as the marine mollusks of the Mazatlanic faunal area. Some additional attention has also been given to the land mollusks of the Windward and Leeward Islands. Owing to the difficulty of securing the services of an artist, the work on the mollusks of the region about Beaufort, N. C., has not been completed, but it is hoped that this will be accomplished during the ensuing year. A new series of heredity experiments with Cerions has been begun in the Tortugas to replace those swept away by the hurricane two years ago. Mr. William B. Marshall, assistant curator, had but little time remaining from his routine curatorial duties for research, and but one paper in addition to that listed in the bibliography was completed and is now ready for the press, describing eight new species of South American naiads, one of them representing a new genus. Dr. Charles Wardell Stiles, custodian of the helminthological collections, and Dr. B. H. Ransom, assistant custodian, have continued their studies of the parasites of man and other animals. Dr. T. Wayland Vaughan, custodian of madreporarian corals, is still engaged in studying the Museum's recent coral collections in connection with his geologic studies.

Mr. Austin H. Clark, curator of echinoderms, during the year continued work upon the crinoids of the Danish *Ingolf* expedition.

In the division of plants the following special investigations were begun, continued, or completed during the year: Mr. Frederick V. Coville, curator, has continued his studies in breeding and propagating the blueberries (Vaccinium), and has made frequent use of the herbarium as heretofore. Mr. J. N. Rose, associate curator, has continued his studies of the Cactaceae, in collaboration with Dr. N. L. Britton, director-in-chief of the New York Botanical Garden, work which has been under way since 1911 under the auspices of the Carnegie Institution of Washington. The publication of volume 2 of the Cactaceae occurred during the past year, and volume 3 will probably appear during the coming year. The manuscript of volume

4 is well advanced. Doctor Rose has continued his studies, also, of Ecuadorean plants referred to in the last report. Mr. William R. Maxon, associate curator, has continued his investigation of the pteridophyta and has prepared manuscript for Part VIII of Studies of Tropical American Ferns. He has nearly completed a report, also, upon the large collection of Haitian ferns made by Dr. W. L. Abbott and Mr. Emery C. Leonard last year and has reviewed critically the West-American allies of *Selaginella rupestris*, describing several new species. A popular article on the botanical gardens of Jamaica has been contributed to the Smithsonian Annual Report. Mr. Paul C. Standley, assistant curator, has nearly completed manuscript summarizing his studies of the trees and shrubs of Mexico, and has submitted parts 2 and 3 for publication; parts 4 and 5 (conclusion) will be turned in for publication during the coming year. He has recently undertaken the preparation of a synoptical account of the flora of Central America and Panama, based primarily upon the collections in the National Herbarium, and in this connection proposes visiting Salvador, in which region practically no botanical collecting has been done. Mr. Standley also has completed manuscript for the Flora of Alaska. Mr. Ellsworth P. Killip, aid, has finished his revision of the genus *Passiflora* as represented in Mexico, Central America, and Panama, and the manuscript is nearly ready for publication. Mr. Emery C. Leonard, aid, has continued his study of the genus *Scutellaria*. With the assistance of Mr. Standley he has nearly completed the identification of the phanerogams of his Haitian collection of last year.

Dr. C. Hart Merriam, associate in zoology, continued his study on North American bears. Mr. N. Hollister has continued work on the African Artiodactyla, but it is greatly delayed by the housing of the mammalian study series on different floors from the basement to the attic. Dr. O. P. Hay, of the Carnegie Institution, has made constant use of the collections in connection with his work on the Pleistocene fauna of North America. The thanks of the Museum are due to Mr. Oldfield Thomas, of the British Museum, for having compared specimens sent to him with types and other material in the collections under his care.

Dr. W. L. Abbott, associate in zoology, made two visits to the division of birds for purpose of examining material collected in Haiti and Santo Domingo by him, and giving information about the specimens and localities. Dr. H. C. Oberholser, of the Biological Survey, continued his determination of the Malayan material collected by Dr. W. L. Abbott, and made occasional identifications in other parts of the ornithological study series. Dr. A. Wetmore, also of the Biological Survey, although away from Washington most of the year, spent some time in work on the bird skeletons.

Dr. E. R. Dunn, of the Museum of Comparative Zoology, identified various reptiles and batrachians during his visits to the Museum. Dr. O. P. Hay and Mr. C. W. Gilmore have examined reptilian material from time to time. Mr. Remington Kellogg, of the Biological Survey, has spent considerable time in the division of reptiles identifying and studying the entire collection of American toads of the genus *Bufo* with a view to preparing a monograph.

Mr. Walter Koelz's studies of the whitefishes in the division of fishes, mentioned in last year's report, were concluded during the present year. Similarly Mr. Carl L. Hubbs, of the University of Michigan, studied the lancelets and lampreys of the collection in connection with a forthcoming review of these groups. Dr. Henry W. Fowler, Philadelphia Academy of Natural Sciences, has greatly aided in the ichthyological work of the Museum.

It is quite natural that when specialists visit the Museum to examine the collections in connection with the working up or monographing larger groups in their home museums or own private collections, a considerable amount of original identification or correction of current identifications of our own specimens must result. In this way the National Museum benefits directly by the visits of scientific workers from other institutions. Again, with the lack in Washington of specialists in many groups, the Museum is entirely dependent upon the generous assistance of many outsiders for proper identification of specimens sent to it. For these favors grateful acknowledgments are due. The division of insects has been particularly fortunate in this respect during the present year. Thus Dr. E. P. Felt, State entomologist of New York, has recently returned a large collection of the dipterous gall-midges (Cecidomyidae) which were sent him several years ago. He has mounted our material on microscopic slides, the only possible permanent method for these very delicate and tiny flies; most of our material is now returned as types of new species, and he has added a large amount of his own type material, making our collection in the family probably second only to that of the New York State Museum in the world. As usual, Prof. T. D. A. Cockerell, of the University of Colorado, has aided greatly with the bees, while Mr. Nathan Banks and Dr. R. V. Chamberlin, both of the Museum of Comparative Zoology, have identified spiders and myriopods, respectively. So much work of a similar nature has been done by the various members of staff of the Bureau of Entomology in connection with their other studies that it would be impractical to acknowledge the assistance separately and individually.

What is true of the division of insects with regard to dependence on the aid of specialists residing outside of Washington for aid in identifying and classifying material due to insufficiency of the

Museum staff holds good to a still greater extent in the division of marine invertebrates. In fact, so extensive is the number of these specialists, to whom the Museum is under great obligations, that a mere list of their names, with the particular group of invertebrates they have undertaken to work upon, must suffice for this report. It includes the following: Dr. Henry B. Bigelow (Medusae, Ctenophora), Dr. L. A. Borradaile (Crustacea: Pontoniidae), Dr. L. R. Cary (Alcyonarians), Dr. R. V. Chamberlin (Annelids and Gephyrea). Dr. N. A. Cobb (free-living Nematodes), Dr. Wesley R. Coe (Nemerteans), Dr. Leon J. Cole (Pycnogonids), Dr. Henri Coutiere (Crustacea: Crangonidae), Dr. R. P. Cowles (Phoronidea), Dr. Joseph A. Cushman (Foraminifera), Prof. G. S. Dodds (fresh-water Entomostraca), Mr. A. A. Doolittle (fresh-water Entomostraca), Prof. Max Ellis (Discodrilids), Dr. C. O. Esterly (marine Copepods), Dr. A. G. Huntsman (Ascidians), Mr. Fritz Johansen (fresh-water Entomostraca), Prof. Chauncey Juday (Crustacea: Daphniidae), Dr. C. Dwight Marsh (fresh-water Copepods), Dr. Alfred G. Mayor (Scyphomedusae), Dr. Maynard M. Metcalf (Salpa, Pyrosoma, Protozoa), Dr. J. Percy Moore (Leeches), Prof. J. Playfair McMurrich (Actinians), Dr. Charles C. Nutting (Hydroids), Dr. Raymond C. Osburn (Bryozoa), Dr. Henry A. Pilsbry (Barnacles), Capt. F. A. Potts (Crustacea: Rhizocephalids), Prof. Frank Smith (Earthworms), Dr. W. M. Tattersall (Crustacea: Mysidacea), Dr. Aaron L. Treadwell (Annelids), Dr. Willard G. Van Name (Ascidians), Prof. L. B. Walton (Planarians), Dr. C. B. Wilson (parasitic Copepods).

The division of mollusks, although less dependent on outside help, nevertheless gratefully acknowledges assistance received from various specialists. Thus Dr. Frank Baker, of the University of Illinois, and Dr. Victor Sterki, of New Philadelphia, Ohio, have kindly determined material. Through the kind cooperation of correspondents several puzzling points concerning Museum material have been cleared up by references to the original types or typical material in the collections under their care. These correspondents are Dr. H. A. Pilsbry, of the Academy of Natural Sciences in Philadelphia; Dr. F. B. Loomis, of Amherst College; and Mr. W. F. Clapp, of the Museum of Comparative Zoology. The Museum is under great obligation to the United States Navy Department for cooperation of a different kind, inasmuch as the investigations by Dr. Paul Bartsch, curator of mollusks, into the shipworm problem were greatly expedited through the efforts of the commanding officers of two of our navy yards. The deeper understanding of the subject gained through this investigation has greatly enhanced the value of our shipworm material. The officers referred to are Admiral C. W. Parks, Chief of the Bureau of Yards and Docks, United States Navy Department;

Commander C. D. Thurber, United States naval station, Pearl Harbor, Oahu, Hawaii; and Capt. Edward L. Beach, commandant of the Mare Island Naval Station, Calif. As noted in previous reports, the study of fossil mollusks is so dependent on that of the recent forms that the paleontologists of the Geological Survey, notably Dr. W. P. Woodring, Dr. Julia A. Gardner, Mr. W. C. Mansfield, and Dr. C. W. Cooke spent considerable time studying material in the division of mollusks.

The National Herbarium, as in previous years, is used frequently by many members of the scientific staffs of the Department of Agriculture. In particular Dr. S. F. Blake, Dr. C. R. Ball, Prof. C. V. Piper, and Dr. W. E. Safford have given attention to several critical groups. Mr. Ivar Tidestrom has continued his work upon the plants of Utah and Nevada.

RESEARCHES ELSEWHERE AIDED BY MUSEUM MATERIAL

The liberal policy of the Museum in keeping its collections and laboratories open to visiting specialists and in sending out its material to scientific workers in this and other countries, as outlined in last year's report, was continued during the present year to the mutual advantage of both parties.

A number of prominent students visited the various divisions for longer or shorter periods, as shown by the following list: Mr. Remington Kellogg used the cetacean and other osteological mammalian material; Mr. Herbert Lang, American Museum of Natural History, studied African squirrels; Mr. H. E. Anthony, of the same museum, South American mammals; Mr. R. M. Anderson, Geological Survey of Canada, specimens of caribou. The bird collections, besides being freely used by members of the staff of the Biological Survey, were examined by Dr. W. B. Alexander, Perth, West Australia; Dr. Stanley C. Ball, Bishop Museum, Honolulu, Hawaii; Maj. Allan Brooks, Okanagan Landing, British Columbia; Dr. H. C. Bryant, Museum of Vertebrate Zoology, Berkeley, Calif.; Mr. James P. Chapin, American Museum of Natural History, New York; Mr. H. K. Coale, Highland Park, Ill.; Mr. Donald R. Dickey, Pasadena, Calif.; Dr. Jonathan Dwight, New York City; Mr. J. H. Fleming, Toronto, Canada; Dr. Joseph Grinnell, director of Museum of Vertebrate Zoology, Berkeley, Calif.; Mr. Ludlow Griscom, American Museum of Natural History, New York; Mr. A. K. Haagner, Pretoria, Transvaal; Mr. Romeyn B. Hough, Lowville, N. Y., Rev. H. W. Hubbard, Peking, China; Mr. M. J. Kelly, Everhart Museum, Scranton, Pa.; Mr. F. H. Kennard, Newton Center, Mass.; Mr. H. Matsumoto, N. E. Imperial University, Sendai, Japan; Mr. W. De W. Miller, American Museum of Natural History, New York; Mrs. M. M. Nice, Norman, Okla.; Dr. W. H. Osgood, Field Museum of Natural

History, Chicago, Ill.; Mr. C. J. Pennock, Kennett Square, Pa.; Dr. J. C. Phillips, Wenham, Mass.; Mr. H. C. Raven, Bayshore, N. Y.; Mrs. E. M. B. Reichenberger, American Museum of Natural History, New York; Mr. James Henry Rice, jr., Wiggins, S. C.; Mr. Charles H. Rogers, Princeton, N. J.; Mr. Ralph H. Rose, South Kortright, N. Y.; Dr. L. C. Sanford, New Haven, Conn.; Mr. P. A. Taverner, Ottawa, Canada; Mr. W. E. Clyde Todd, Carnegie Museum, Pittsburgh, Pa.; Prof. M. Oshima, of Japan. The above list covers those who examined the skin collection, and includes a goodly number of members of the American Ornithologists' Union, who spent considerable time during the period of the meeting (Nov. 8–11, 1920) in investigating various questions in connection with their work in other museums or in relation to their own private collections. In the office of the division of birds there is a case reserved for common birds of the Eastern States, and certain birds about which inquiry is most frequent (the nightingale, the robin redbreast of Europe, the starling, etc.), as well as examples of a few birds noted for their bright colors or strange features of bill, plumage, etc. The inquiries of many amateurs and nature-study students are satisfied by reference to this case of birds, but no list of these visitors or statistics as to their numbers has been attempted. The following students have examined the series of North American eggs or parts of it; Prof. W. B. Barrows, Agricultural College, Mich.; Mr. H. W. Brandt, Cleveland, Ohio; Mr. E. J. Court, Washington, D. C.; Mr. A. F. Ganier, Nashville, Tenn.; Mr. A. H. Hardisty, Washington, D. C.; Mr. R. G. Pape, Texarkana, Ark.; Dr. A. G. Ruthven, University of Michigan, Ann Arbor, Mich.; Mr. W. E. Saunders, London, Ontario, Canada; Mr. J Fletcher Street, Philadelphia, Pa.; Mr. George H. Stuart, 3d, Philadelphia, Pa.

Reptiles and amphibians were examined by Dr. Thomas Barbour, Museum of Comparative Zoology; and Dr. E. R. Dunn, of the same museum; and Dr. Sidney F. Blake, of the Department of Agriculture. An unusual number of outside entomologists made prolonged stays of from several weeks to several months studying our materials; thus Mr. Ray T. Webber, Melrose Highlands, Mass.; Mr. John Tothill, of the Canadian entomological staff; Mr. C. F. W. Musebeck, Dr. W. T. M. Forbes, and Mr. R. T. Shannon, all of Cornell University. Many other entomologists have visited the division of insects for a few days or a single day at a time, such as Mr. S. W. Frost, of the entomological staff of the Pennsylvania State College; Dr. W. J. Holland, director of the Carnegie Museum, Pittsburgh, Pa.; Dr. William Barnes, Decatur, Ill.; and Dr. C. T. Ramsden, Guantanamo, Cuba. While no outsiders pursued any studies in the laboratories of the division of marine invertebrates during the present year, personal inquiries by members of the scientific staffs of the

Bureau of Fisheries and of various bureaus of the Department of Agriculture were frequent. Doctor Ball, recently appointed curator of the Berenice Pahui Bishop Museum, in Honolulu, spent several days in the division of mollusks reviewing the collections to acquaint himself with the methods employed. Mollusks were also studied by Dr. G. Dallas Hanna, of the University of California; Dr. Bruce Clark, of the same university; and Hon. Truman H. Aldrich, who brought a lot of his material for comparison with that in the Museum. The division also had numerous personal calls from specialists in the Department of Agriculture, Bureau of Fisheries, and Geological Survey for information or examination of collections as an aid in their particular lines of research. The visitors calling for information on special points at the division of echinoderms were Mr. Wilfrid B. Alexander, of the Western Australian Museum, Perth, West Australia; Dr. August F. Foerste, Dayton, Ohio; Prof. T. Harvey Johnston, Queensland University, Brisbane; Prof. Hiko Matsumoto, Sendai University, Japan; Capt. Frank A. Potts, Cambridge, England; and Dr. S. Yoshida, Osaka, Japan. Mr. Arthur de C. Sowerby, on his way to China to collect for the Museum, stopped for several days and visited with the curators and examined specimens. Dr. R. W. Shufeldt, Washington City, used the mammal, bird, and fish collections considerably in photographing and comparing material. Among the professional botanists from elsewhere than Washington who have worked in the herbarium during the year are the following: Prof. H. M. Hall and Prof. Frederick E. Clements, of the Carnegie Institution of Washington, who were engaged in studying *Atriplex*, *Chrysothamnus*, and several other critical genera; Dr. C. F. Millspaugh, of the Field Museum of Natural History, engaged in preparing an account of the flora of Santa Catalina Island, Calif.; Dr. P. A. Rydberg of the New York Botanical Garden, in connection with studies of Leguminosae and Compositae for the North American Flora; Mr. C. A. Weatherby, of East Hartford, Conn., engaged in the study of certain genera of ferns; Prof. S. Mihara, director of the cotton experiment station at Mokpo, Chosen, Japan; and Prof. Koyomitsu Ryu, of the College of Agriculture, Morioka, Japan.

A large number of specimens were asked for as loans by numerous outside investigators and institutions as an aid in the study of their own material. Mammals were loaned to Dr. J. A. Allen, Mr. H. E. Anthony, and Mr. Herbert Lang, of the American Museum of Natural History, New York; the University of California, Department of Geology; Mr. Arthur de C. Sowerby, London; Dr. Oldfield Thomas, British Museum; Dr. G. D. Hanna, California Academy of Sciences; Dr. Joseph Grinnell, University of California; Dr. R. W. Shufeldt, Washington City. Birds were sent to Witmer Stone, Philadelphia

Academy of Natural Sciences; Messrs. W. de W. Miller and J. P. Chapin, American Museum of Natural History, New York; Mr. Frank Bond, Washington City; Maj. Allan Brooks and Mr. Louis Agassiz Fuertes, Ithaca, N. Y.; Mr. Charles B. Cory, Field Museum of Natural History; Dr. N. Kuroda, Tokyo, Japan; Mr. H. H. Bailey, Miami Beach Zoological Park, Fla.; Mr. A. C. Bent and Mr. J. C. Phillips, Cambridge, Mass. Reptiles and amphibians were sent to Dr. Thomas Barbour and Dr. E. R. Dunn, Museum of Comparative Zoology; Miss M. C. Dickerson, American Museum of Natural History, New York; Dr. Frank N. Blanchard, Zoological Museum, University of Michigan; and Prof. A. M. Reese, West Virginia University. From the division of fishes specimens were loaned to Mr. Carl L. Hubbs, Zoological Museum, University of Michigan, and Dr. Henry W. Fowler, Philadelphia Academy of Natural Sciences. In addition, specimens of fishes have been borrowed repeatedly by the specialists of the Bureau of Fisheries. No insect material of any importance was transmitted to investigators outside of the Museum. Marine invertebrates were sent to Dr. K. H. Barnard, South African Museum, Cape Town; Capt. F. A. Potts, Zoological Laboratory, The Museums, Cambridge, England; Mr. W. A. Richter, North Milwaukee, Wis.; Dr. Frank Smith, University of Illinois; Mrs. Leon S. Stone, New Haven, Conn.; Mr. Joel H. Swartz, geological laboratory, Johns Hopkins University, Baltimore, Md.; Dr. A. L. Treadwell, Vassar College, Poughkeepsie, N. Y. Plants sent out from the National Herbarium to specialists or institutions outside of Washington for study numbered 4,076, comprised in 71 lots, a slight falling off from the previous year. Only the larger and more important loans are mentioned in the following list: 208 specimens of *Azalea* lent to the Arnold Arboretum of Harvard University, for monographic study by Dr. Alfred Rehder; 184 specimens of violets of the western United States lent to Dr. Ezra Brainerd, Middlebury, Vt., for study in connection with his forthcoming monograph of the North American Violaceae; 298 specimens of *Hosackia* lent to the University of California, Berkeley, Calif., for study by Prof. W. L. Jepson; 127 specimens of *Mimulus* lent to Cornell University, Ithaca, N. Y., for study by Mrs. Adele Lewis Grant, who is engaged in a revision of the North American species of this genus; 108 specimens of *Filix* lent to the Gray Herbarium of Harvard University for study by Mr. C. A. Weatherby; 280 specimens of *Hypoxis* lent to the Gray Herbarium of Harvard University for study by Miss Amelia E. Brackett; 269 specimens of Scrophulariaceae lent to the New York Botanical Garden for monographic study by Dr. Francis W. Pennell; 1,474 specimens of North American species of *Piper* lent to Prof. William Trelease, of the University of Illinois, Urbana, Ill., for use in connection with his monographic study of this genus. During the year 11

persons connected with the Department of Agriculture have borrowed from the National Herbarium 44 lots of plants, aggregating 1,293 specimens.

DISTRIBUTION AND EXCHANGE OF SPECIMENS.

Duplicates distributed to schools, colleges, and institutions aggregated 2,925 specimens, of which 1,242 were in 8 sets of mollusks, regularly prepared for this purpose, and two sets of 91 fishes each similarly prepared.

A collection of about 500 glass eels, averaging in length 57 mm., was collected for and presented to Dr. Johannes Schmidt, of the Carlsberg Laboratorium, Copenhagen, Denmark, to assist him in his studies of the development of the eel. Of the alcoholic specimens of the 17-year cicada, collected for the use of colleges and similar institutions, as mentioned in last year's report, one lot of 100 specimens was distributed this year.

Exchanges to the number of 12,530 specimens were arranged, 11,926 being botanical. Of the 604 zoological secimens, the most important exchange consisted of 149 bird skins, which were sent to the Museum of the University of Michigan; the remainder were disposed of by the divisions of mammals, birds, reptiles, fishes, marine invertebrates, and mollusks in small lots as exchanges with various institutions and individuals. The largest exchanges of plants were sent to the New York Botanical Garden, British Museum of National History, Mr. J. Theriot, Le Havre, France, Gray Herbarium of Harvard University, Field Museums of Natural History, California Academy of Sciences, and the College de Longueuil, Quebec. The others, made up of sets of less than 500 specimens, were exchanged with 53 different institutions and individuals.

TOTAL NUMBER OF SPECIMENS IN DEPARTMENT OF BIOLOGY, INCLUDING NUMBER OF DUPLICATE SPECIMENS.

As explained in previous reports, the numbers given below can only be approximately correct. It would manifestly be impossible to count the specimens individually. The figures presented are based upon previous estimates, the numbers received during the year being added, and the specimens disposed of by gifts and exchange, or otherwise expended, being deducted. It should be noted that this census does not include the collections of mammals and birds in the custody of the Biological Survey.

Duplicates have not been segregated in several of the divisions for various reasons, but more particularly because a large amount of material has yet to be worked over monographically, so as to make it safe to deplete the series. The figures furnished in last year's report for the duplicates of fishes contained not only the number of duplicates actually segregated but also a rough estimate as to the

possible number of duplicates which the rest of the series might yield when eventually worked up. With the receipt this year of approximately 100,000 specimens of Philippine fishes this method of arriving at a fair estimate of the number of duplicates available for distribution proved utterly inadequate. It has therefore been considered the better plan only to list the number of duplicates actually segregated. It may be further noted that the figures for the division of plants are exclusive of the lower cryptogams. In the following table the figures in parentheses indicate the number of duplicates included in the total:

Division:		
Mammals	77,071	
Birds	299,771	(9,150)
Reptiles	74,329	
Fishes	709,987	(25,000)
Insects	2,200,000	
Marine invertebrates	704,539	(10,000)
Mollusks	1,436,172	(12,000)
Echinoderms	155,000	(50,000)
Plants	1,073,000	(20,000)
Total	6,729,869	(126,150)

REPORT ON THE DEPARTMENT OF GEOLOGY.

By George P. Merrill, *Head Curator.*

Considered with reference only to the work actually accomplished along lines of investigation, the year ending June 30, 1921, has, with the possible execption of the year immediately preceding, been one unprecedented in the history of the department.

Accessions.—A marked increase in the number of accessions is shown over those recorded in any one of the past 15 years. The total number listed is 231, a gain of 51 over last year, and of 29 over the recorded number in 1914–15, next highest on the list. Of the acquisitions of the present year, 151 were received as gifts, 39 as exchanges, 24 as transfers from other departments of the Government, chiefly the Geological Survey, 5 were acquired by purchase, and 5 as deposits or loans. A considerable quantity of the gift and transfer material will, doubtless, on examination prove to be duplicate or undesirable, what proportion it is yet too early to state, but apparently the total value is well up to the average. The additions to the geological, mineralogical, and petrological collections number 1,772 individual specimens and 140 boxes and trays, only a few of which have as yet been unpacked and assorted, but which it is estimated will yield a total of not less than 20,000 specimens, while upward of 50,000 specimens have been added to the paleontological collections.

The largest contributor to the division of geology was as usual the Geological Survey, whence were transferred 131 boxes and 7 trays of material, much of it being described sets of rocks and ores. From this source also were received 5 specimens of the platinum-bearing covellite from the Rambler Mine, Wyo.; the type set of specimens from the R and S molybdeum mine, N. Mex., described by E. S. Larsen and C. S. Ross; and a small collection of carnotite minerals and associated ores from Routt County, Colo., collected and reported on by Hoyt S. Gale.

Accessions of materials from South America have been especially important. Through the courtesy of the Guggenheim interests, Custodian Frank L. Hess was enabled to add a large series illustrative of the Bolivian tin and tungsten ores, and through Messrs L. L. Ellis and Don Stewart, of Oruro, Bolivia, and Prof. Joseph T. Singewald, of Johns Hopkins University, Baltimore, to secure other examples of like nature. From Mr. Tomas A. Le Breton, am-

bassador from Argentina, was received a representative series of Argentina ores and minerals.

Important additions were made to the borate collections from California by Assistant Curator Foshag. Other contributions received through the same source include specimens of rich silver ore from the California Rand Silver Co., Randsburg, Calif.; of cerargyrite from the Calico District, gift of J. R. Lane, of Yermo, Calif.; and an uncommonly large and pure example of cinnabar contributed by the New Almaden Mining Co.

Among the radium-bearing materials received are carnotite ore from the Long Park, Colo., properties of the Radium Luminous Materials Corporation, furnished by the Radium Information Service, New York City; euxenite ore, sent at the request of F. L. Hess by the Orser-Kraft Feldspar Co. (Ltd.), of Perth, Ontario; torbernite from White Signal, Grant County, N. Mex., gift of the Radium Treatment & Sanatorium Co., Silver City, N. Mex.; and approximately a kilogram of uraninite from Joachimstahl, Bohemia, acquired by exchange from Ward's Natural Science Establishment.

Among miscellaneous gifts may be mentioned two specimens of gold ore from the Mother Lode, Calif., and one of the White Pine County, Nev., scheelite, received from W. J. Loring, San Francisco, Calif.; examples of crude talc of unusually fine quality from Death Valley, sent by the Pacific Minerals & Chemical Co., Glendale, Calif.; bauxite from British Guiana, donated by the Demerara Bauxite Co., Philadelphia; a specimen of a sandstone used as a pulp stone in grinding wood for paper making, contributed by the International Paper Co., New York City; and a sand-rock used for various industrial purposes, by the National Silica Co., Oregon, Ill.

An exceptionally large example of filamentous basalt, Pele's hair, from Kilauea Crater, Hawaiian Islands, was presented by Prof. T. A. Jaggar through Dr. H. S. Washington, and four specimens of an unusual form of lava from the eruption of a volcano in San Salvador in 1917, together with photographs of the region, were received from Bartholomew McIntire, San Francisco, through the Department of State.

But four additions to the meteorite collection were recorded during the year. These comprised two examples of the Forsyth County, N. C., iron, and one of the Chinautla, Guatemala, by exchange with Ward's Natural Science Establishment; a fragment of the Troup, Tex., stone, deposited by the University of Texas; and a piece weighing 75 pounds cut from a 475-pound mass of iron found in Owens Valley, Calif., in 1913, by Mr. Lincoln Ellsworth, of New York City.

The extent of the mineral collection was materially increased. A large number of new or rare species, including fine examples of

precious opal from Nevada, a suite of rare sulphosalts from the Binnenthal, Switzerland, and miscellaneous minerals, chiefly from foreign sources, were obtained through exchange with Ward's Natural Science Establishment. In a like manner were added a number of Italian minerals, received from Prof. Alberto Pelloux, Genoa; miscellaneous minerals from California, including some rare sulphates and an attractive exhibition specimen of beautifully crystallized pink halite from Searles Lake, received from Mr. M. Vonsen, Petaluma, Calif.; interesting lead and vanadium minerals sent by Mr. C. A. Heberlein, Supai, Ariz.; and a collection of the unusual zeolites from North Table Mountain, near Golden, Colo., received from the School of Mines at Golden.

The Rainbow Ridge Mining Co., through Mr. Archie Rice, New York City, presented a suite of precious opal from their mines in Humboldt County, Nev. These show the variations in the coloring of the opal, ranging from the very dark or "black" opal to the palest opalescent tints. The collection forms a part of an exhibit composed entirely of opals in the matrix.

Additional accessions of note include the following gifts: Rare copper minerals from Chuquicamata, Chile, presented by Guggenheim Bros., New York City; exceptional specimens of wolframite, by J. F. Aguilar Revoredo, Oruro, Bolivia, and of the rare mineral hewettite, by A. O. Egbert, Prescott, Ariz.; sphenomanganite and catoptrite from Sweden, new to the collections, by Col. W. A. Roebling, Trenton, N. J.; inyoite from New Brunswick, by E. J. Armstrong, Erie, Pa.; a large specimen of bismuthinite, by W. H. Weyher, Alta, Utah, and an exceptional specimen of sphalerite, by C. H. Short, Salt Lake City, both obtained through the efforts of Mr. Victor C. Heikes; a large group of fluorspar crystals, by the Diamond Fluorspar Co., Karbers Ridge, Ill.; described specimens of augite and apthitalite, by Dr. Henry S. Washington; and several examples of semiprecious stones, by F. M. Myrick, Johannesburg, Calif.

A most important addition to the collection of gems and gem minerals was afforded by the acquisition, through the Frances Lea Chamberlain fund, of 56 cut and uncut tourmalines from Mesa Grande, Calif. The cut forms include both cabochons and facetted stones and show the rich variety of coloring characteristic of this mineral; the crystals are of varying sizes, showing two to three colors in each example. Through the same means were secured 9 cabochons of chrysoprase; 6 blue zircons from Queensland, Australia; 4 carved jades; 2 cabochons of Persian turquoise; 2 cut gems each of Madagascar orthoclase and wernerite; 1 Australian opal carved in the form of a pansy blossom; 4 blue and yellow Australian sapphires; and an Australian opal, cut cabochon, weighing 31.9

carats. A cut topaz weighing 92.4 carats was received as a loan from Mrs. George P. Merrill.

The principal addition to the petrological collection is the extensive and valuable series comprising upward of 300 hand specimens of igneous rocks from the islands of the Pacific and Indian Oceans, collected by the late Dr. Joseph P. Iddings and presented by his sister, Mrs. Francis D. Cleveland, of Cambridge, Mass. These, one regrets to state, have not as yet been fully described. Several brief papers under the joint authorship of Drs. Iddings and Morely are sufficient to show their interest and importance, but it is evident much work upon them remains to be done. Including also the scientific portion of Dr. Iddings's library, as well as valuable collections assigned to other departments, this is considered one of the most noteworthy accessions of the year.

Other additions, received by transfer from the Geological Survey, consist of collections of rocks from the western New England and eastern New York lime belt, collected by Prof. T. Nelson Dale, and miscellaneous rocks from Montana, Colorado, and Washington, collected by Messrs. Hancock, Pishel, and Beekley.

The accessions in the section of invertebrate paleontology are of especial interest on account of the wide range of localities represented. China, Australia, Tunis, Thrace, Java, Philippines, Hawaii, Trinidad, Jamaica, Haiti, Colombia, Argentina, Chile, and Bolivia are the most prominent of the foreign sources.

Perhaps the most valuable of these foreign collections are the molluscan types from Bowden, Jamaica, described by W. P. Woodring and deposited by Johns Hopkins University, and important acquisitions of fossil invertebrates and plants collected in China by Prof. George D. Louderback, of the University of California. Large collections from Haiti, the result of surveys being made for the Haitian Government under the direction of the Geological Survey, through which institution they were presented by the Haitian Republic, must also be mentioned, as well as a valuable lot of Tertiary fossils from Australia, received as an exchange from the National Museum, at Melbourne.

Additions to the Cambrian collections are comprised in three accessions. About 6,000 specimens, collected and studied by Secretary Walcott, were deposited by the Smithsonian Institution; approximately 1,000 from the Upper Cambrian of Wisconsin, received as a gift from Dr. W. O. Hotchkiss, State geologist, were secured through the efforts of Dr. E. O. Ulrich to supplement the monographic studies by himself and Dr. C. E. Resser; and 332 specimens from Lancaster County, Pa., were presented by Dr. H. Justin Roddy, of Millersville, Pa.

Approximately 25,000 specimens of Silurian and Devonian fossils from Maine, representing the final shipment of collections made by the late Prof. H. S. Williams, have been transferred from the Geological Survey. The collections from these horizons have been further supplemented by valuable and much-needed materials secured through three exchanges with Raymond R. Hibbard, of Buffalo, N. Y.

Additional noteworthy accessions are: An especially selected lot of Carboniferous foraminifera, gift of Hon. Charles H. Morrill, Lincoln, Nebr.; a large collection containing many new species, particularly of fossil sponges and trilobites, from a hitherto unrepresented area in Nevada, received in exchange from Mr. H. G. Clinton, Manhattan, Nev.; and a large slab of fossiliferous Ordovician limestone from southwestern Ohio, obtained by the curator for exhibition purposes.

By far the most important accession to the section of vertebrate paleontology is a collection of more than a hundred specimens of vertebrate remains, mostly mammalian, representing a new Pliocene fauna of 30 or more species, obtained by Mr. J. W. Gidley, working under the joint auspices of the National Museum and the Geological Survey. The collection includes basic material for two skeleton restorations, one of a little-known species of mastodon, the other a new species of Glyptotherium. Mr. Gidley also collected from the "bone quarry" at Agate, Nebr., a block or slab, 5½ by 3½ feet, and 14 inches thick, weighing upward of 4,000 pounds, and containing numerous fossil bones, mostly of the little two-horned rhinoceros *Diceratherium cooki*.

Mr. C. W. Gilmore, while investigating certain fossiliferous areas in New Mexico, noted elsewhere, secured interesting mammalian remains.

Of the materials acquired by exchange, mention may be made of a fossil turtle, *Bystra nanus*, a rare specimen and the type of the genus, received from the Buffalo Society of Natural Sciences; a disarticulated skull and lower jaws of the crested dinosaur Stephanosaurus, the first representative of this reptile to be secured for the national collections; part of a skull and lower jaw of a Pleistocene elephant from an unknown locality, and an elephant tooth from Otranto, Italy, received from Ward's Natural Science Establishment; approximately 200 specimens of Pleistocene mammals from a cave deposit near Coconino County, Ariz., received from the University of Arizona; and two skulls of *Diceratherium cooki* and casts of two Permian reptile skulls from the University of Chicago.

The lower jaw of a Pleistocene mastodon from near Yazoo City, Miss., gift of the Yazoo Commercial Club; a jawbone with teeth intact of the fossil shark, *Edestus heinrichsii*, gift of the Southern

Coal, Coke & Mining Co., St. Louis, Mo.; and a fossil elephant skull, acquired by purchase, are additional accessions worthy of note. Mention may also be made of the acquisition of an original oil painting of a life restoration of the flying reptile Ornithostoma which was deposited by the Smithsonian Institution.

Of prime importance among the accessions to the section of paleobotany are large collections from the Eocene formations of southeastern North America, described and figured by E. W. Berry in Professional Papers of the United States Geological Survey. Following these should be noted gifts of unusually well-preserved exhibition and study specimens from Malheur County, Oreg., and Coeur d'Alene, Idaho, the former presented by Mr. Sam Ballantyne, Boise, and the latter by Henry J. Rust, Coeur d'Alene, Idaho. Valuable material was also included in the extensive collection from China received from Professor Louderback, mention of which is made above.

Explorations and expeditions.—Explorations were confined wholly to the division of paleontology. The field season of 1920 was spent as usual by Secretary Walcott in the Canadian Rockies. His work had for its object the determination of the character and extent of the great interval of nondeposition of sedimentary rock-forming material along the Front Range of the Rockies west of Calgary, Alberta, and the clearing up of the relations of the summit and base of the great Glacier Lake section of 1919 to the geological formations above and below. Early in July work was begun along the Ghost River northeast of Banff; the Rocky Mountain front was studied and among its cliffs a new formation of Lower Middle Cambrian age was determined. Forty miles north of Lake Louise a geological section was studied in detail that tied in the base of the Glacier Lake section with the Middle and Lower Cambrian formations. Proceeding to the upper valley of the Clear Water River, a most perfectly exposed series of limestones, shales, and sandstones of Upper Cambrian and later formations was found, which cleared up the relations of the upper portion of the Glacier Lake section to the Ordovician formations above.

During July, 1920, and again in January, 1921, Curator Bassler was engaged in the preparation of casts of type specimens of fossils in the Walker Museum, University of Chicago, in continuation of plans to attain for the national collections their proper completeness by having represented all available type specimens. The casting of all the Devonian, Mississippian, and Pennsylvanian types in the Walker Museum, amounting to some thousands of specimens, was accomplished during these two visits.

Dr. E. O. Ulrich, of the Geological Survey, associate in paleontology, continued his field researches on the Cambrian and Ordo-

vician rocks of the Appalachian and Mississippi Valleys during the first three and last two months of the fiscal year. Accompanied by his assistant, he studied numerous areas to determine doubtful geological points, during the course of which he obtained valuable collections which will come to the National Museum.

Early in the year Assistant Curator J. W. Gidley was detailed to visit Williamsburg, Va., to investigate a reported find of some fossil bones in that vicinity. These proved to be the remains of an extinct species of whale of Miocene age, but were incomplete and too badly damaged to make possible the recovery of a sufficient number for an exhibition mount.

Two other important field expeditions were undertaken by Mr. Gidley during the year; the first as the result of reports from Mr. Kirk Bryan, of the Geological Survey, who had discovered some promising localities for fossil vertebrate remains while making an extensive survey of the underground water resources in the San Pedro Valley of Arizona. Mr. Gidley spent two months or more in the Arizona field, visiting three localities in the San Pedro Valley and one in Sulphur Springs Valley. The last yielded only fragmentary remains of Pleistocene mammals, but much better results were obtained in the San Pedro Valley, where two localities, one about 2 miles south of Benson, the other at the Curtis ranch, about 14 miles south of Benson, yielded remains of about 30 species, mostly mammals, which seem to represent a new or little-known Pliocene fauna. Mr. Gidley shipped 21 boxes, with an aggregate weight of about 4,630 pounds. A portion of this material will be suitable for exhibition, the most important being remains sufficiently complete to form the basis of skeleton restorations of a rare species of mastodon and a large edentate. Other remains represent extinct species of camels, carnivorous animals, rodents, turtles, and birds.

The second expedition, entirely under Museum auspices, included a trip to Agate Springs, Nebr., where was secured a large slab, or block of limestone containing remains of the little rhinoceros *Diceratherium cooki*. This will be cleaned and exhibited with the bones *in situ*.

Mr. C. W. Gilmore was detailed in April to visit a fossiliferous area some 36 miles north of Santa Fe, N. Mex., for the purpose of making collections of paleontological material, and for determining the advisability of reserving certain lands for national monument purposes. A skull, lower jaws, and other bones of an extinct rhinoceros, various limb and foot bones of a camel, and a small collection of miscellaneous specimens were obtained as a result of this trip.

Work of preserving and installing the collections.—Numerous minor changes have been made in the exhibition collections by the addition of new material. A special case to accommodate two large

masses of molybdenum ore has recently been installed, and an instructive addition made by Mr. Shannon to the economic series in the form of weighed samples of some of the more important ores, each of which is accompanied by samples of its constituent elements in their relative portions. The saline series has been greatly improved by the addition of materials collected in California by Mr. Foshag. To make space for a collection of ores from Argentina, a series of mercury-antimony ores from Huitzuco, Mexico, was removed from exhibition.

Information sufficient for the disposition of some 250 boxes of miscellaneous material stored for the Geological Survey in the summer of 1919 having been received from the Director, the task of assorting them was undertaken and carried out so far as the identity of the boxes could be definitely determined. This proved both tedious and difficult owing to careless and incomplete labeling. A part of the boxes were returned to the survey, some turned over to various survey men located in the National Museum, and 128 boxes were accessioned as a transfer. Of the last named but a small proportion has as yet been unpacked. The work goes slowly since much of the material is in such a condition that the disposition of each lot requires careful consideration, and in many cases can not be made without thorough investigation and consultation with the survey collectors. Where decision is possible the material has either been rejected as unsuitable for museum purposes or has been catalogued and incorporated in the collections.

Two cases supplementing the collection of gems have been added to the exhibits in the mineral hall. One of these contains gem minerals in the matrix or as found in nature; the other illustrates the varieties and occurrence of precious opal.

Incidental to the visit of Madame Curie the exhibit illustrating radio-activity was materially enlarged and reinstalled in two cases at the east end of the mineral hall, where it is more attractive as well as more instructive than as formerly displayed.

The study series of minerals has been entirely overhauled, cleaned, and rearranged. A number of specimens were transferred to other series, and the drawer labels improved to facilitate the ready location of specimens. The duplicate collection has likewise been overhauled and a large amount of worthless material discarded. Several hundred petrographical specimens selected from old sets broken up have been incorporated in the study series of rocks.

The great influx of new collections to the section of invertebrate paleontology has required continued rearrangement of the study series in order to accommodate the new material. Much time has to be spent each year in this purely manual labor, but condensation and elimination of duplicates is necessary since the collections at present

nearly fill the available space. The Cambrian collections under the charge of Secretary Walcott were so condensed during the year that an entire room in the Smithsonian building was made available for other purposes. Assistant Curator Resser has also reduced the Cambrian collections housed in the Museum Building until they now occupy the minimum of space and still remain accessible.

Similar work on the post-Cambrian Paleozoic collections has been carried on by Curator Bassler. Additional space afforded by the transfer of a number of steel cases from the department of anthropology has made possible the withdrawal of all material from storage, so that all collections are now easily accessible. Lack of time, however, has prevented completion of the arrangement of large collections of Devonian invertebrates known as the Williams collection, although Doctor Resser has devoted considerable time to this work. The preparation and classification of 10 boxes of Cambrian and Ordovician fossils forwarded by the Canadian Geological Survey for study by Secretary Walcott occupied about two months of Doctor Resser's time.

The Mesozoic collections have as heretofore been cared for by Dr. T. W. Stanton, Dr. W. H. Dall has kept the biologic collections of the Cenozoic series up to their usual high standard, and Dr. T. W. Vaughan has cared for the numerous large accessions secured through his activities.

Miss Jessie Beach, aid, has assisted in all work on both the exhibition and study series where literary and clerical help were required. Her duties have included reading of proof, preparation of manuscript, registering and numbering specimens, and general routine work of the division.

The preparation of photographic material for illustration, particularly of fossil insects, cephalopods, and protozoans, often microscopic, has as heretofore devolved on Messrs. Bassler and Resser, and been executed with their customary skill and taste.

In addition to the cleaning and rearranging necessary every year exhibition work in the section has included the preparation of a mount illustrating an Ordovician sea beach; an exhibit of fossil insects occupying one-half of an upright case; and work toward the improvement of the stratigraphic exhibit of Paleozoic faunas. The forms are often small and so inconspicuous to the average visitor that in many cases enlarged photographs are now introduced with the specimens. Experience has shown that a picture calls attention to the descriptive label and this to the fossil itself.

Dr. Frank Springer has selected from his collection an instructive and showy biological series of fossil crinoids, an exhibit which occupies two entire cases, and which can not be surpassed in any museum.

Several additions to the exhibits of fossil vertebrates resulted from the work in that section during the year. A skeleton of *Brachyceratops montanensis*, unique in being the smallest horned dinosaur yet discovered, forms a most interesting addition to the exhibits illustrative of the Ceratopsia. Mr. N. H. Boss is to be highly commended for the excellence of the mount, which in some respects proved to be a most difficult subject. It might also be mentioned that the National Museum now has mounted skeletons of the smallest as well as the largest individuals of this race of dinosaurs, and, indeed, the only ones of their kind in any museum in the world (pl. 2).

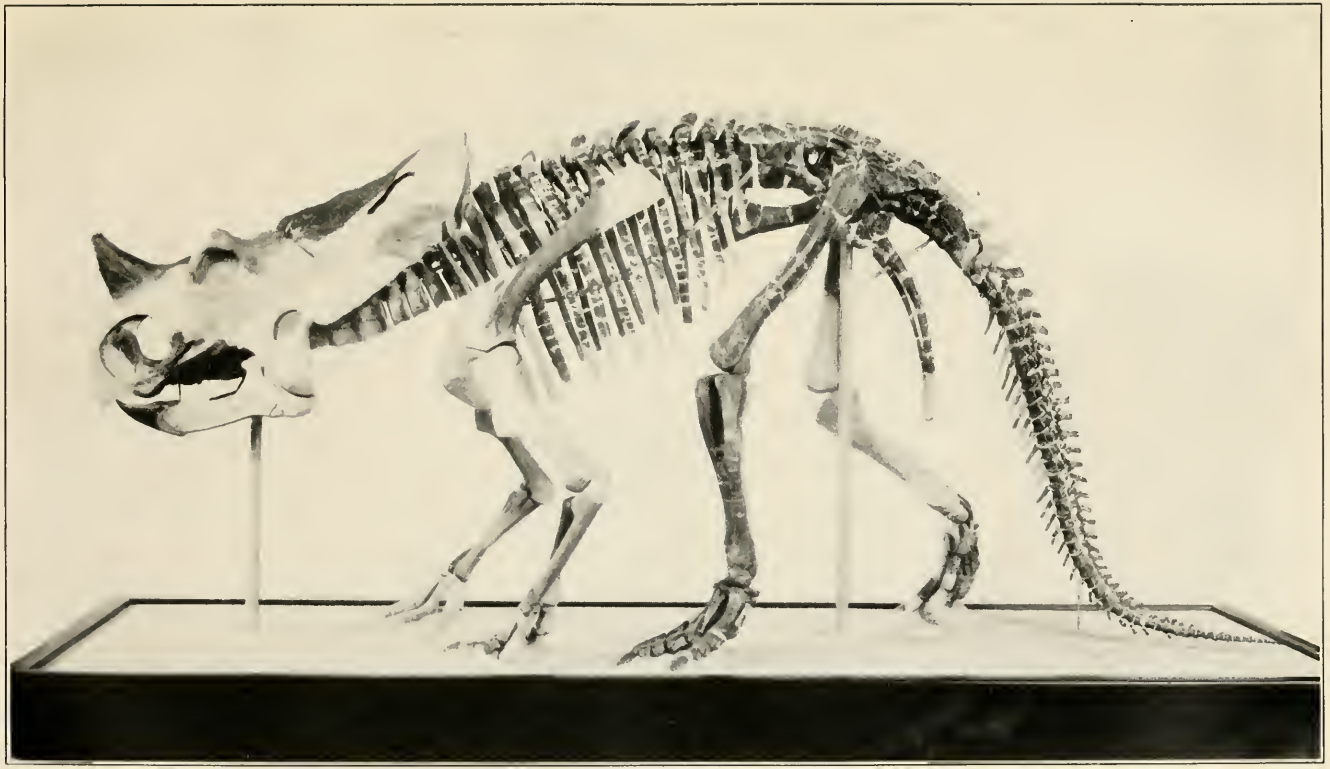
Mr. Boss also prepared the skeleton of the smallest lizard, *Saniwa ensidens*, the type specimen, which had been in the Museum for the past 50 years in the condition as received from the field and described by Leidy. Instead of consisting of but a few bones, the specimen was found to have the greater part of the skull, the backbone, and numerous other bones preserved. This is a most important specimen from a historical standpoint, being the first Varanid lizard to be described from North America; also, it is now known to be the most perfect skeleton of its kind as well as the most ancient.

The work of mounting the skeleton of the fossil wolverine, Gulo, from the Cumberland cave deposit, reported as under preparation last year, has been completed by Mr. Horne, as has also that of a composite mount of a bear. There are now on exhibition three skeleton mounts from the material collected from this deposit several years ago by Mr. Gidley (pl. 3).

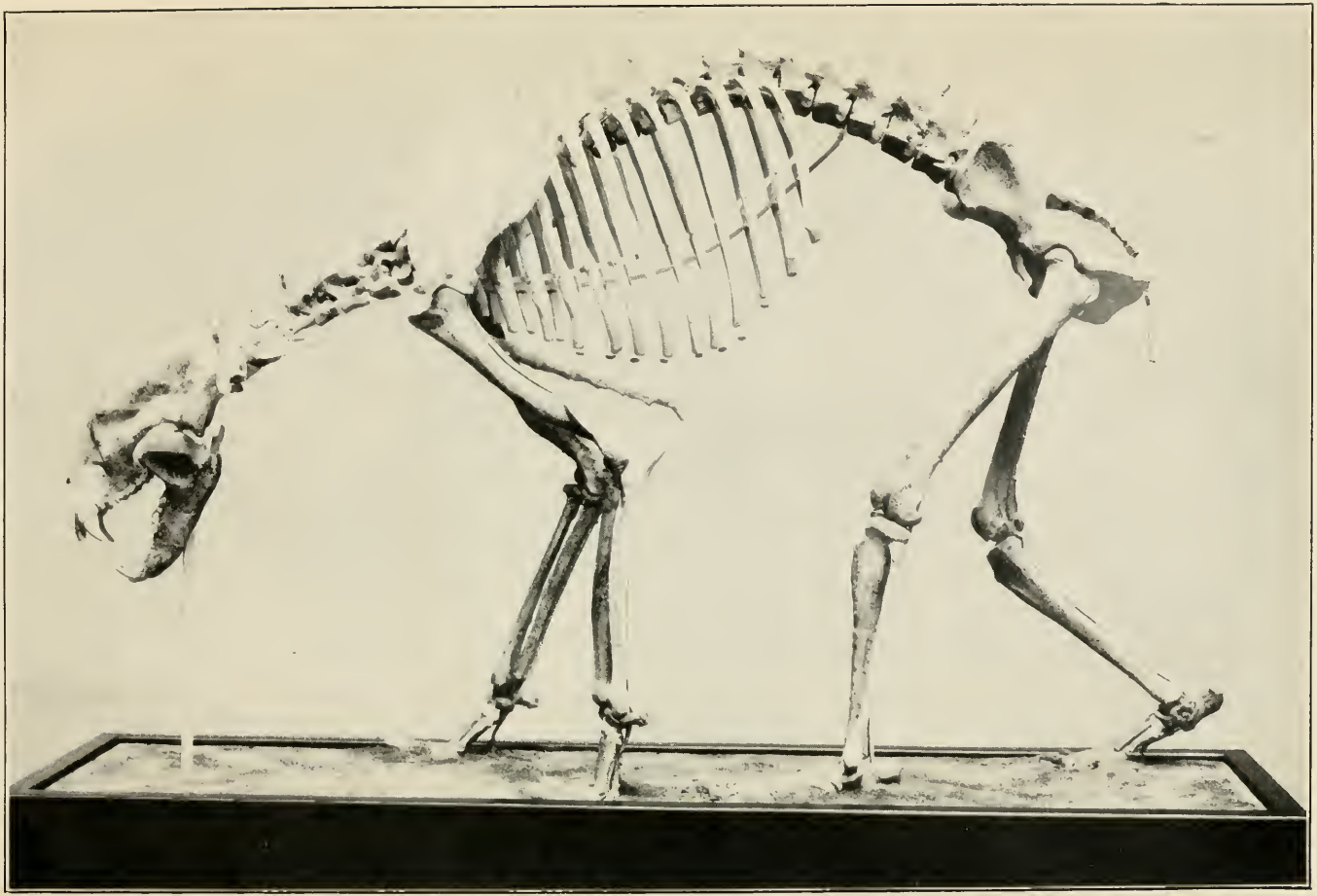
Mr. Horne has also completed mounts of the skulls of *Monoclonius flexus* and *Elephas primigenius* and cleaned and restored the missing parts of eight large Oreodont skulls from the Miocene of Oregon.

A number of Titanothere skulls have been prepared for use in a special exhibit comprising some 26 individuals now being installed in a new case in the southeast corner of the exhibition hall. Mounts for more than half of these are made, and the work is well under way.

Mr. Barrett was engaged for the entire year in preparatory repair work, chiefly on specimens from the study collections. Special mention should be made of the complete overhauling of the many trays of miscellaneous Titanothere materials. Scattered parts of individuals were assembled, broken bones repaired, and the material arranged in standard trays in the steel cases, thus rendering them easily accessible. Several hundred individual bones of the Cumberland cave material, several small collections received from the United States Geological Survey, a large cetacean skull from the diatom deposits of California, numerous Ceratopsian fragments, and a considerable portion of a wolf skeleton have also received attention.



SKELETON OF SMALLEST HORNED DINOSAUR (BRACHYCERATOPS MONTANENSIS), FROM MONTANA. COLLECTED IN 1913; MOUNTED DURING 1920 AND 1921.



SKELETON OF AN EXTINCT BEAR FROM A PLEISTOCENE CAVE DEPOSIT NEAR CUMBERLAND MARYLAND. COLLECTED IN 1915; MOUNTED DURING 1920 AND 1921.

Mr. Gidley has continued his systematic arrangement of the Fort Union materials, adding about 200 to the identified and 450 to the catalogued lists of this collection.

Since the resignation of Mrs. Stelle, the position of aid in paleobotany has remained vacant. Messrs. Bassler and Resser have therefore been obliged to look after the work of this section. Exhibition work has dealt mainly with the biologic series occupying the long wall case in the paleobotanical hall. This exhibit, now well advanced, illustrates the biologic relationships of fossil plants, and, supplemented by ample descriptive labels and numerous diagrams and photographs, shows admirably the evolution of these organisms. Miss Beach has assisted in the cataloguing and numbering of the new acquisitions in the section.

Present condition of the collections.—The mineral collection, though ranking but third among those of the public museums of the country, is nevertheless entitled to almost first consideration on account of the method of display. As in the year past, the gem portion of this collection has been under the immediate supervision of Miss Margaret Moodey, to whose taste is due much of its attractiveness. This collection has greatly prospered through the Chamberlain endowment. Were it necessary to emphasize the desirability of having a perfectly definite specified sum from which could be drawn immediately funds for purchase, it is here offered. Among the entire series the opals have perhaps profited the most. The collection as a whole is fairly balanced, though naturally lacking as complete a series of diamonds, rubies, sapphires, and other expensive stones as might be wished.

Little has been added to the exhibition series in physical and chemical geology, the petrographical series and the collections of larger materials grouped under the heads of rock-weathering, glaciation, vulcanism, etc., remaining practically unchanged from last year. The meteorite exhibit has received several important additions as listed below:

	Grams.
Appley Bridge, England (stone)	590
Colby, Wis. (stone)	1,685
	1,956
Forsyth County, N. C. (iron)	416
	418
Owens Valley, Calif. (iron)	35,500
Troup, Texas (stone)	115
Yenberrie, Australia (iron)	3,320

The collection, though ranking but third among the public collections in America, is nevertheless one of great importance on account of the unusually large proportion of stones which have been the subject of systematic investigation. The total number of falls and finds now represented is 490.

As a whole, the exhibition collections throughout the department are now in good order, although there are important gaps. This is particularly the case in vertebrate paleontology, where there is need of skeletal remains of some of the larger reptilian forms. The study series in all divisions are in good order and accessible, and the catalogues are well up to date.

Researches.—The Head Curator has continued his studies on meteorites and has completed, for the time being, researches on chondritic structure and metamorphism.

For the first time in the history of the department there has been made—at least begun—a systematic attempt at determining the mineralogical nature of the ore collections. Heretofore, owing to lack of assistance, it has been possible to classify these collections only according to the principal metal they carried, regardless of its form of combination. Mr. Shannon has attacked the problem with energy, skill, and intelligence, and in connection with his work has not merely discovered minerals new to the localities, but in several instances new to science. Andorite, not previously known from America, has been found to constitute silver ore from Nevada, and lead ores from Colorado have been found to consist of phosgenite and strontium-bearing cerussite. Mr. Shannon has also made a detailed study of the black sands of Idaho, disclosing many new and unusual facts regarding them. Crystallographic investigations on datolite, vivianite, and boulangerite have been published or are in process of publication. Chemical examinations of four new mineral species, owyheeite, nyeite, higginsite, and orientite, have been completed, and ludwigite from several localities has been investigated. The mineral collbranite has been proven identical with ludwigite.

The division of mineralogy has likewise prospered under the conditions existing during the past two years. Assistant Curator Foshag has thoroughly overhauled and rearranged the mineral collection, and corrected and brought up to date the card catalogue of the same. He has also, incidentally, analyzed and described several minerals, some of which were new to science. Among these mention may be made of plazolite, a new mineral, creedite, and a number of the borate minerals. He has under investigation the minerals microlite, eakleite, a new mineral from California, and some rare lazurite-bearing rocks, also from California.

With the departure of Mr. Foshag, work on the petrographic series must come to a stop. This is greatly to be regretted since there are thousands of specimens which need assorting, a portion to be reserved, a portion held for duplicates, and still another portion to be rejected. This is a work which can be done only by one with some petrographic training. The work is falling more and more behind yearly and unless we are more fortunate in holding our

assistants in the future than in the past, the outlook is indeed discouraging. Many of these collections are large and of great scientific interest, as, for instance, those of the igneous rocks of the Yellowstone Park described by the late Dr. J. P. Iddings, as well as those of the Pacific and South Sea Islands. These need to be numbered and marked individually in a manner to insure them against being lost or mislaid through careless handling. Now they simply lie in pasteboard trays with labels mainly in pencil, and nothing to serve as a connecting medium between the two. The overturning of a tray, thus separating specimen from label, would therefore result in complete ruin.

Paleontological researches included those by Secretary Walcott on the appendages of the trilobite and related Crustacea, upon which subject he has practically completed a memoir.

Curator R. S. Bassler, in association with Ferdinand Canu, completed the concluding volume of their studies on the American Cenozoic Bryozoa, as well as certain researches entitled "Studies on fossil and recent Cyclostomatous Bryozoa."

Dr. E. O. Ulrich's monographic studies on the early Paleozoic faunas have progressed to a point where they are nearing completion. With Doctor Bassler he has undertaken a monograph embracing some 400 species of Silurian Bryozoa and Ostracoda of Maryland, which will be published by the geological survey of that State, and in association with Dr. C. E. Resser, has continued work on the Upper Cambrian faunas of the Mississippi Valley, having practically completed the description and illustration of several large families of Early Paleozoic trilobites.

Dr. Frank Springer has begun studies preparatory to a monograph on the Silurian Crinoidea of North America, forms in which his collection is especially rich.

Dr. T. W. Stanton has continued work on the invertebrate faunas of the Comanche series of the Cretaceous, and Dr. F. H. Knowlton has completed a manuscript on the fossil plants of the Miocene Lake Bed formation of South Central Colorado, and is now engaged on a revision of the flora of the Green River formation. Dr. Mary J. Rathbun identified a small collection of fossils from Trinidad, obtained by J. A. Bullbrook and F. W. Penny.

Mr. C. W. Gilmore completed a short paper on the fauna of the Arundel formation of Maryland, and a semipopular account of the horned dinosaurs for the Smithsonian annual report, both of which are now in press. The manuscript and illustrations for an article descriptive of the extinct lizard *Saniwa ensidens* Leidy are nearing completion, and a report on the Cretaceous fossil Reptilia of the State of North Carolina was prepared for the geological survey of that State.

Mr. J. W. Gidley's long absence in the field prevented the completion of his researches on the Fort Union Primates. However, his studies are nearing an end, and he hopes to present the results for publication in a short time. Some progress has also been made on the study of the Cumberland Cave carnivores.

Within the year, 347 lots of material have been sent in from various sources for determination. No inconsiderable amount of time is spent in this work. In the majority of cases, a laboratory test is necessary to determine the nature of the material, and when fossils are submitted, one lot often consists of a number of forms which frequently require careful study. Incidentally, the clerical work necessary to keep track of these, and in writing the reports, is a considerable item in the day's work. In addition to this, and aside from inquiries which come direct to members of the staff, 484 letters from persons seeking information on various subjects have passed through the office within the year.

Various students outside the staff have engaged in researches on the collections, particularly the paleontological. Dr. August F. Foerste, of Dayton, Ohio, spent the summer of 1920 in a study of Silurian cephalopods and Ordovician trilobites; Dr. Arthur Hollick has been engaged for a part of the year studying the Alaskan floras, under the auspices of the United States Geological Survey. Miss Winifred Goldring, of the New York State Museum; Prof. E. W. Berry, of Johns Hopkins University; Dr. Ralph Chaney, of the University of California; and Dr. G. R. Wieland, of Yale University, have likewise been students of the plant collections. Mr. A. S. Romer, of Columbia University, New York, studied our Permian reptilian and amphibian materials in connection with his thesis on comparative myology; Mr. Childs Frick, of New York, spent some time in looking over our Equus specimens in connection with his studies of the Pacific coast Pliocene and Pleistocene faunas; and Mr. Remington Kellogg, of the Biological Survey, studied certain of our cetacean materials as an aid to his investigations of the Pacific coast Cetacea. It might be said that aside from the advantage to the student, the help of these various specialists is of very great benefit to the collections.

Messrs. Palache, of Harvard University, and Hewett and Larsen, of the Geological Survey, have collaborated on sundry occasions with Messrs. Shannon and Foshag, as will appear in their publications. Cooperation with the Maryland Geological Survey is shown in the forthcoming Silurian volume of that organization, a work which has resulted in the acquisition of many type specimens by the National Museum. Mr. Bruce Wade, of the Geological Survey of Tennessee, has studied and described the Museum's large collection of Cretaceous fossils from that State; Dr. O. P. Hay has

continued his descriptive work on American Pleistocene faunas; and many other specialists, among whom may be mentioned Ferdinand Canu, Versailles, France; Dr. M. A. Howe, New York Botanical Gardens; Dr. J. A. Cushman, Boston Society of Natural History; Prof. T. D. A. Cockrell, Boulder, Colo.; and Dr. R. T. Jackson, Peterboro, N. H., have collaborated by their studies.

Mr. A. Rodolfo Martinez, of the Geological Institute of Mexico, has been working in the laboratory studying methods of mineralogical and petrological research.

Distributions.—Exchanges predominated in the distributions made during the year. These were comprised in 41 shipments with an aggregate of 10,250 specimens and 374 pounds of material in bulk. Eleven specially prepared lots, comprising 447 specimens, were sent out as gifts, and 612 individual specimens, with the addition of 150 pounds of magnetite, were transmitted in 20 shipments to special students and institutions for investigation or experimental work.

In addition, 23 sets of ores and minerals, 3 sets illustrating rock weathering and soil formation, and 3 sets of invertebrate fossils, aggregating 2,156 specimens, were distributed to schools.

Total number of specimens in the department.—It is impossible to give with even approximate accuracy the number of specimens in a collection of this nature. It is estimated, however, that the collections of the several divisions yield a total of not less than 1,500,000 specimens. No statement as to the number of duplicates included can possibly be made.

71305°—21——7

REPORT ON THE DIVISIONS OF TEXTILES AND MEDICINE AND THE SECTIONS OF WOOD TECHNOLOGY AND FOODS.

By F. L. Lewton, *Curator of Textiles.*

The accessions received during the year number 75 (including one joint accession with another department), being just the same as the preceding year.

The entries covered by the above accessions number 943, 772 less than were received in the fiscal year 1920. These entries may be divided into five groups as follows: Textiles 61, medicine 509, wood technology 152, foods 159, and miscellaneous organic products 62, each group, with the exception of foods, showing fewer entries than last year.

While the number and quality of these accessions have undoubtedly been influenced by the economic conditions prevalent throughout the country, taken as a whole, they compare very favorably in historic and scientific value with those of other years.

ACCESSIONS DESERVING SPECIAL NOTICE.

With the generous cooperation of American firms producing the highest qualities of textiles, the National Museum is building up a collection for exhibition and record to show the achievements of American textile industries.

In this connection, the most important and valuable accession of textile specimens received during the year was a series of 18 specimens of fur fabrics, velvets, and plushes, woven at Shelton, Conn., and contributed by Sidney Blumenthal & Co. (Inc.), of New York, N. Y., to whom the Museum has several times been indebted for beautiful examples of this class of textiles. The specimens received include "Kerami," "Chinak," "Perwitzky," "Baby Persian Lamb," and "Kitmole," pile fabrics representing the skins of real animals; "Continental," "Shelbourne," "Taranto," "Fenwick Textone," and "Chadwick," upholstery velvets in two-pile and printed effects; and seven specimens of novelty pile fabrics for coats, dresses, and trimmings, sold under the names of "Glamorsheen," "Panoply," "Pan Ondulay," "Ronge Plush," "Alfresco Plush," and "Audubon." The last-named fabric has been finished to resemble the plumage of birds and is adapted for millinery and dress trimmings and for bags and fancy work.

The silk collection was increased by seven specimens of novelty silk fabrics woven at Hazelton, Pa., the gift of the Duplan Silk Corporation, New York City. These comprise beautiful piece and cross-dyed combinations of silk and artificial silk, woven with hard-twisted crêpe yarns and slack-twisted novelty yarns in plain, satin, and twill weaves.

In accordance with the plan of preserving as an historical record all types of equipment and apparatus used in the War with Germany, the Museum obtained by transfer from the Director of Air Service, specimens of the airplane fabrics used in the construction and equipment of airplanes for military use. These included two grades of imported Irish linen manufactured in accordance with British Air Board specifications, and the best grades of cotton airplane cloth and balloon cloth. These wonderful fabrics were made in America from sea-island cotton of not less than one and one-half inch staple. The airplane cotton weighs about 4 ounces to the square yard, is mercerized, and looks like fine silk poplin. The Director of the Air Service, through the Material Disposal and Salvage Division, sold a surplus of these fabrics, amounting to many hundred thousand yards, to the public and to manufacturers. In order to demonstrate to the dry-goods trade how the cotton airplane and balloon fabrics could be used, some of it was "converted" into dress and drapery fabrics by bleaching, dyeing, or printing. The converted airplane fabrics were also sold to the public, and samples of these were included in the specimens transferred to the Museum.

The Museum is indebted to Mr. T. J. Keleher, of Washington, D. C., for a Riker mount of a series of entomological specimens exhibiting the life cycle of the silkworm moth.

The collection of hand-woven and hand-worked textiles was augmented by a number of interesting specimens acquired by gift, loan, or purchase. To Miss Em-Sidell Schroeder, of Washington, the Museum is indebted for the gift of a fine specimen of tied and dyed work in the shape of a "Shikar Chundri," made in Rajputana, India. This has only a part of the strings removed, and shows the method of tying the cotton fabric to enable portions of it to resist the dye and so develop the intended pattern. Miss Schroeder also contributed two specimens of hand weaving done at the Washington Handicraft School, and a bark cloth pillow cover. An old blue and white double-woven coverlet was received by exchange from Mrs. M. W. Gill of Washington, D. C. Two patchwork quilts, representing a form of needlework which was once a popular household art, but is now fast passing away, were received during the year. One, of silk, loaned to the collections by Mrs. A. F. Graham, of Washington, D. C., presents good examples of patchwork, quilting,

and hand embroidery; the other, a cotton quilt, interesting because of its old, English landscape chintz lining, was obtained from Miss Edith C. Long, also of Washington, D. C.

Our collection of Cashmere shawls has been augmented by the loan of an interesting specimen from Mrs. Louise E. Hogan, Neponsit, Long Island, N. Y., which represents a quality unlike those heretofore received, and for this reason is a valuable acquisition, as this class of art textiles presents a large field for study, because of the wide variety of design, color, and quality of yarn used in the manufacture of these shawls.

Examples of the interesting textile fabrics woven by the Moros of the Lake Lanao region of the Island of Mindanao, in the southern part of the Philippine Archipelago, were loaned to the Museum by Lieut. Col. F. W. Brown, Washington, D. C. The 26 specimens of Moro weaving include bright-colored plaid squares of cotton for headdresses; long, striped cotton scarfs or sashes; and all cotton, and cotton and silk sarongs in gay stripes of blue, red, green, yellow, and magenta. Several of these fabrics showed wide stripes woven with warp threads which had been tied and dyed, giving beautiful mottled or clouded effects.

Examples of the household crafts of earlier days, consisting of a spinning wheel of the type used to spin wool and cotton yarns; a home-made, four-arm clock reel for reeling the spun yarn into the skeins or cuts of uniform length required for warping the old hand looms; three homemade baskets woven from aspen and willow sprouts grown in Virginia; two candle molds; and a bundle of dressed raw flax which was grown in Fairfax, Va., soon after the Civil War, were contributed by Mrs. Charles R. Weed, of Seat Pleasant, Md.

The National Museum is indebted to Mrs. M. W. Gill, of Washington, for the deposit of a Florence lock-stitch sewing machine, which will be added to the series of sewing machines illustrating the development of this most useful invention, the first of which to sew a seam by machinery is the Howe machine of 1845.

In the division of medicine, the most important accession of the year was the deposit of an automatic tablet machine by the Arthur Colton Co., of Detroit, Mich. Compressed tablets are now used to an enormous extent in medicine, being made with machinery of ingenious construction. The fact that this class of tablets requires no medium or vehicle to aid in their administration, and the ease with which they can be tested, as well as their permanent character (in most cases being just as valuable years after they are made as when fresh) has made them a very popular form of medication. This machine is equipped with an electric motor, and will produce from one to three hundred tablets a minute. It will be used to demonstrate how medicated tablets are made.

Next in importance is the accession covering the contribution of the H. K. Mulford Co., of Philadelphia, Pa., illustrating vaccine and serum therapy. Few of the present generation are aware of the fact that smallpox, the most terrible of all the ministers of death, killed at least 60,000,000 people in the 18th century, and that in preceding centuries, about 10 per cent of all deaths were attributable to this disease. Millions of the survivors weakened, crippled, sightless, all bore hideous traces of the power of this scourge. It was left for a humble village doctor, Edward Jenner, in 1789 to conquer this disease by a bit of virus on the point of an ivory lancet. It was he who demonstrated to the world that this disease in the cow is mild, while in man it is virulent, and introduced cowpox virus into the system of human subjects to render them immune from the malignant type. With compulsory vaccination, Jenner's discovery has become so effective that many active physicians have never seen a case of smallpox. The average person knows comparatively little about this wonderful discovery and the manner in which one of the greatest scourges to mankind was conquered. An exhibit has been arranged in a manner which tells something of the history of the discovery; the terrible effects of the disease; the trifling inconvenience of vaccination; and the modern sanitary methods of procuring the virus, etc.

Another valuable medical discovery was that of the antitoxic property of the blood serum of animals immunized by the inoculation of bacterial toxins. The principle of this discovery, which was made in 1890 by Behring and Kitasato, is that the blood serum of a subject which has recovered from an attack of a communicable disease caused by bacteria when transferred to another subject will render the latter immune. Since this discovery, antitoxins for the prophylactic and curative treatment of diphtheria and lockjaw have been included in the United States Pharmacopoeia. All serums are obtained in practically the same manner, and so an educational exhibit was arranged to give the public a better understanding of the theory and principles of serum therapy. The subject of diphtheria was chosen to illustrate in detail, and there follows exhibits relating to lockjaw, pneumonia, and cerebrospinal meningitis. By means of charts, photographs, and specimens Museum visitors are shown how the bacteria which cause these diseases are grown in Loeffler's blood serum; the manner of injecting these organisms into horses; how the immunized horses are bled; steps in obtaining the blood serum; tests for purity with filled syringes ready for administration; and mortality tables showing the decrease in fatalities from these diseases since this discovery.

That hay fever is the result of pollen irritation is now an accepted fact, and the protein sensitization theory has received a great deal

of consideration. According to this theory, the hay-fever victim has the faculty of decomposing pollen into its poisonous and non-poisonous constituents, and the poisonous part causes the troublesome irritation to the mucous membranes of the eyes and nose. Extracts made from pollen are employed for the purpose of immunization and creating a tolerance to pollen proteins. The public has manifested great interest in the exhibit illustrating the curative and preventive methods of treating this disease. Charts show some of the plants which cause the disease; enlarged illustrations of the pollen; how the medicine is administered; the effects of diagnostic tests on patients to ascertain whether their trouble is caused by plants maturing in the spring or autumn; and filled syringes of the pollen extracts containing the protein nitrogen from the pollen of rye, timothy, orchard grass, sweet vernal grass, and redtop grass dissolved in physiological saline solution for treatment of spring hay fever, and extracts from the pollen of ragweed, golden rod, and corn for fall hay fever.

The accession is made up of 15 charts, upon which 175 photographs, specimens, etc., have been mounted. Several interesting additions will be made to this series.

The arrangement of medicines by therapeutic effect is the most useful to physicians, but standard works (Pharmacopoeias and Dispensatories) contain an alphabetical arrangement of the articles of materia medica, because a physiological classification is a delusive guide, due to the fact that some medicines could be properly placed in several different classes on account of the variation of their action depending on the dose, combination, mode of administration, etc. The study collections of the division, which until recently were the exhibition series, are arranged botanically, and the therapeutic action is usually described on the label by group names, such as emetic, expectorant, sialagogue, etc. These descriptive therapeutic terms appear on many of the specimens of the exhibition series without conveying anything to a person not versed in medicine. So, with a view to making the meaning of these terms clear and to point out some of the most used representatives of some of the well-known classes, an exhibit has been arranged comprising 26 groups. Three official medicines have been selected to represent each class depending upon the predominant virtue which they manifest and on account of which they are most frequently prescribed. The therapeutic groups shown with appropriate descriptions and examples are, alteratives, antispasmodics, laxatives, carminatives, diaphoretics, emetics, vesicants, caustics, demulcents, narcotics, cardiac stimulants, cardiac depressants, diuretics, anodynes, digestants, antiseptics, vermicides, astringents, sialagogues, febrifuges, styptics, expectorants, antacids, anaesthetics, local anaesthetics, and disinfectants. The Museum is

indebted to the following companies which have donated the material for this exhibit: Powers-Weightman-Rosengarten Co., Philadelphia, Pa., 20 specimens of medicinal chemicals; E. R. Squibb & Sons, New York City, 15 pharmaceutical preparations; McKesson & Robbins (Inc.), New York City, 11 medicinal substances; Eli Lilly & Co., Indianapolis, Ind., 10 pharmaceuticals; Dodge & Olcott Co., New York City, 6 medicinal oils; Schieffelin & Co., New York, N. Y., 6 pharmaceutical products; Parke, Davis Co., Detroit, Mich., 5 medicinal substances; Armour & Co., Chicago, Ill., 2 animal products.

The disguising of disagreeable medicines is a problem which has long taxed the ingenuity of doctors and pharmacists. With adults the task is comparatively easy, and is accomplished by sneaking the medicinal substance past the palate, coated with gelatin, sugar, chocolate, etc. But in the case of children it is difficult. By instinct they object to disagreeable medicines, and due to the natural inclination to disintegrate food, usually hold a pill, capsule, or tablet in the mouth until the purpose of the coating is defeated. Dr. Bernard Fantus, professor of pharmacology and therapeutics, College of Medicine, University of Illinois, has devoted a great deal of attention to the matter of candy medication for children, his object being to so incorporate medicinal substances in fats and sugars that they may be dissolved in the mouth as candy without disagreeable taste or odor being detected. Doctor Fantus visited the Museum during the week of the meeting of the Pharmacopoeial Convention, at which time he consented to furnish material to illustrate this form of medication. The specimens donated by him for this purpose consist of 6 colored "fat sugars" used as the base in which to incorporate the medicines, and 43 specimens attractive to children and free from disagreeable odor and taste.

Many interesting and valuable articles showing the progress and development of medicine and pharmacy were received during the year. The Whitall Tatum Co., Philadelphia, Pa., donated 14 specimens consisting of liquid measures, a suppository mold and machine, a tablet mold and machine, an emulsifier, prescription sieve, and pill tile. Mr. W. deC. Ravenel, United States National Museum, contributed an old balance of the type used in drug stores 40 or 50 years ago. The National College of Pharmacy, Washington, D. C., through the dean, Dr. H. E. Kalusowski, presented the Museum with a suppository mold made by James Dominic O'Donnell, of Washington, D. C., previous to 1873, which is believed to be the first one ever used for making suppositories by compression. One of the first instruments ever used for throwing a finely divided spray for medical purposes, consisting of a rubber bulb 4 inches long, and a metal bottle 2 inches long with connecting metal parts, was made by Asahel M. Shurtleff, of Codman & Shurtleff, makers of surgical in-

struments, Boston, Mass., about August 27, 1871. This old atomizer was contributed to the Museum by Mr. Arthur A. Shurtleff, of Boston.

The following material of an historical nature was received by gift: From the board of trustees of the United States Pharmacopoeial Convention (Inc.), through Dr. E. Fullerton Cook, chairman of the revision committee, Philadelphia, Pa., manuscripts, proofs, and documents relating to the Sixth, Seventh, and Eighth Revisions of the United States Pharmacopoeia; from the United States Pharmacopoeial Convention (Inc.), through Dr. Murray Galt Motter, Washington, D. C., one typewritten copy of the Proceedings of the Seventh, Eighth, and Tenth Decennial Conventions; from Dr. Murray Galt Motter, Washington, D. C., four photographs of prominent members of the American Pharmaceutical Association; and from Mrs. Frances Long Taylor, of Athens, Ga., through Miss Katherine Wootten, Washington, D. C., a number of papers and documents relating to the life and career of Dr. Crawford W. Long, the first to intentionally produce anesthesia by inhalation of sulphuric ether for a surgical operation. Mrs. Taylor also loaned Doctor Long's medical diplomas and a case of surgical instruments used by him.

In planning the development of the collections of the division, an interesting feature was added, namely, group representations of the more important drugs showing the several stages in their production from their natural sources. Opium and cinchona were selected to be represented in detail, and the work of obtaining the necessary specimens and photographs was completed during the year. The first item of the following material received for these exhibits was procured by transfer, and the remainder by gift: Fourteen opium products from the Bureau of Internal Revenue, Treasury Department; photographs of poppy cultivation and opium manufacture were received from the following: Mr. J. H. Hill, managing director of the Ghazipur Opium Factory, Ghazipur, India, through Mr. Harold R. Foss, American consul in charge, Calcutta, India; Mr. Ernest B. Price, vice consul in charge, Canton, China; Dr. Lewis R. Thompson, Shenchowfu, China, through the American consulate, Changsha, China; Rev. W. Hartman, Shenchowfu, China, through the American consulate, Changsha, China. For the cinchona case there were received 10 specimens of *Cinchona succirubra* bark from Dr. M. Kerbosch, director of the Government Cinchona Plantations, Tjinjiroean, Java, Dutch East Indies, through Mr. S. W. Zeverijn, Amsterdam, Holland.

New exhibits of animal products were arranged during the course of the year, and the following material was obtained for this purpose: Eli Lilly & Co., Indianapolis, Ind., donated 6 sheets of colored gelatin, 13 specimens of elastic capsules, and 4 specimens of globules;

9 medicinal substances from the animal kingdom were presented by McKesson & Robbins (Inc.), of New York City; and the H. K. Mulford Co., Philadelphia, Pa., contributed 4 specimens of antitoxin serum and 1 specimen of vaccine virus.

The "Medicinal Forms" exhibit was enhanced by the addition of 22 photographs contributed by Parke, Davis & Co. These pictures were made especially for the Museum, and illustrate the workings of a modern pharmaceutical manufacturing plant. They show the crude drugs as received from the market; vacuum driers; percolators for extracting soluble medicinal constituents; how pills, tablets, capsules, and suppositories are manufactured, counted, and bottled by machinery; how pastes and ointments are placed in collapsible tubes, etc.

A needlework illustration of enlarged microscopic views of animal cells, tissues, and blood crystals was presented to the division by Dr. J. S. Foote, professor of pathology, College of Medicine, Creighton University, Omaha, Nebr. On this piece of hemstitched linen the tissues, cells, and crystals are embroidered in colored silks representing the hematoxylin and eosin stains. The nuclei are in blue, the cytoplasm in pink, and the crystals in brown. These cells are arranged around a large Purkinje cell of the cerebellum. The linen has a 1½-inch frame, and is a very unique and interesting piece of work.

A plaster bust and a marble medallion of Dr. Andrew Taylor Still, the founder of osteopathy, was contributed by Dr. George A. Still, surgeon in chief of the American School of Osteopathy Hospital, Kirksville, Mo., and are valuable additions to the exhibit which illustrates the history and principles of osteopathy.

The American Osteopathic Association of Orange, N. J., appointed a committee to cooperate with the Museum in obtaining material to complete the exhibit relating to this subject, and there has been received for this purpose by gift, through Dr. Norman C. Glover, the Washington representative of this committee, a small collection of books dealing with osteopathy, photographs, and an unmounted human spine.

Old homeopathic medicine cases were contributed by Dr. Mary E. Hanks, Chicago, Ill., and Dr. Lynn A. Martin, of Binghamton, N. Y., through Dr. W. A. Dewey, of Ann Arbor, Mich. The case presented by Doctor Hanks is made in the form of a book, and is very interesting. The case donated by Doctor Martin contains two-hundredth potencies and was used for many years by Dr. Titus L. Brown, a well-known homeopathic physician and instructor.

The collections in the section of wood technology, were increased by a number of accessions of importance. To the office of works of the British Government, through Sir Lionel Earle and the American ambassador to Great Britain, the Museum is indebted for the gift of a most interesting piece of oak timber. This is a large sec-

tion taken from the hammer-beam roof of Westminster Hall, London, England, during recent repairs to this famous building. The roof was built under the orders of Richard II, in 1399, and the oak used therein must be anywhere from 900 to 1,000 years old, or more. The roof beams and timbers of this historic structure were found to be so weakened by the attacks of larvae of a boring beetle, *Xestobium tessellatum*, known as the "death watch," that portions of the timbers were removed and the roof supported by an invisible steel reenforcement. The section of timber presented to the Museum is valuable from an historical and entomological standpoint, and in addition shows the beauty of the wood itself, the old craftsman's work, and the durability of British oak when used in heavy construction. The Museum also received for exhibition with the specimen photographs and drawings of Westminster Hall and its roof structure, which indicate the spot from which the specimen was taken, together with a copy of a report by Sir Frank Baines, upon the history and repairs to the roof of Westminster Hall and the methods undertaken to combat the ravages of the beetle.

Specimens and photographs of balsa wood, a material weighing but little more than half as much as cork, were presented by the American Balsa Co. (Inc.), of New York City. These include a cross section of the trunk of a young balsa tree, *Ochroma lagopus*, a squared piece of balsa timber, and an ice-cream container made of this recently developed wood to demonstrate its value as a nonconductor of heat. The utilization of the wood of this quick-growing tropical American tree has been brought into prominence during the last few years. The manufacture of buoyancy and insulation products, such as life rafts, refrigerators, and parts of lifeboats and airplanes, especially in connection with the war with Germany, has become very extensive. Eighty thousand floats made of balsa wood were used in constructing the 250-mile submarine mine barrage in the North Sea.

The Muskegon Machine Co., Muskegon, Mich., contributed a series of 23 specimens representing the work of an industry that goes hand in hand with present-day conservation methods. These, the products of the Linderman dovetail glue jointer, are small samples of what is being done in the way of building up automobile running boards, doors, etc., chair seats, moldings, columns, frames, and countless other things from small pieces of wood, much of which has been hitherto classed as waste and has been conveyed under the boilers to be used as fuel.

A series of specimens showing steps in the manufacture of willow baskets was contributed by Mr. Andrew Kessler, of Washington, D. C. Mr. Kessler personally made the baskets and parts by hand

from selected stock grown by him. This exhibit represents an industry that is gaining in importance in the United States, and is deserving of more recognition.

The importance of the closer utilization of wood as a conservation measure, and the practicability of laminated wood construction in the manufacture of a number of articles subject to severe usage, is shown by a series of 23 specimens of built-up airplane wing ribs, tenpins, duckpins, and shoe lasts, which were received by transfer from the Forest Products Laboratory at Madison, Wis.

A moth-proof cedar chest was presented by the Piedmont Red Cedar Chest Co., of Statesville, N. C. This chest, designed and built especially for exhibition in the National Museum, is devoid of all brass trimmings, save the keyhole plate, and is finished with a high wax polish, so that nothing has been added to detract from the simple beauty of the wood itself.

As accessions of importance other than those mentioned under textiles, medicine, and wood technology, there should be mentioned the transfer from the States Relations Service of the Department of Agriculture, of an exhibit of over 100 examples of canned fruits, vegetables, fish, and meats, which has attracted the attention of large numbers of visitors. This appetizing array of canned foods was put up by children according to the coldpack method, and represents a selection from the jars winning prizes in 17 State contests between members of boys and girls canning clubs. The 10 best jars entered in each State contest were selected by the State club leader, and sent to Washington for exhibition in the National Museum, as an additional honor to the youthful prize winners. These examples of an important work in food conservation, now being carried on by children all over the United States, represent a great advance in canning methods, and show that home-put-up foodstuffs which can be shipped about from local to State fairs, and across the country to Washington, for exhibition under severe conditions of light and heat, well deserve the attention they have received in the section of foods.

Fifteen large charts, showing graphically the composition and fuel value of important articles of food, were added to the section of foods, by transfer from the Department of Agriculture. They serve to further explain the models of 100 calorie portions, and the exhibits showing the principal classes of foods, which were mentioned in a previous report.

The importance of dehydration as a means of conserving a local surplus of fresh foods, and of avoiding many transportation difficulties, is brought to mind by a series of 22 specimens of dehydrated California fruits and vegetables, contributed by the Caladero Products Co., Atascadero, Calif.

A very complete series of specimens illustrating steps in the manufacture and use of the "chank" shell of India, was contributed by Dr. Hugh M. Smith, United States Commissioner of Fisheries. This shell held in veneration by the Hindus, is collected by divers in the Gulf of Manar, off the coast of Travancore and elsewhere in India, and has been used from time immemorial for bracelets, armlets, charms, etc.

The Museum's extensive collection of authentic commercial raw materials used in American industries was increased by the efforts of Mr. A. E. Carlton, American consul at Medan, Sumatra, who sent through the State Department, eight samples of Hevea rubber, representing all the grades produced and sold in that market, including the grades most in demand for making automobile tires.

Mr. Dan P. Steeples, of Sumner, Wash., presented to the Museum, a large sheet of so-called "fungus paper," a wonderfully preserved piece of the leathery velvet-like mycelium or absorbing organ of a parasitic fungus, *Fomes laricis*, which is rather common upon Douglas fir, larch, pines, and other species of trees in the Northwestern States. Several hundred years ago, a similar material, called surgeons' fungus, was used as a styptic for stopping bleeding and for binding wounds, like a plaster.

EXPLORATIONS AND EXPEDITIONS.

No expeditions or trips of any great importance were made by any member of this division during the year. The International Silk Show, held at the Grand Central Palace, New York City, February 7 to 12, 1921, was attended by the curator in response to the invitation from the management that the National Museum be represented officially by exhibits and a member of the staff. Advantage was taken of this opportunity for enlisting the cooperation of the most important manufacturers of silk fabrics in the extension of the Museum's exhibits, resulting in the accession of two valuable groups of fabrics and the promise of many others.

Through the courtesy of the Hammermill Paper Co., of Erie, Pa., the assistant curator, section of wood technology, was enabled to visit the plant at Erie from May 11 to 15, 1921, and study under the most favorable conditions the manufacture of high-grade sulphite paper. As a result of this trip, two separate but closely related series of specimens are being prepared for the Museum; one qualitative, showing every step in the manufacture of paper from spruce wood; the other quantitative, showing the exact amounts of every material required to make 100 pounds of bond paper.

WORK OF PRESERVING AND INSTALLING COLLECTIONS.

All of the collections under the care of the curator have been carefully inspected for insects, and all perishable material like wools and

foodstuffs have been fumigated several times. This has meant, however, constant vigilance, as we have to fight not only the usual Museum pests like the drug-store beetle, Dermestes, and wool and grain moths, but recently the cigarette beetle has become a menace and was found attacking the tobacco specimens. The old exhibit and duplicate collections dating back prior to 1895 have been carefully gone over, checked in the catalogues, and the specimens past usefulness were laid aside for exchange with other institutions and schools or for condemnation. The catalogueing of new specimens has been kept up to date, and the installation of new material has been made as soon after its receipt as was possible. A large part of the time of one preparator was given to making gummed-letter case labels for the textile exhibits, a large number of group labels for the medicinal collections, and labeling the transparencies in the section of wood technology, so that the legends may be read by transmitted light.

The examination and indexing of new textile terms and other special information contained in the large number of trade papers and periodicals received by the sectional libraries of textiles, woods, medicine, and foods has occupied the time of the preparators when not engaged in other duties. A set of upward of 2,000 small samples of North American woods, which are pieces of the actual wood specimens experimented upon by Dr. Charles S. Sargent and his assistants in connection with his report on the forest wealth of the United States for the Tenth Census, which had long been in storage, was gone over carefully by the assistant curator, section of wood technology, and matched up with the data published by Dr. Sargent in volume 9 of the Tenth Census Report. This very valuable scientific collection of authentic specimens is thus rendered available for the study and identification of new material.

In the division of textiles eight new permanent installations and a special temporary exhibit were set up during the year. The special exhibit of live silkworms was installed in the South Hall during June 13–20, 1921. During this period about 300 silkworms of both the Italian and Japanese races reached their maturity and spun cocoons. Before the exhibit closed on June 30 moths had emerged from most of the cocoons, so that during practically the whole 18 days the feeding and spinning of the silkworms and the activities of the adult moths could be seen. The public was informed of the exhibit through notices in the local newspapers, which were copied by papers in Baltimore and Philadelphia, and its interest in the subject was evidenced by an increased attendance of visitors to the Arts and Industries Building of over 1,500 the first week. The installations included exhibits of cartridge silks, airplane, and balloon fabrics, plushes and velvets, tied and dyed textiles, a rearrangement of the series of early American implements for spinning, reel-

ing, and winding, and the installation of the historical series of sewing machines and textile machinery models which were transferred from the division of mechanical technology. The series illustrating the composition of the human body was brought down from the east gallery, where it had been shown for many years in the division of medicine, and reinstalled with the food exhibits. The latter were regrouped and their appearance very much improved. The new material, showing canning and preservation of foods by boys and girls, was arranged by States and installed in the large wall case in the east south range, where it has attracted a great deal of attention.

Practically one-half of the cases of the exhibition series in the division of medicine contain new exhibits which were installed during the year. In all, 15 new exhibits were installed, and two cases completely rearranged with the addition of new material. The new exhibits have been arranged to show medicines obtained from the animal kingdom; the use of sphagnum moss as a substitute for absorbent cotton; candy medication for children; steps in the manufacture of glass ampoules; the various forms into which medicines are prepared for administration; the manner of obtaining and administering serums for the prevention and treatment of diphtheria, lockjaw, pneumonia, and meningitis; the importance of the cinchona tree and the poppy plant from a medicinal standpoint; how medicines are divided into classes based on their physiological action; the importance of gelatin to disguise the taste and odor of unpalatable medicines; the progress of the development of pharmaceutical equipment; how specimens are examined by means of the microscope, etc. An exhibit case devoted to Dr. Crawford W. Long, of Athens, Ga., the first surgeon to intentionally produce anesthesia by inhalation of sulphuric ether for a surgical operation, containing a number of his personal relics and documentary evidence to substantiate his claim, was prepared with material presented or loaned to the Museum by his daughter, Mrs. Frances Long Taylor. The Morton case containing the original apparatus used by Dr. William T. G. Morton when he demonstrated the use of sulphuric ether as an anesthetic, and personal relics of this famous person, and the marble bust of Maj. Walter Reed, were obtained by transfer from the division of history. The bust of Maj. Walter Reed was installed where it properly belongs, in the alcove which relates to the history of medicine in America. It is here exhibited with pictures of Drs. James Carroll, Jesse W. Lazear, and Aristides Agramonte, other members of the commission which proved that yellow fever is transmitted by mosquitoes. An important addition to the historical collections is a series of eight bromide enlargements of men famous in medicine, which includes pictures of the following: Aesculapius, the "God of

Medicine"; Hippocrates, "Father of Medicine"; Galen, a noted medical writer, sometimes called the "Father of Pharmacy"; Avicenna, the Arab medical writer, whose teachings were followed by myriads of medical practitioners; Paracelsus, the founder of chemical pharmacology and therapeutics; Vesalius, who did much to advance the study of anatomy; Paré, a famous French surgeon; and Edward Jenner, the originator of vaccine therapy, who extirpated the loathsome disease smallpox. These pictures have been framed and labeled and are hung on the pilasters above the cases on the east gallery.

A special exhibit of all the books in the sectional library on the subject of homeopathy was arranged for the benefit of the delegates to the annual meeting of the American Institute of Homeopathy, which was held in this city from June 19 to 24, 1921, and many of the delegates visited the Museum for the purpose of seeing this exhibit and the permanent one arranged to illustrate the history and principles of this school of medicine.

The southeast court containing the wood collections was closed to the public from January 20 to March 3, 1921, in order to permit the installation of the large colored transparencies and bromide enlargements showing forest stands, lumbering methods, and wood utilization. Each of the transparencies was labeled on the glass with black letters, permitting the title to be easily read from the floor, even at some distance. A specific title in white letters was put on the frame below each of the colored bromide enlargements, and four large general labels, one for each set of 12 pictures around the four sides of the gallery, were mounted above the frame. Upon opening the wood court to visitors two bulletin boards were installed, one on either side of the entrance, on which to put items of public interest concerning woods and their uses. Other installations include a large section of British oak from the roof of Westminster Hall; the exhibit of handmade willow baskets; an assembling of the California redwood material, including the refinishing of a large 6-foot board; and the exhibition of a Piedmont red-cedar chest.

PRESENT CONDITION OF THE COLLECTIONS.

With the exception of slight fading of certain textile fabrics which are affected by the light, and the discoloration of certain food samples due to exposure to light and heat, there has been but very little deterioration of either the exhibit or study materials. The collections in the section of wood technology are also in very good condition.

The exhibition and study series of the division of medicine are in good condition. It was found necessary to renew the preserving fluid on the specimens comprising the exhibit of organotherapy.

For the benefit of the Museum.—As much time as could be spared from routine work has been given by the curator and one assistant to the preparation of comprehensive technical definitions of textile fabrics based upon authentic specimens in the Museum's collections. This has meant the careful examination of all available current textile literature, as the technical mill and trade terms used in older works of reference are often not in accord with those in current use in the United States. Considerable progress has been made toward the completion of a fabrics glossary based on actual specimens.

The use of the Museum's collections and facilities by visitors and correspondents.—Dr. Arno Viehoever and Mr. J. F. Clevenger, of the pharmacognosy laboratory of the Bureau of Chemistry, Department of Agriculture, made frequent use of the study collections in the division of medicine for identifying and comparing commercial drugs submitted to that laboratory under the food and drugs act.

Dr. H. E. Kalusowski, dean of the college of pharmacy, George Washington University, made use of the collections in the study of gums and resins.

Mr. Samuel D. Stevens, North Andover, Mass., made use of the collections in a study of the development of hand spinning and weaving in colonial times.

One of the professors of the school of medicine, George Washington University, frequently brought his class to the Museum to study the exhibits in the section of foods.

The research director of the trade paper Women's Wear and his assistant spent some time studying and sketching the models of spinning and knitting machinery in the division of textiles for use in the investigation of the history of the knitting industry.

Numerous visitors made inquiry at the curator's office in search of special information suggested by the exhibits, and made particular use of the technical books in the sectional library. The curator furnished special information on industrial raw materials and the identification of specimens, from time to time during the year to the Bureaus of Chemistry and Plant Industry, United States Department of Agriculture, and to the New York appraiser's office, Treasury Department. The identification of specimens of fibers and fabrics, gums, resins, seeds, and woods, and bibliographical compilations on various subjects for numerous individuals, both in and out of the Government service, has been a regular part of the work of this division. He furnished the identification of the cottons and cotton seeds introduced by the Office of Foreign Seed and Plant Introduction and Distribution, Department of Agriculture.

Several groups of school children from private and public schools of Washington and Alexandria, Va., were given talks on the textile collections by the curator. He also arranged for lectures and demonstrations at the Museum to the classes in home economics and textiles at George Washington University and the University of Maryland.

Names of special cooperators.—Special thanks are due to Dr. Murray Galt Motter, librarian of the Hygienic Laboratory, Washington, D. C.; to Dr. W. A. Dewey, registrar of the homeopathic medical school, University of Michigan, Ann Arbor, Mich.; Dr. Caswell A. Mayo and Mr. Charles G. Merrell, of Cincinnati, Ohio; Dr. J. Norman Taylor, chemist, Fungicide Board, Department of Agriculture; Mr. T. J. Keleher and Dr. Norman C. Glover, of Washington, D. C., for their splendid cooperation in arranging for the contribution of specimens to the Museum, and for making use of every opportunity of presenting the needs of the Museum to persons and professional bodies in a position to render assistance.

RESEARCHES ELSEWHERE AIDED BY MUSEUM MATERIAL.

Dr. H. E. Howe, of the National Research Council, was furnished with small samples of mercerized cotton, wool, flax, silk, and artificial silk for investigations with the microscope.

The Microchemical Laboratory of the Bureau of Chemistry, Department of Agriculture, was also supplied with fiber specimens for microscopical work.

The firm of Darby & Darby, patent attorneys of New York City, was furnished a sample of a silk fabric of special construction for use in a patent investigation.

Mr. M. D. C. Crawford, research editor for Women's Wear, a trade publication, was supplied with 11 photographs of historical textile machinery for use in a study of the development of certain phases of the textile industry.

At the request of the management of the International Silk Exposition, held in the Grand Central Palace, New York City, February 7 to 12, 1921, the Museum loaned to the committee on historic exhibits several specimens concerned with the early manufacture and use of silk in this country.

DISTRIBUTION AND EXCHANGE OF SPECIMENS.

A set of small samples of American woods, representing 18 species, were sent as an exchange to the New York State College of Forestry, Syracuse, N. Y., at the request of Dr. H. P. Brown, professor of wood technology, for use by his graduate students in certain research work.

A set of twelve 8 by 10 inch photographs of exhibits in the division of medicine were furnished to Mr. Charles G. Merrell, Cincinnati, Ohio, and were by him framed and hung in the Lloyd Library of Cincinnati, in order to bring the work of the division to the attention of the many professional workers in botany, medicine, and pharmacy who frequent that library.

Mr. Merrell was also furnished a photograph of the model of the Birch oil still constructed by the Museum, from which he prepared 14 lantern slides and presented them to colleges throughout the United States for use in lectures in the manufacture of essential oils.

Armour & Company, Chicago, Ill., was furnished with a photograph of the Museum's exhibit of animal drugs, part of the material for which was furnished by that company. The photograph was reproduced in the Armour Magazine for the information of its employees.

Several requests were made during the year by visitors and correspondents for copies of two labels, one accompanying the series illustrating the composition of the human body, and the other classifying the specimens arranged to show the development of the healing arts. All of the requests were granted.

REPORT ON THE DIVISION OF MECHANICAL TECHNOLOGY.

By Carl W. Mitman, *Curator.*

Staff.—In the last annual report it was stated that the goal toward which this division was bending its efforts and for which it possessed the nucleus was a museum of engineering. Some progress has been made toward this end, in that on May 1, 1921, the writer was placed in charge of the division of mineral technology and his title changed to read "curator, divisions of mineral and mechanical technology." In this capacity he will administer the work of all strictly engineering units of the department of arts and industries. In addition to the advantages to be thus gained in the development of these phases of the Museum's activities, the reorganization is materially more economical in that the two divisions, which for the past 10 years have been cared for by a staff in each, will now be administered by the writer aided by two assistant curators, one assigned to mineral technology and one to mechanical technology.

Accessions.—During the time covered by this report there was a marked increase in the amount of material received. The total number of accessions is 33 as against 13 for the year 1919–20, while the number of objects is 162 against 97 for the previous year.

Of these accessions, 25 were gifts, 4 were loans, 1 a transfer, and 2 were prepared in the division laboratory. The designation of the objects was as follows: 122 to transportation and machinery, 17 to metrology, 6 to firearms, 6 to communication, and 11 were objects of a miscellaneous character.

In a division covering such a range of subjects as that in mechanical technology, it is difficult to place comparative values upon the various accessions, for each one received is of importance in the section to which it belongs. Thus in land transportation, the Duryea gasoline automobile of 1892–93, presented by Mr. Inglis M. Uppercu, New York City, is undoubtedly the accession of greatest importance historically. On the other hand, the full-size single-cylinder sectioned and hand-operated gasoline engine which visualizes the cycle of operations in the internal-combustion engine as the visitor operates it, is by far the most important accession educationally. There is not a visitor who, upon seeing this exhibit, does not stop before it, operate it, and study it. The exhibit was pre-

sented by the Willys-Overland Co., Toledo, Ohio, through Mr. John N. Willys, president.

Through the efforts of Mr. E. H. Sithens, Millville, N. J., in procuring two "ordinary" bicycles, one a "Columbia" and the other a "Victor," the collection of bicycles was greatly enhanced, and now includes 12 distinct types ranging from about the first introduction in 1863 to the "new rapid safety," introduced about 1887. Mr. Ransom Matthews, Selma, Calif., added to his collection of gasoline engine spark plugs loaned to the Museum, which now embraces a total of 150 different types of plugs.

The collection being assembled to visualize the development in aeronautics was considerably improved by the gift of the experimental hydroplane model made by Mr. Edson F. Gallaudet in 1898, and used by him in the fall of that year in experimental aeronautical work on Long Island. The model was presented to the Museum by the Gallaudet Aircraft Corporation, East Greenwich, R. I.

During the year Mr. George W. Spier, of Washington, D. C., custodian of watches, donated eight valuable specimens of early timepieces, both of American and European manufacture. They are incorporated in the horological collections which are being arranged to illustrate the mechanical developments in this art. In this connection, an important watch was donated by John J. and Charles E. Bowman, Lancaster, Pa. It is No. 49 of 50 watches made about 40 years ago by the donors' father, Ezra F. Bowman. One of its most interesting features is that it is regulated by timing screws rather than the usual type of regulator, so as to avoid the disturbance of its isochronal adjustment. The watch is also of a smaller design than the customary watch carried in that day and was a pioneer of the now established smaller and more convenient watch. The many parts used in the construction of several of the models of Hamilton watches, all attractively mounted in a massive framework, was received as a gift of the Hamilton Watch Co., Lancaster, Pa. This exhibit, placed with a part of the collection of watches on exhibition, adds materially to the instructive features of the horological collections.

Mr. Emile Berliner, Washington, D. C., presented two gramophones of importance in the developments of the talking machine. One is the first commercial type of machine brought out in 1893, and the other is an electrically operated machine devised by Mr. Berliner in 1896. Another valuable educational exhibit received during the year was that prepared by the Royal Typewriter Co., New York. The exhibit consists of four objects which illustrate the structural features of the typewriter generally, with particular reference to the Royal. This is done by means of a sectional or skeleton model of

the typewriter; a model two times enlarged of the type bar action; a model two times enlarged of the roller trip escapement; and the complete Royal typewriter.

Activities and condition of collections.—Despite the handicap incurred through the resignation of Miss Bartlett early in the year, resulting in a reduction of an experienced staff by one third, progress was made in connection with the maintenance of the collections. The work of reallocating the exhibits begun last year was continued satisfactorily, and efforts were successful to a slight degree in procuring new material to bring the several exhibition units more toward completeness. As a result of the rearrangement, a satisfactory amount of exhibition space became available, over 75 per cent of which was gradually made use of for the installation of valuable objects which, because of the crowded conditions existing before, were of necessity placed in storage. The preparation, repair, and installation of this material consumed fully 50 per cent of the time of the preparator and aid, the balance being used in the design and construction of new exhibits and the almost endless maintenance of the delicate objects comprising the greater majority of the collections. Prominent amongst the installations thus made, were the collection of bicycles and the collection of rails, both of which collections are becoming more and more valuable. Considerable time and work was likewise involved for the whole staff in caring for the materials continuing in storage. Through the assignment of larger offices to the division, there became available several basement rooms, which were immediately used for the storage of materials assigned to the division but heretofore scattered in three separate places. At this time an examination of the materials was also made to determine what, if any, redisposition could be made, each item being considered separately. As a result, a group of 146 listed objects were transferred elsewhere.

In furthering the definite program of eliminating all possible overlappings of the various Museum activities, there were transferred to the division of history 79 objects, all but 2 comprising a biographical series relating to Joseph Henry. For this same general reason four models of boats were transferred to the division of history, their value in history being greater than their value as examples of naval architecture.

In the nature of new work mention may be made of the almost complete reconstruction of the "Stourbridge Lion" locomotive model following research conducted by this office, and the construction of a model of the airplane designed by Leonardo da Vinci about 1490 A. D. The necessary data for this work was obtained chiefly from a photostat copy of da Vinci's notes and incomplete sketches. Construction of a model of the Hensen aircraft, designed by Hensen

about 1840, was also undertaken and completed. The work just enumerated required the whole time of the preparator when not otherwise engaged in the maintenance and preservation of the collections.

The writer's activities during the year when not required by the general administrative work and supervision of staff, centered in the composing of descriptive labels to accompany exhibits. Approximately 300 labels were prepared and submitted for final printing. The writer prepared also a descriptive catalogue of the mechanical engineering collection, which is now in press and will be issued as a Museum bulletin. The catalogue is confined entirely to motors, locomotives, and objects dealing with the developments in transportation, and does not include metrology and horology. These latter subjects, it is expected, will be the basis of a second volume of the mechanical collections, to be prepared at some future date. A beginning was made, too, in the preparation of a descriptive catalogue of the collections devoted to naval architecture, and it is a satisfaction to report that about one-fourth of the manuscript has been prepared at this writing.

Considering the scope of the activities of this division, therefore, and the small staff engaged, the condition of the collections is very satisfactory, but maintained with difficulty.

Special investigations.—No special investigations were conducted upon the materials in the division other than those which were required in the constructive development of the collections. Prior to the actual construction of the models visualizing the developments in aircraft, Mr. Garber was closely engaged in study so as to obtain the most authentic data available on these subjects. The results of this study are shown in the models on exhibition and described earlier in this report. In original work such as this there is, of course, the possibility of error in interpretation, so that the division welcomes any constructive criticism.

Inquiries relative to watches, clocks, locomotives, ships, firearms, electricity, and to many other subjects were answered, the effort being made to not only answer the direct inquiry, but to enlarge upon it, giving all information which might prove useful.

The shortage of watchmakers and scientific instrument makers throughout the country to-day has been the subject of earnest consideration by those particularly involved. Through the efforts of Mr. Spier, honorary custodian of watches, the National Research Council was made conversant with the situation, as a result of which representatives of the watchmaking industry and the watchmaking schools were invited to attend a conference under the auspices of the council to discuss the question and devise means of remedying it. This conference was held in Washington May 19 and 20, and

as a result, there was formed tentatively the Horological Institute of America, whose chief purpose is to bring about the unification of the schools of watchmaking throughout the country and to increase the capacity and standard of instruction so that there may be developed a wholly American industry. At this conference the writer spoke of the Museum's educational work and was assured of the cooperation of those present in the horological work being conducted. In this connection, and as an added feature for the people attending the conference, the Hamilton Watch Co. loaned to the Museum for a period of two months a working model, enlarged six diameters, of their standard 23 jewel watch movement. The exhibit is still on exhibition at this writing and is viewed with great interest by the daily visitors to the Museum. In the organization of the Horological Institute, too, Mr. Spier was elected chairman of the organization committee and the writer appointed as a member of the advisory committee.

REPORT ON THE DIVISION OF MINERAL TECHNOLOGY.

By Carl W. Mitman, *Curator.*

Staff.—For 18 months after the resignation of Mr. C. C. Gilbert and Dr. Joseph E. Pogue, curators, efforts were made to secure a competent staff, but without success. On May 1, 1921, and in order to prevent the continuation of this condition of affairs, the writer was appointed to take charge of this as well as the division of mechanical technology, inasmuch as he formerly was connected with the division, first as aid and later as assistant curator, and is therefore experienced in the work.

With this arrangement Miss Ruth Sherwood, stenographer and typist of the division of mechanical technology, assumed similar duties for the division of mineral technology, taking charge of the files, catalogues, etc., for both divisions; while Mr. Haney, preparator for the division since its organization, and who has admirably maintained the collections during the period of the division's inactivity, continues in this same capacity.

Accessions.—Although lacking in organization, the division made some progress, but only in the obtaining of a few accesions—considerably more than during the preceding year. Last year one accession, comprising one object—the working model of a salt works—and 626 specimens belonging to an earlier accession were received, while this year four accessions, comprising 466 specimens, were recorded. Of these accessions one is a gift, one a deposit, and two are transfers.

The most important of these accessions is that of the American chemical exhibit deposited by the National Research Council, Washington, D. C. The central feature of the exhibit is a model representing an idealized group of chemical industries such as are required in the production of dyes, war gases, pharmaceuticals, and explosives. The model plants which produce the crude chemicals, namely, sulphur wells, a coal mine and by-product coke plant, a fixed nitrogen plant, and salt wells are located at the outer portion of the model, while the plants for the production of intermediates and finished products are in the center toward the front. Radiating from the intermediate plant are four smaller plants; one for the production of explosives, another for pharmaceuticals and medicinals, the third for making war gases, and the fourth for the production of dyes. To these there might be added synthetic flavors, perfumes, food colors, synthetic resins, and the like.

In addition to the model there are charts showing some of the intermediates and finished products obtained from each of the four crude chemical materials—sulphur, salt, coal, and atmospheric nitrogen. On these charts actual samples of the chemical substances are attached.

Other features of the exhibit are a collection of American dyes, war gases, explosives, pharmaceuticals, synthetic flavors, food colors, and perfumes, all derived from coal intermediates, and models to show the molecular structure of these chemicals.

The Bausch & Lomb Optical Co., Rochester, N. Y., presented eight specimens of optical glass. These are valuable as indicative of the wholly American optical-glass industry which was developed during and since the World War.

Upon request of the Georgetown University School of Foreign Service a few specimens of mineral commodities such as Chile nitrate, manganese ore, copper ore and copper, raw tin, etc., were supplied for illustrative purposes in the classroom.

The prime object in view for the division since its inception was to obtain latitude in depicting the mineral industrial operations and their social bearing. But to have concentrated on any one project until complete, with the facilities at hand, would have been to narrow down the scope of instruction afforded for years ahead. It seemed best, therefore, to make the exhibits cover the fields of metals and nonmetals inclusively, even though sketchily to begin with. Thus the activities were gradually widened so that the total number of industries represented at this writing is 22, or about one-half of the important types of mineral occurrences. None is complete; some depict only the industrial processes; some show only the stages from native occurrences to finished product; and few deal with the economic aspects, the most difficult and at the same time the most important phase of the undertaking. All need a thoroughgoing attention to arrangement and labeling. In other words, the exhibits already assembled need amplifying, and additional exhibits are to be obtained.

REPORT ON THE DIVISION OF GRAPHIC ARTS.

By R. P. Tolman, *Assistant Curator.*

On July 1, 1920, this division was transferred from the department of anthropology to the department of arts and industries, and Mr. R. P. Tolman placed in charge, with title of assistant curator.

Plans were formulated for complete rearrangement of the series in a logical sequence so as to bring both historical and technical material of a kind together in a chronological order. This plan has been carried out only in a small part, but it promises to be a great improvement and will be followed carefully and should be completed in the next fiscal year.

The year has been devoted largely to preparation of card catalogues in both the division of graphic arts and the section of photography and with the collection of material for the completion of the exhibition series. A number of gaps in the exhibition series have been filled. As an illustration, the exhibit of handmade paper and watermarks is one of a series showing the materials used in graphic arts. Printing ink has been installed for several years. An exhibit showing the steps in designing and making of type is the next in the series, and Dard Hunter has promised to send the Museum the materials, tools, etc., used by him for cutting the punches, casting the type, etc., for the two books made entirely by him. This will show the hand methods of early times. An exhibit showing modern methods is being planned.

The definite scientific value of an accession is hard to determine with such varying material as was received this year. The following deserve to be mentioned:

The exhibit of handmade paper and watermarking of handmade paper consists of 90 specimens beginning with the rags from which the paper is made, photographs of machines used to beat the rags, four sizes of hand molds, on which the paper is made showing the various kinds of watermarks, the ordinary wire marks, and the beautiful light and shade watermarks with method of how the mold is wired or embossed, together with photographs showing the interior of a French handmade paper mill, and the model of the paper mill in the Science Museum, London. Samples of laid paper made about 1480, 1570, 1660, and 1780 with attention called to the differences in the paper of various dates, especially noticeable in the even texture

of the 1780 example. Also an early sample of wove paper, which was invented by John Baskerville in 1750, and an example of light and shade watermark made by Mr. W. H. Smith, the inventor of the process, about 1850, as well as other fine and beautiful watermarks. The whole exhibit was assembled and labeled by Mr. Dard Hunter, of Chillicothe, Ohio, who is an authority on handmade paper, both as a writer and a manufacturer. One of the many labels may be of general interest, as it gives a brief history of paper.

PAPER.

221–210 B. C.—Paper was made in China from silk refuse. The oldest mold covering was made of strips of bamboo, bound together by filaments of vegetable fiber.

105 A. D.—Paper made from rags and plant fibers first made in China by Ts'ai Lun.

Unknown.—Date of invention of wire screen unknown.

12th century.—Paper made in Europe by the Moors. First mention of rag paper occurs in the tract of Peter, Abbot of Cluny (1122–1150).

1270.—First watermarked design.

1494.—First English paper mill was established at Hertford by John Tate.

1690.—First American paper mill operated by William Rittenhouse at Roxborough, near Philadelphia.

1750.—Wove paper invented by John Baskerville.

1798.—First paper-making machine invented by Louis Robert, a Frenchman. Introduced into England by Henry Fourdriner, who perfected the process.

1819.—First colored watermarks.

1849.—Light and shade watermarks invented in England by Mr. W. H. Smith.

Mr. Dard Hunter has also made a second valuable contribution to the division of two books in unbound condition which he made from beginning to end. They are The Etching of Figures, by William Aspinwall Bradley, and The Etching of Contemporary Life, by Frank Weitenkampf, curator of the print department, New York Public Library. Both of these books were published by The Chicago Society of Etchers for their associate members, limited to 250 and 275 copies respectively, and accompanied by an etching by an active member of the society. To quote from the introduction in The Etching of Figures, by Mr. Bradley:

This publication is the entire work of Dard Hunter, Marlborough-on-Hudson. The paper was made by him especially for this book, each sheet separately in a hand mold. The steel punches for the type were cut by him, the matrices struck, and the type cast in a hand mold. The printing was done on a hand press. These methods are practically the same as those used by printers at the time of Albrecht Durer.

In an exhaustive study of paper making and typography Mr. Hunter has never seen mention of a book produced in which paper, type, and printing were the work of one man as they are in the present volume.

Mr. Rudolph Ruzicka, the well-known wood engraver of New York, promised the division some time ago an exhibit of his work, and this year the Carteret Book Club, of Newark, presented a set of four blocks and five proofs in color through Mr. Ruzicka. These are especially interesting because the blocks were designed, engraved, and printed by him for the Carteret Book Club, of Newark, and show the fine results of modern methods.

Among the prints received this year were about 300 from the wood blocks of Thomas Bewick from Earle W. Huckel, of Philadelphia, a former aid in the division. These are of especial interest, as only a few original prints were owned by the division. Nine hundred and ninety-nine specimens were received from Mr. Huckel and need careful study before further comment can be made upon their value.

Beautiful examples of the art of printing type, designs, and halftone engraving were the gift of the firm of Norman T. A. Munder Co., of Baltimore.

The Rembrandt Intaglio Printing Co., of Lancaster, England, was the first to use rotary intaglio photogravure, a process developed for it by Karl Klic, of Vienna. Historical examples dating 1894, 1896, and 1897 are among the specimens received, the 1894 example being one of the first successful examples ever made. The specimens in color are very beautiful. This method is now used extensively. Entire newspapers are printed by this method and the "rotogravure" section of the Sunday papers show the fine results which are obtained on cheap paper.

Mr. Benjamin C. Brown, of Pasadena, Calif., president of the Print Makers Society of California, contributed six examples of his work in soft ground etching, together with a written description of his methods of work, which contains new information on the subject. Five of Mr. Brown's soft ground etchings are printed in color, and not only fill a gap in the collection but are as well fine examples of the art.

This method gives a sketchy and artistic effect. A metal plate is covered with a soft sticky ground, over which it stretched a thin sheet of rough paper, and on this the drawing is made with lead pencil. Where the pencil marks appear on the paper, it sticks to the ground, so that when the paper is pulled off the ground comes up with it, leaving the metal exposed wherever the pencil has touched the paper. The plate is then etched in the usual way.

The American Museum of Natural History, New York City, is fortunate in possessing 50 of what are undoubtedly the first font of metal type ever cast. They were made by the Korean Government Printing Office in 1403. The American Museum presented facsimiles in type metal of the brass originals to the United States National

Museum. The originals were made about 50 years earlier than movable type are said to have been made in Europe. The type are concave underneath and irregular in thickness, but this was of no consequence. They were set up in wax and all pressed down, so that the printing surface was level.

Clay types were invented in China by a smith named Pi Shing, between 1041–1049. He engraved a type in a very fine plastic clay and burned it. He had no successor, and after his death the Chinese returned to their ancient methods of using engraved blocks of wood, which process is said to date back to 581 A. D.

Electrotyping is a method used in graphic arts to duplicate printing plates. Where large editions are wanted several plates are necessary and duplicate plates may be made at very small cost, in comparison to the original engraved plate. The claim is made that the metal deposit is harder in proportion to the hardness of the material on which it is deposited, and therefore the electrotype deposit made on lead is harder and tougher than that made on wax, so that larger editions can be printed from lead-molded electrotypes.

The Royal Electrotype Co., of Philadelphia, furnished an exhibit showing the process of manufacture of lead-molding electrotypes from a halftone-and-type original through the various steps to the finished electrotype; and also had it carried through the McKee treatment which process puts the overlay and underlay in the plate itself.

At the present time a large percentage of the electrotype plates are called "nickel-steel." This name is a misnomer because only nickel and copper are used. A thin sheet of nickel three one-thousandths of an inch in thickness is deposited first, then a thick layer of copper. The smooth nickel surface prints with very little wear.

The electrotype exhibit now consists of wax molding, lead molding, and the McKee treatment of electrotype plate.

Mr. Karl Arvidson and Mr. Charles Furth of the Photogravure & Color Co., contributed several hundred specimens of photogelatine and photogravure work extending over a period of 30 or 40 years, with fine examples of the work they are doing at present in photogravure, both in color and black and white.

The Ketterlinus Lithographic Manufacturing Co., of Philadelphia, gave 10 specimens of their work in lithographic color printing, which presents an excellent idea of the results obtained by lithographic printing.

The three states of the etched plate Shoveller Drake, by Frank W. Benson, of Salem, Mass., the well-known artist, together with the original plate in its "destroyed" condition, show the methods used by the artist in carrying the plate from the first state to the finished

published one. This is especially evident from the careful study of the plate itself. The expression "plate destroyed" does not mean that the plate has been actually destroyed but that the plate is disfigured so that prints from it have no artistic or commercial value. It also insures the commercial value of the published prints.

Mr. Walter Tittle, of New York, has contributed two of his fine dry-point etchings of President Harding, taken from life. The division needs more contemporary work of the artists.

The specimens contributed by Mr. Howard Levy, of Philadelphia, are the work of the Overton Engraving Co., and show how the opening in the diaphragm of the camera affects the form of the halftone dot in the finished product. The effect is truly remarkable.

Examples of two-color printing on both sides of the paper and four-color printing on one side only were received from the Curtis Publishing Co., of Philadelphia; the paper going through the press but once. By this method of wet printing a different effect from dry printing is obtained. The ink being wet mixes and mellows, giving good results, but with not quite the brilliance of dry printing.

Max Levy presented an etched master screen, 150 lines to the inch, for rotary intaglio photogravure. From this master screen photographic copies are made on glass or film, and such copies are used for photo printing on carbon tissue.

Mr. Paul Brockett contributed a three-color print, 133 lines to the inch is shown, and the same picture printed seven lines to the inch. It is the work of the Trichromatic Engraving Co., and shows clearly the formation of the halftone dot in color work.

Nearly all the accessions received this year deserve comment, each one having particular qualities which are of interest.

The total number of specimens received was 1,963, about four times as many as last year, making a total of 15,983 in the division June 30, 1921. These figures do not take into account the photographic collections in the section of photography. Mr. A. J. Olmsted, custodian of that section, makes the following report as to the collections under his charge.

SECTION OF PHOTOGRAPHY.

On July 1, 1920, the section of photography, as a part of the division of graphic arts, was transferred from anthropology to the department of arts and industries. Only one accession had been received since the death of Mr. Thomas W. Smillie, in 1917, to whom the Museum owes a great debt for his untiring efforts, knowledge, and foresight in collecting the historical material now in the section of photography. It would be practically impossible at this time to duplicate it. Mr. Smillie began collecting as early as 1886, and even then realized that the historical specimens were fast disappearing.

Efforts were made to continue along the general lines which Mr. Smillie had followed, and 22 accessions consisting of 333 specimens were received. They were of both scientific and historical value, as most of them were new to the section.

The New York World, of New York City, presented a print from the first negative made in the United States by the Belin methood of sending illustrations by wire. The picture was the portrait of an old Indian, and was sent by the St. Louis Post Dispatch to the New York World on November 14, 1920. It is an interesting and timely exhibit. Photographs had been transmitted in Europe a short time previously by this method.

The New York University furnished a bromide enlargement of the first daguerreotype portrait ever made, dating 1839 or 1840. It was of Prof. John W. Draper's sister Dorothy, who posed in the bright sunshine, her face heavily powdered, for an exposure of about four minutes.

Specimens of the McDonough color process were secured from Mr. A. J. McGregor, Chicago, Ill. There are very few specimens of this process in existence and the Museum is most fortunate to have these in its collection.

The War Department printed and deposited over 100 photographs from the original negatives made by Brady of the Civil War, and also sent a collection of large toned bromide prints representing scenes in the Great World War, which have been placed on exhibition. These prints show, not only the comparative methods of warfare of 1865 and 1918, but also differences in photographic results.

The most recent development in motion-picture cameras is represented by a Jenkins model of a high-speed camera that will make 30,000 exposures a minute—these results are necessary in the study of analysis of motion. Strange as it may seem, Muybridge, who is known as the grandfather of motion pictures, began his work in an effort to study the motion of animals. To-day the highest development of motion pictures is the analysis of motion—studying the motion of projectiles and airplane propeller blades, etc.

The Canadian Government, Dominion Park Branch, sent a reel of motion-picture film picturing Trumpeter Swans, an almost extinct bird—and for this reason the film is valuable and will be increasingly so as the years go by.

Several prints by processes that were not represented in the collection have been received: a bromoil of Andrew Carnegie from Harris & Ewing, from Mr. Edward Crosby Doughty an enlargement on Japanese tissue, and Mr. Charles E. Fairman furnished some very attractive gum prints.

One thousand three hundred and seventy-one printed plates and apparatus of the Muybridge collection were catalogued this year,

thereby bringing the work up to date and making it possible to catalogue the accessions as received in the future. This was a large amount of work and took several months to accomplish it. The completion of the card catalogue almost marks an epoch in the records of the collection. Up to this year the card catalogue consisted of three separate systems, from which no totals could be obtained. The numbers now run in an unbroken series, the last entry being 3388, and a cross-reference is partially completed.

The wall cases on the south side of the court were cleaned and material in them stored. This space was used for the Brady Civil War and Signal Corps' photographs of the Great World War. This collection of pictures complements the war collections made by the Museum and attracts much attention from visitors.

The series of partly finished lenses furnished by Bausch & Lomb Optical Co. makes a fine new exhibit and will be of interest to those who wish to learn how a fine anastigmat lens is made. There are many and various processes of fine workmanship which enter into their manufacture.

In order to place new and timely exhibits, old ones must be taken down. This crowded condition and lack of space somewhat interferes with the growth of the collection and the desire to secure new material. Mr. G. S. Williams, of Washington, is a friend of the collection. In the past he has secured many exhibits and always has the advancement of the collection in mind. Likewise Mr. George Harris, of Harris & Ewing, sends material of Museum interest, that comes to him in the course of business.

Mr. C. L. Lewis, Toledo, Ohio, past president of the Photographers' Association of America, often visits the collection when in Washington, and was instrumental in securing the transparency and lantern slide of the McDonough color process received during the year. The collections of the section are unique. The Photographers' Association of America has appointed a committee to form a similar collection, to be at Winona Lake, Ind., where they aim to establish a school of photography, endowed by the association. The formation of another collection will make competition for new material, and funds should be provided so the section of photography can purchase rare specimens when they come on the market.

Plans for the coming year are a continuance of those formulated last year. A section devoted to the history of color photography and motion pictures is in course of development. Efforts will be made to secure recent pictorial photographs from America's leading pictorial workers.

REPORT ON THE DIVISION OF HISTORY.

By T. T. Belote, *Curator.*

IMPORTANT CHANGES IN ORGANIZATION.

During the past fiscal year the organization of the division of history has undergone an important change. On July 1, 1920, the division which had been a branch of the department of anthropology since its organization in 1881, was given an independent status as a separate and distinct branch of the Museum's activities. This action was the logical result of the tremendous development of the historical collections, particularly during the more recent period of their existence, a development which rendered their efficient and economic administration except as an independent unit a very difficult matter. The change was desirable, however, not only from the standpoint of efficiency and economy but from the scientific point of view as well, in that the historical collections in the Museum represent classes of materials of an unique character. They are of special interest and value to the public and to the student of history on account of their exceptional patriotic and educational significance in connection with the national development of the United States. Illustrating primarily military and naval history, they represent also many other phases of American achievements and contributions to world progress along social, political, technical, and scientific lines.

The establishment of the division upon an independent basis, and the addition to the staff of an aid in connection with the war collections has greatly increased the facilities of the division for systematic historical museum work. The separation of the historical from the anthropological collections permits their future development along strictly historical lines, and at the same time eliminates a great volume of work of routine character which was necessary under the former arrangement.

COMPARISON OF INCREMENT OF SPECIMENS OF 1920–21 WITH THAT OF 1919–20.

The number of specimens received during the past fiscal year is much smaller than the number received during the previous year. This is explained by the fact that the number received during the fiscal year 1919–20 was uncommonly large, owing to the acquirement by the Museum of an immense amount of military and naval ma-

terial relating to the war with Germany. Even so the additions during the past year are sufficiently large to materially increase the matter on hand and to indicate that the collections will continue to expand in a normal and satisfactory manner. The 7,144 specimens received cover a wide range as regards their character, and represent very evenly the various fields and sections of the historical activities of the Museum.

ACCESSIONS DESERVING SPECIAL NOTICE.

The extent and importance of the materials added to the historical collections during the past fiscal year can only be made clear after a brief reference to the various classes into which these materials are divided in accordance with the present scheme of the activities of the division.

The historical collections are at present divided under two general heads, one including the material relating to the recent World War; the other, known at present as the original historical collections, includes much material relating to United States history prior to and subsequent to that period. The collections relating to the World War are further divided into the following classes of material: Commemorative, foreign, military, naval, numismatic, and pictorial. The original collections are divided into the following classes of matter: Antiquarian, biographical, costume, military, naval, numismatic, philatelic, and pictorial.

Thus it may be noted that the division of history seeks to illustrate the national development of the United States by an accumulation of museum material belonging to the classes stated above, which when associated together and exhibited in contiguous territory will present a graphic story of the most notable phases of American history. Each of the classes of materials mentioned above has a specific duty to perform in this connection, and all unite to form a vast reservoir of objects for the graphic presentation in museum form of the annals of the United States from the colonial period down to most recent times.

WAR COLLECTIONS.

The additions to this section of the historical collections have not been so large as during the previous fiscal year when they attained to gigantic proportions. They have nevertheless been notable both in size and interest.

Most notable have been the contributions made by the Navy Department. The exhibit of this Department in the rotunda of the Natural History Building and in the Aircraft Building now includes among other objects the following of special note. In the latter location are shown two naval aircraft of the latest design, a flying boat

F–5–L, and an aeromarine *39–B* seaplane. The first of these is sectionalized to show the process of manufacture and forms one of the most interesting objects in the entire war collection. Planes of this type were used for patrol and convoy duty in the war zone during the great conflict. Their wing spread is 103 feet 10 inches, length over all 49 feet 4 inches, gasoline capacity 495 gallons, speed 100 miles an hour, horsepower 800, and weight with field load 13,000 pounds. They are equipped with radio, four 230-pound bombs, 10 Lewis guns, and 1 Davis nonrecoil gun. They carry a crew of five including two pilots, a radio operator, a bomber, and a mechanician. Power is derived from two Liberty motors and the possible cruising radius is about eight hours. This splendid plane with its hugh bulk and massive wings suggesting a fabled marine bird of prehistoric times, its powerful motive engine, its gasoline tanks, its delicate and complicated apparatus for purposes of navigation and communication, and, finally, its bombs for offensive, and its guns for defensive purposes may well be taken as a suitable illustration of the wonderful use by the Navy Department of this latest and most effective enemy of the submarine and protector of friendly shipping. This exhibit is made even more graphic and effective by the installation of four model figures representing as many members of the crew at their respective stations with flying suits and equipment as actually used in time of war. The second plane deposited by the Navy Department is a much smaller scout plane, known as an aeromarine *39–B*. This plane is equipped with a Curtiss 100-horsepower engine capable of making 1,400 revolutions a minute with a speed of 68 miles an hour. The upper wing of this plane is 47 feet in width, the lower 36 feet, the length over all 30 feet, and the height 13 feet.

In the rotunda of the Natural History Building are a number of very interesting models showing the types of vessels used by the Navy in the war zone, including the torpedo-boat destroyer *Manley*, which did patrol duty and chased enemy submarines from December 26, 1917, to November 11, 1918; a submarine chaser, 441 of which were built during the war and 121 performed efficient service on the coast of France and in the Mediterranean; an Eagle boat designed especially to chase enemy submarines, but none of which were finished in time to take part in the war; a submarine of late model; the converted yacht *Corsair* representing a type of converted yacht used as an auxiliary very successfully during the war; and a mine sweeper designed especially to remove loaded mines from the paths of other ships. Thirty-six of the latter were sent to Europe after the armistice was signed for duty in connection with the removal of the North Sea barrage.

Of great interest in connection with these models are a number of marine instruments of the most recent type used on naval vessels for

various purposes, including a magnetic compass, a master gyroscopic compass, a chronometer, a sextant, a pelorus, a patent log, a sounding machine, a hand lead, a stadimeter, and an aneroid barometer. These illustrate in an excellent manner the character of the delicate and complex machinery by means of which the modern ships of war are managed.

The exhibit of the Navy Department also contains a number of typical pieces of ordnance of the type used during the war, as the 6-inch gun from which was fired the first American shot during the war, and the primer which fired the last shot on November 11, 1918, at 10 o'clock 57 minutes 30 seconds, and examples of regular types of naval guns, as a 1-pounder rapid-fire gun on a boat cage stand mount used on the bows of boats when employed in landing armed detachments or on harbor patrol; a 3-inch Davis nonrecoil 13-pounder gun used on small patrol vessels having decks too light to stand the shock of recoil of the usual type of guns; a 3-inch 50-caliber antiaircraft gun; and a Y gun or depth-charge projector used to attack submarines. Of particular interest in this connection are unique models, complete in every detail, of the long-range naval guns on tractor and railroad mounts used in France during the war, including the 7-inch naval tractor and the 14-inch naval railway batteries, marks 1 and 2. In connection with these guns are a number of fire-control instruments, including a bore-sight telescope, a gun-sight telescope, a gun-sight check telescope, a short-base range finder, and a turret periscope. Other ordnance materials of note are projectiles of the type used by the Navy during the war—a number of aircraft bombs; 12, 8, 7, 6, 5, 4, 3, inch shells; 6, 3, and 1 pounder gun projectiles; and a number of torpedoes and torpedo tubes.

Of special interest are a number of pieces of the delicate yet powerful signaling apparatus used during the war on naval airplanes and ships. These include a radio-telephone set, a radio compass, and specimens of receiving and transmitting vacuum tubes. A very striking exhibit in this connection is a set of hydrophones for the detection of the proximity of submarines, mounted on a model of a ship's stern.

The Navy Department has also deposited a number of pieces of captured German naval material. The most interesting of these are the engines of a German submarine, complete in every detail, a torpedo, and seven naval-gun shells.

As may be noted from the foregoing summary, the exhibit already deposited by the Navy Department relating to the great war is most striking and presents in a graphic manner the leading features of the work of that branch of the service during the great conflict. This exhibit is constantly receiving additions of note and will un-

doubtedly in time become one of the most notable collections of such materials in existence.

Of important additions to the numismatic section of the war collection are replicas of the victory medal with the buttons and ribbons pertaining thereto, received from the War Department, Quartermaster Corps. From the same source were received copies of the certificates issued by the War Department to those wounded in the service during the war and to the next of kin in the case of those who were killed. Replicas of the naval medals issued for special services during the war, including the medal of honor, distinguished service cross, and distinguished service medal were purchased. From the Italian Government, through the State Department, were received two bronze replicas set in marble of the obverse and reverse of the gold medal of honor presented by the Italian National Committee founded for that purpose to King Victor Emmanuel III as commander in chief of the army and navy as a national testimonial of the deeds of heroism and sacrifice performed by the Italian people during the World War. Of special interest among other medals added to the collection during the past year are replicas of the medal commemorating the achievements of the American Red Cross War Council, 1917–1919, received from the American Numismatic Society; of the medal awarded in 1919 by Williams College to Williams men who served in the Army or the Navy of the United States or of any of the Allies during the war, from Williams College; of the medal by A. Bonnetain, commemorating the services of Marie Dupage and Edith Cavell, from Mrs. E. H. Harriman.

An interesting series of European commemorative medals of the war was also added to the collection. These include portrait medals of President Wilson, General Pershing, Premier Clemenceau, and Marshal Foch. Of special interest in connection with the work of American patriotic societies during the war are a replica of the World War service insignia and a copy of the certificate for civilian service issued by the General Society of Colonial Wars to members of the society in recognition of patriotic service rendered to the United States during the war. These were presented to the Museum by the society.

The pictorial material relating to the war has been increased by a number of specimens, the most important being two large paintings by Arthur M. Hazard of Boston, Mass., entitled "Not by Might" and "The Spirit of the Armistice." These two works typify the noble and unselfish achievements of the American soldiers and sailors in a spirited and striking manner. They were used in the United States during the fourth and fifth Liberty loan drives, and also in Canada during the Victory loan drive of that Dominion.

They have been presented to the Museum by the Woman's Liberty Loan Committee of New England.

The collection of uniforms of the type worn by American women during the war, which is being assembled in the Museum by the National Society of the Colonial Dames of America, has been increased by representatives of the following organizations:

Chief yeoman (F), United States Naval Reserve Force; yeoman (F) winter uniform; yeoman (F) summer uniform; National League for Women's Service, first lieutenant, Junior Corps; League of Catholic Women, canteen service; Woman's Land Army of Hamilton County, Ohio, under auspices of Cincinnati Garden Club; National Land Army of Ohio, canteen uniform; War Camp Community Service; contract surgeon, United States Army; Salvation Army; United States Army nurse; American Fund for French Wounded; Knights of Columbus; Emergency Fleet Corporation, United States Shipping Board; Navy Nurse Corps, blue and white hospital uniforms; and Young Women's Christian Association.

To the commemorative section of the war collections was added a collection of British and Canadian uniforms worn during the war by Lieut. Louis Bennett of the 40th Squadron, Royal Air Force, who was killed in action in France August 24, 1918. These are accompanied by a number of miscellaneous documents and photographs relative to the service of Lieutenant Bennett. The collection was presented to the Museum by Lieutenant Bennett's mother, Mrs. Louis Bennett, of Weston, W. Va.

A touching reminder of the conflict reaching the Museum during the past year is the body of the carrier pigeon Cher Ami received from the United States Signal Corps and mounted by the Museum taxidermist. This pigeon was one of 600 birds which were donated by the pigeon fanciers of Great Britain for use in France during the World War. Trained by American pigeoneers and flown from American lofts, 1917–18, Cher Ami returned to his loft with a message dangling from the ligaments of a leg cut off by rifle or shell shot. He was also shot through the breast and died from the effects of this wound June 13, 1919.

The foreign material relating to the World War has been increased by a collection of French military objects presented to the Museum by the French Government. This collection includes a steel listening post, a steel cupola with gun, a catapult, a Brandt cannon, a number of hand and rifle grenades, several swords and bayonets, signal rockets, a number of pieces of armor and miscellaneous relics. From the Czecho-Slovak Army in Russia, artillery section, with headquarters at Vladivostok, was received a Russian 3-inch field-gun, model of 1903, manufactured at Perm, which was originally mounted upon a wheeled carriage but later removed

and modified for mounting on a railroad car. The gun was captured with the armored train Orlik from bolshevists forces by Czecho-Slovak troops, July, 1918, and used by the latter in their defense of the Trans-Siberian Railroad, 1918–20. From the War Department, Motor Transport Corps, was received three captured German military vehicles as follows: A Komnick auto truck, a Herring truck, and a Lanz ordnance tractor.

ORIGINAL COLLECTIONS.

The antiquarian section of the original historical collections has received a number of notable objects, among which the following may be mentioned: A watch seal of carnelian set in gold, bearing the Washington crest and owned by General Washington subsequent to the War of the Revolution. The seal was given by Washington to his nephew, Bushrod Washington, who inherited Mount Vernon upon the death of Mrs. Washington in 1802. It was later bequeathed to Mr. William Lanier Washington and has now been presented to the National Museum by Mr. William Sloane, of New York City. A pair of shoe buckles and a punch glass owned by General Washington; a purse owned by Mrs. Washington; a gold watch and a silver teaspoon owned by Lord Thomas Fairfax; a silver tea caddy owned by Gov. Alexander Spottswood; a knife and fork owned by Dr. William Cabell; three glass decanters in a silver stand owned by Col. Augustine Claiborne; and a traveling sermon box owned by Gilbert Burnett, Bishop of Salisbury, were lent by the National Society of the Colonial Dames of America. A Cincinnati china teacup and an antique Mexican chair were presented by Mrs. E. M. Chapman. A collection of 15 pieces of American Historical chinaware, including a number of pieces used at the White House by President Lincoln and decorated with the United States coat of arms, was lent by Mrs. F. W. Dickins. A pair of silver shoe buckles worn during the War of the Revolution by Lieut. Col. Thomas Posey, of the Seventh Virginia Regiment, was lent by Miss Lucy S. Beverley, and two glass decanters owned by Henry Clay were the gift of Mrs. Lulu Hillary Epler.

Among the notable additions to the biographical section of the historical collections are a silver punch bowl with tray, ladle, and 10 mugs, which were presented to Lieut. Col. George Armistead. The bowl with cover is in the shape of a cannon ball supported by four eagles. On one side is engraved a view of the fort and harbor; on the other appears the following inscription: "Presented by a number of the citizens of Baltimore to Lieutenant Colonel George Armistead for his gallant and successful defense of Fort McHenry during the bombardment by a large British force on the 12th and 13th of September, 1814, when upwards of 1,500 shells were thrown, 400 of

which fell within the area of the Fort, and some of them of the diameter of this vase." These interesting souvenirs of the bombardment of Fort McHenry have been installed in the case with the original United States flag which flew over the fort at that time and which inspired Francis Scott Key to write the words of the Star Spangled Banner. They are presented to the Museum by Mr. Alexander Gordon, jr., of Baltimore, a great-grandson of Lieut. Col. George Armistead. A very handsome gold mounted and jeweled sword presented to Maj. Gen. George B. McClellan in 1861 by the city of Philadelphia was donated to the Museum by his daughter, Mme. Paul Desprez. A particularly interesting relic in connection with the lives of famous Americans is an iron wedge bearing the initials "A. L." which was used by Abraham Lincoln when a resident of New Salem, Ill., 1830–1834, and given by him to Mentor Graham, his instructor in surveying. This important memento of the early life of the great war President has been presented to the Smithsonian Institution by Mr. Henry W. Allen, of California. Other notable relics of the Civil War acquired during the past fiscal year were a dress sword with belt, sash, gauntlets, and spurs, presented to Brig. Gen. Marcus La Rue Harrison by the officers and men of his command, the First Arkansas Regiment, and donated to the Museum by Mrs. Harrison. The National American Woman's Suffrage Association has added to their already large and interesting collection of relics in the Museum a gold badge presented to Susan B. Anthony by the Citizens Suffrage Association of Philadelphia in 1848, a flag pin presented to her by the ladies of Wyoming on the occasion of her eightieth birthday in 1900, and the distinguished service medal awarded to Dr. Anna Howard Shaw by the United States War Department for especially meritorious and conspicuous service as chairman of the Woman's Committee of the Council of National Defense during the War with Germany. The biographical collections have also been increased by a large collection of objects relating to the scientific career of Joseph Henry, first Secretary of the Smithsonian Institution, transferred from the division of mechanical technology.

The principal feature of the period costumes section of the historical collections, namely, the series of costumes worn by mistresses of the White House, has been brought up to date by the addition of the dress worn by Mrs. Ellen Louise Wilson during the first administration of President Wilson. This costume of satin brocade, the bodice trimmed with rhinestones and pearls and the train of lace, has been lent by Mrs. Wilson's daughter, Miss Margaret Wilson. Other additions of note to the costumes section included a number of costumes covering the period from colonial times to the present day, both American and European, the gift of the estate of Mrs.

Mary E. Pinchot. Numerous other additions of the same general character have also been made to this important section of the historical collections.

The military section has received a number of interesting accessions, the most notable being the uniform coat, vest, breeches, and sash worn by Capt. Ely Dagworthy of the British Army during the French and Indian War. This uniform, lent by the National Society of the Colonial Dames of America, is the earliest British uniform in the possession of the Museum, and is a splendidly preserved specimen of the uniforms of the type which played such a prominent part in America during the French and Indian War, the War of the Revolution, and the War of 1812. Other military relics of note received during the past fiscal year are two pairs of epaulets of the period of the War of 1812, presented by Mrs. Mary Mason Barlow; a sword, a saber, a hat, belt, cup, and powder horn, used during the War with Mexico by Lieut. Baldwin J. Crosswait, Third Ohio Infantry, presented by Miss Forest M. Crosswait; a sword, sash, and four belts, owned during the Civil War by Bvt. Capt. Frank M. Smith, First Maryland Volunteers, presented by Mrs. Smith; a pair of epaulets worn during the Civil War by Col. E. W. Chastain, Eighth Georgia Regiment, Confederate States Army, lent by Mr. Norman C. Stow; and a sword, scabbard, and belt, taken from the body of a Mexican bandit after the raid of Francisco Villa on Columbus, N. Mex., March 9, 1916, presented by the Hon. A. S. Burleson.

The materials relating to the history of the Navy prior to the World War have been increased by a number of accessions of importance. Among these are a collection of relics recovered from the wreck of the U. S. battleship *Maine* when the remains of this ship were removed from Habana Harbor in 1911, including such materials as chinaware, silverware, timepieces, rifles, powder cans, binoculars, and various other objects in use on the ship in 1898 at the time of the explosion. All of them now show plainly the effects of the salt water by which they were covered during the period when the wreck remained submerged. These were received from the Navy Department. A fitting companion piece to this collection is a bronze memorial plaque, designed by Charles Keck, and cut from metal recovered from the wreck at the same time as the relics described above. This beautiful tablet, presented to the Museum by Dr. Gertrude R. Brigham, is one of a number of such pieces made from various parts of the *Maine* in accordance with act of Congress of August 22, 1902, which authorized their manufacture.

The materials relating to the early history of the Navy have also been increased by the transfer from the division of mechanical technology of models of the frigate *Constitution*, the first United States *Monitor*, and the Confederate ram *Merrimac*.

The collections of the section of numismatics have been increased by a number of interesting specimens. As was the case during the previous year the principal contributor to the coin collection has been Mr. Douglas N. Starr, of Washington, D. C., who has made a number of notable additions to his already large and interesting loan collection of United States and foreign coins. Among these are the following United States gold pieces: Five dollars, 1884; twenty dollars, 1850; twenty dollars, 1907, designed by Augustus St. Gaudens; one dollar, McKinley memorial, 1917; and two specimens of the United States silver half dollar commemorating the Pilgrim Tercentenary, 1920. Mr. Starr has also lent a most interesting series of uncirculated German commemorative coins, showing the portraits of the German emperors from 1871 to 1914. Mr. George W. Conner, of Hollywood, Calif., has presented an interesting series of the paper currency of the Republic of Texas. Among interesting additions to the collection of medals are a bronze portrait plaque of Ambrose Swasey, designed by Victor D. Brenner, which has been presented by Mr. Swasey; a bronze medal commemorating the centennial anniversary of the University of Virginia, presented to the Smithsonian by the university; and a bronze replica of the medal of award of the Alaska-Yukon Pacific Exposition, presented by Erastus Brainard, of Seattle, Wash.

The philatelic collections have been increased during the year by the addition of numerous specimens from the Post Office Department, and many of these are examples of new issues received by that department from the International Bureau of the Universal Postal Union, Berne, Switzerland. Unfortunately, owing to the serious illness of the philatelist it is impossible at present to give specific description of the materials received in this field of the activities of the division of history.

RESEARCHES FOR THE BENEFIT OF THE MUSEUM.

Under this head may very appropriately be considered a most important work undertaken during the past fiscal year in connection with the reclassification of the records of the division. This was rendered necessary by the separation of the historical records from those of the department of anthropology with which they had heretofore been connected. It is now possible for the first time to unite the entire body of data relating to the historical specimens in the offices of the division. This will be accomplished by the entry of this data in skeleton form in Museum catalogue books of standard type from which series of catalogue numbers will be assigned to all the historical material involved, both old and new. Thus the historical records will be greatly simplified and the entire series of catalogue books containing them will be located in a single consecu-

tive file instead of being scattered through the anthropological files as was formerly the case. In the same connection the early records are being verified and the material covered by them classified under the various heads indicating the field of activity of the various sections of the division as indicated in the earlier portion of this report. Corresponding adjustments are being made in the arrangement of the card catalogue of the division, and when the researches along this line are complete an excellent basis will have been secured for the preparation of a classified catalogue of the historical collections for publication purposes.

RESEARCHES ELSEWHERE AIDED BY MUSEUM MATERIAL.

The usual number of inquiries concerning the historial materials have been received during the past fiscal year and much information along this line has been furnished for the benefit of researches in historical museum material in other fields. In many instances the data furnished has been accompanied by photographs of objects connected with the work under discussion.

LIST OF ACCESSIONS TO THE COLLECTIONS DURING THE FISCAL YEAR 1920–1921.

(EXCEPT WHEN OTHERWISE INDICATED, THE SPECIMENS WERE PRESENTED OR WERE TRANSFERRED BY BUREAUS OF THE GOVERNMENT IN ACCORDANCE WITH LAW.)

ABBOTT, E. L., Washington, D. C.: Fragment of a leaf-shaped blade and a chipped arrow point collected at Ocean City, Md. (65512); sacred paint slab and piece of flint worked for drill, from Arizona (66567).

ABBOTT, Dr. W. L., Philadelphia, Pa.: 201 bird skins, 9 skeletons and 2 nests, 6 alcoholic birds, 1 turtle and 2 eggs, 3 reptiles, 2 myriapods, and 4 packages of shells from Haiti (65280, 65367); 4,000 plants, 10 specimens of cacti, 31 bird skins, several eggs and nests, 5 skeletons of birds, 6 lots of mollusks, 6 snakes, 1 insect, 10 archeological specimens and lot of human bones, all from the Dominican Republic (66026, 66323, 66659); 571 mammals, 534 birds, 118 reptiles, 65 fishes, 258 invertebrates, 4 vials of ants, 17 insects, a collection of mollusks, and a bottle of parasitic worms (collected by Charles M. Hoy in Australia) (65456, 66572).

ABBOTT, Dr. W. L., and C. Boden Kloss, Federated Malay States Museums, Kuala Lumpur, F. M. S.: 144 mammals, 496 birds, 3 reptiles, and 6 ethnological specimens from Siam, Anam, and Cochin China (65213).

ABBOTT, Dr. W. L., and Emery C. Leonard, U. S. National Museum: 10,000 plants from Haiti, collected for the Museum (65600).

ABRAMS, Prof. Le Roy. (See under Leland Stanford Junior University, and E. A. McGregor.)

ACADEMY OF NATURAL SCIENCES, Philadelphia, Pa.: 12 specimens of minerals (65445, exchange).

ACKERMAN, Carl, Los Angeles, Calif.: 3 specimens of cacti (65420); 4 specimens of cacti (65485, exchange).

ADAMS, Paul J., Knoxville, Tenn.: 176 specimens of land and freshwater shells, representing 11 species, from Tennessee (66241).

AGNES SCOTT COLLEGE, Decatur, Ga:

Dragonfly, *Gomphaeschna furcillata* (66740).

AGRICULTURE, DEPARTMENT OF:

Set of 15 charts illustrating the composition of food materials (66205).

(See also under Copenhagen, Denmark, Zoological Museum.)

Bureau of Biological Survey: 1,981 insects representing 196 species in the Orders Neuropteroidea, Coleoptera, Homoptera, Diptera, and Hymenoptera (65183); 185 miscellaneous reptiles and batrachians from various localities received during 1919–1920; also 8,726 miscellaneous mammals from various localities received between July 1, 1917, and June 30, 1920, inclusive, and not previously accessioned (65225); 39 reptiles and batrachians from various localities (65227); 8 specimens of *Anodonta wahlametensis* from the mouth of Bear River, Utah, 8 mollusks, 9 crus-

AGRICULTURE, DEPARTMENT OF—Continued.

Bureau of Biological Survey—Continued. taceans, 14 fishes, 6 amphibians, 2 specimens of *Aegla laevis*, and 7 reptiles, from Argentina and Paraguay, all collected by Dr. Alexander Wetmore (65232, 65982); 88 bunches, 75 sprays, and 12 heads of Birds of Paradise (65312); 2 turtles, 13 snakes, 4 lizards, 25 amphibians, and 49 batrachians from various localities in the United States (65594, 65713); 46 plants from Wisconsin, collected by H. H. T. Jackson and H. H. Sheldon (65659); 23 eggs, 2 nests and 1 skeleton of birds (65710); nest and 2 eggs of *Megaquiscalus major major* (65881); 3 plants, *Selaginella* and cacti, 10 specimens of cacti, and a specimen of *Mammillaria*, all collected in Arizona, by Mr. Vernon Bailey (65913, 66190, 66406, 66221, 66336); also 37 specimens, 2 species, of freshwater mollusks from North Dakota, collected by Mr. Bailey (66090); 44 specimens, 10 species, of land shells from Dijon, France, collected by Mr. E. A. Goldman (66089); 4 plants from Washington (66135); (through Bureau of Entomology) 116 specimens of Coleoptera, 60 species; 231 specimens of Hemiptera, 22 species; 37 specimens of Lepidoptera, 12 species, 153 specimens of Diptera, 23 species, and 236 specimens of Hymenoptera, 20 species (66252); 23 reptiles and batrachians, 6 mollusks, and 1 cactus collected by Dr. Alexander Wetmore in South America, and 9 frogs collected by Mr. Francis Harper and Mr. H. M. Laing in Alberta, Canada (66263); 260 alcoholic birds, 210 skeletons, skulls, etc., and 82 birds eggs, also 7 fishes from South America (66331, 66403, 66675); 10 specimens, 3 species, of freshwater mollusks, from Athabaska Delta, Alberta, Canada, and 13 specimens, 1 species, of freshwater mollusks from Carlisle, La. (66377); 81 beetles from Brazil, collected by Messrs. E. G. Holt and J. C. Vasquez (66395); 24 alcoholic specimens of birds from Canada; and 52 skeletons and skulls, and 4 eggs from Argentina (66596); 61 skeletons and parts of birds, 36 alcoholic specimens of birds, 10 eggs and 2 nests, from Argentina, Montana, etc. (66645); (through C. R. Risinger and W. E. Musgrave): Cotton seed and a little fiber found by C. R. Risinger in a cliff dwelling about 15 miles north and a little east of Cottonwood, Ariz. (66691); 1,142 plants (66722); 1,622 mammals transferred by the Biological Survey between July 1, 1920, and June 30, 1921, inclusive (66774).

Bureau of Chemistry: 8 specimens of starches and 2 specimens of dextrin (65794).

Bureau of Entomology: 1,311 specimens of miscellaneous Hymenoptera (65214); 4 specimens of fresh-water isopods, *Caecidotea* species, collected in a well at Dallas, Tex., by Mr. F. C. Bishopp (65229); an earthworm taken from earth about the base of a palm purchased from a local florist by Col. Charles A. Williams, United States Army (retired) (65645); 140 miscellaneous insects from Auch, Gers, France, collected by Dr. L. O. Howard (65670); 25 specimens, all type material, including type and allotype, of a remarkable hemipteron constituting a new subfamily, collected at Santiago de las Vegas, Cuba, by Dr. Mario Calvina (65770); miscellaneous

AGRICULTURE, DEPARTMENT OF—Continued.

Bureau of Entomology—Contd. specimens of cicadas collected by Mr. Dixon Merrill 6 miles south of Lebanon, Wilson County, Tenn. (66001); 380 specimens of Coleoptera, 220 of Hemiptera, and 33 of Lepidoptera (66010); 2 mollusks, *Megalomastoma croceum* and *Veronicella occidentalis*, from San Juan, Porto Rico (66237); 6 amphipods, *Orchestia grillus*, collected by Mr. J. D. Mitchell, Victoria, Tex. (66399); 2,857 specimens of determined Hymenoptera (66750); 34 specimens of insects from Brazil (66752); 800 beetles (66756).

(See also under California Academy of Sciences and Gerald F. Hill.)

Federal Horticultural Board: 4 specimens, 1 species, of mollusks, *Neritina zebra*, collected in soil about plants from Para, Brazil, at quarantine, Washington (65203); 3 isopods, *Philoscia* species, on orchids from Manaos, Brazil (65549); 2 vials of enchytraid worms from Holland (65638); 4 slugs collected in dirt around plants from Naples, Italy (66266); 5 specimens, 3 species, of mollusks taken from soil around shamrocks from Liverpool, England (66279); 3 specimens, 1 species, of mollusks collected by Mr. Max Kisliuk, jr., at Philadelphia, Pa. (66461); 5 specimens, 2 species, of mollusks, *Opeas goodalli*, and *Subulina octona*, from soil around a potted palm from Georgetown, British Guiana (66663).

Forest Service: Plant, *Cheilanthes villosa*, from New Mexico (66058):

Forest Service, Forest Products Laboratory, Madison, Wis.: 23 specimens of airplane ribs, tenpins, duck pins, and shoe lasts, showing laminated wood construction (66696).

AGRICULTURE, DEPARTMENT OF—Continued.

Bureau of Plant Industry: 3,281 specimens of grasses (65186, 65618); (through Prof. A. S. Hitchcock); 1,017 specimens of grasses (65426, 66015); 95 plants (65187, 65255, 65272, 65310, 65414); 45 specimens of plants from St. Lucia (65193); 19 plants from Georgia (65194); 700 plants collected by Mr. W. W. Eggleston (65195); plants from the District of Columbia (65196); 2 packets of seeds of African plants (65197); 662 specimens of plants from Central America, collected by Dr. S. F. Blake (65226, 65951); (through Dr. Blake), 6 photographs of type specimens of plants, and 11 specimens of mosses from Guatemala (65409, 65895); 97 plants from India (65297, 66580, 65588); plant, *Gaylussacia brachycera*, from Pennsylvania (65356); 17 photographs of botanical specimens; 20 plants, cacti, from Washington (65648); 2 plants, *Ribes*, from Alaska (65693); 9 plants from Mexico (65720); 5 plants from Texas (65811); 90 Guatemalan plants, 17 plants from Colombia and Costa Rica, 46 plants from Colombia, all collected by Mr. Wilson Popenoe (66018, 65925, 66039); (through Prof. C. V. Piper) photograph of type specimen of plant, *Phaseolus ricciardianus*, 2 photographs of plants, 32 plants from Florida, and 259 plants from North Dakota (65926, 66000, 66017, 66163); fragmentary specimen and photograph of a plant, *Rinorea gracilis*, from Bolivia (66123); (through Dr. F. V. Coville) plant, and section of trunk of sage brush collected by R. L. Piemeisel, August 7, 1912, 2 miles northwest of Tooele, Utah (66164, 66330); plant, *Cassytha filiformis*, from Flor-

AGRICULTURE, DEPARTMENT OF—Continued.

Bureau of Plant Industry—Contd.

ida, collected by Mr. M. B. Waite (66167); 4 fragmentary specimens of plants, *Alsodeia* (66206); 5 photographs and a fragmentary specimen of plant, *Rinorea* (66231); 2 slugs, *Agrilomax agrestis*, young, from citrus plants in greenhouses (66246); plant, *Baltimora*, from Java (66286); (through W. E. Safford) 79 specimens and photographs of plants, Datura (66297); 3 plants from Trinidad, one of them representing the species *Polygala* (66360, 66638); 4 plants from California and Texas, collected by Dr. O. F. Cook (66372); 30 ferns collected in Utah and Nevada by Mr. I. Tidestrom (66410); 9 plants collected by Mr. George E. Murrell (66483); 2 photographs and 2 plants (66498); 5 specimens of cacti from California, collected by L. G. Polhamus (66517); plant from Alabama (66577); 2 plants, *Casimiroa* (66578); plant from New Mexico (66599); (through Mr. E. O. Wooton) 85 plants from Montana (66679); 3,000 plants from Siam, Burma, and India, collected by Mr. Joseph F. Rock (66713); plant, *Protea argenta* (66762).

States Relations Service: A collection of canned food products representing the finest examples of canning done by State leaders in boys' and girls' club work from prize-winning exhibits at State Fairs (65793).

AINSLIE, C. N., Sioux City, Iowa: Approximately 200 small moths, Microlepidopera, from Iowa (65538).

ALEXANDER, Dr. C. P., Urbana, Ill.: 4 mosquitoes collected in Illinois by Mr. S. C. Chandler (65816).

ALEXANDER, W. B., Buenos Aires, Argentina: 2 specimens of cacti from Argentina (66397).

ALFARO, Dr. A., Museo Nacional, San José, Costa Rica: 988 specimens of mosquitoes (65990, 65991, 66062, 66119, 66523); 33 flies belonging to the family Tipulidae (66375).

(See also under San José, Costa Rica.)

ALLEN, Dr. EUGENE T., Washington, D. C.: 661 plants collected in Norway, by Dr. Olaf Andersen (66085).

AMERICAN AMBASSADOR TO GREAT BRITAIN. (See under British Government, H. M. Office of Works).

AMERICAN BALSA CO. (INC.), New York City: 8 photographs, 1 reprint, and 3 specimens showing growth and use of balsa wood (66522).

AMERICAN BATH STONE CO., Boston, Mass.: 2 four-inch cubes of "Bath stone" (66593).

AMERICAN BIBLE SOCIETY, New York City: 3 pamphlets containing a verse—John III, 16—from the Bible, printed in 269 different languages (65355).

AMERICAN HARDWOOD MANUFACTURERS' ASSOCIATION, Memphis, Tenn.: 64 photographs, 8 by 10 inches, picturing the manufacture of hardwood lumber (66071).

AMERICAN MUSEUM OF NATURAL HISTORY, New York City: 50 type-metal casts of the first movable metal type ever made, Korea, 1403 (65998); 35 echinoderms, 23 amphipod crustaceans, and a collection of decapod crustaceans, a duplicate series, secured by the American Museum Congo expedition; also 5 decapod crustaceans from Patagonia and 1 decapod crustacean from the Falkland Islands (66109); 25 muscoid flies (66146); 4 flies of the genus *Mesembrinella* (66288, exchange); plant, *Erigeron*, from Ecuador (66441, exchange); 64 specimens, 34 species, of diplop-

AMERICAN MUSEUM OF NATURAL HISTORY—Continued.
terous wasps (Hymenoptera) from Congo, determined by J. Bequaert (66524); 11 cotype adults and 9 cotype galls of 13 species of gall-making Cynipidae (66697).

AMERICAN OSTEOPATHIC ASSOCIATION, Orange, N. J. (through Dr. Norman C. Glover, Washington, D. C.): A collection of photographs, books, and charts, also an unmounted human spine for use in exhibit illustrating principles of osteopathy (66748).

AMERICAN SECURITY & TRUST CO. (See under Miss Caroline Henry.)

AMERICAN TYPEFOUNDERS CO., Jersey City, N. J.: 18-point type body with the Lord's Prayer cast on its face, and 18-point type body with American Typefounders advertisement on its face, and one type A (66222).

AMERICAN WALNUT MANUFACTURERS' ASSOCIATION. (See under Pickrel Veneer Co.)

AMES, Oakes, Boston, Mass.: 49 orchids from the Philippine Islands (66272, exchange).

ANACONDA COPPER MINING CO., Anaconda, Mont.: A specimen of crystallized arsenic oxide (66082).

ANDERSON, Mrs. Thomas H., Washington, D. C.: Shrunken head of an Indian, Jivaro Indians, South America (65261).

ANDREWS, D. M., Boulder, Colo.: 3 plants from Colorado (65387).

ANDREWS, Mrs. George L. (through Miss Emily O. Battles and Mrs. Julian-James, Washington, D. C.): 2 Chinese vases, rectangular, and 8 specimens of modern Mexican pottery (65318); a collection of laces, jewelry, and silverware, and an embroidered crêpe de chine dress; also a wash drawing of "Two Boys Playing with a Dog," signed "F. O. C. Darley, fecit" (65319, loan).

ANECT, Rev. Brother, St. Michael's College, Santa Fe, N. Mex.: 190 plants from New Mexico (65497).

ANGEL, May Goodrich, Hailey, Idaho: Sample of black sand from Idaho (65380).

ANHYDROUS FOOD PRODUCTS CO., THE, Chicago, Ill.: 22 specimens of dehydrated fruits and vegetables (66251).

ANTHONY, Miss Lucy. (See under National American Woman's Suffrage Association.)

APOLLINAIRE-MARIE, Brother, (See under Instituto de la Salle, Bogota, Colombia.)

ARANA, Señor Ignacio, Pipi, Santa Cruz, Bolivia, South America (through P. L. Ports, Washington, D. C.): A bracelet canteen used by the Chiriguano Indians, Bolivia, some 30 or 40 years ago (65885).

ARISTE-JOSEPH, Brother. (See under Instituto de la Salle, Bogota, Colombia.)

ARIZONA, UNIVERSITY OF, Tucson, Ariz.: A collection of about 200 specimens of mammalian fossils from a cave near Anita, Coconino County, Ariz. (65379, exchange).

ARMOUR & CO., Chicago, Ill.: 2 specimens of medicinal substances from the animal kingdom (65790); 4 samples of suprarenalin (66676).

ARMSTRONG, E. J., Erie, Pa.: Specimen of inyoite from Hillsborough, New Brunswick (65557); 5 specimens of Upper Devonian sponges from western New York (66013).

ARMSTRONG, L. K. (See under Henry Fair.)

ARNOLD, P. B., Lavino Furnace Co., Sheridan, Pa. (through Dr. Edgar T. Wherry): A specimen of manganese ore from Wassau district, Upper Guinea, western Africa (66541).

ARSÈNE, Brother G., St. Paul's College, Covington, La.: 726 plants from Louisiana (65400); plant, *Burmannia*, from Louisiana (65582).

ARVIDSON, Karl. (See under Photogravure and Color Co.)

ASTORIA MAHOGANY CO. (INC.), Long Island City, N. Y.: 12 photographs showing the manufacture of mahogany veneers (65873).

ATKINS, JOHN R., Dallas, Tex.: 3 specimens of cacti from Texas (65868).

ATKINSON, C. M., Florence, S. C.: United States silver half dollar issued in 1829 (65347).

AUSTEN, Maj. E. E. (See under British Government, British Museum (Natural History).)

AUSTRALIAN INSTITUTE OF TROPICAL MEDICINE, Townsville, North Queensland, Australia: 40 specimens, 12 species, of named Australian insects (66587).

AUSTRALIAN MUSEUM, Sydney, N. S. W., Australia: A collection of crustaceans collected by the "Endeavour" (66308): 51 fishes (66543, exchange).

BACKER, C. A., Buitenzorg, Java: 2 specimens of *Solidago* (65450).

BAILEY, HAROLD H., Miami, Fla.: 7 mice, *Peromyscus*, from Hog Island, Va., and a collection of miscellaneous beetles in alcohol (65663).

BAILEY, Dr. L. H., Ithaca, N. Y.: 4 specimens of Venezuelan cacti, and 52 ferns from Trinidad and Venezuela (66329, 66640); 20 specimens of cacti, and 2 ferns from Trinidad (66612, 66718, exchange); (through Mrs. Agnes Chase) plant *Fuirena*, from Venezuela (66684).

BAIN, Dr. and Mrs. H. FOSTER, Washington, D. C.: Collection of minor oriental art objects (49 specimens) (65364, loan).

BAIN, Mrs. H. FOSTER, Washington, D. C.: 3 Chinese embroidered squares and a yellow brocade satin imperial throne cushion, collection of vases, jars, etc. (66227, 66464, loan).

BAKER, Prof. C. F., College of Agriculture, Los Banos, P. I.: 300 butterflies and moths from the Philippine Islands (65188); 45 specimens of Sphecinae (wasps), representing 14 species, including types of 3 new species; 58 specimens of Scollinae (wasps), representing 18 species, including types of 7 species; 4 specimens of Elidinae (wasps), representing 1 species new to the collection (65465); 61 specimens, 31 species, of mollusks from Luzon and Mindanao, P. I. (66249); 211 specimens of unidentified Chrysidiidae (cuckoo wasps), mainly from the Philippines (66376).

BAKER, Dr. FRANK C. (See under Illinois, University of.)

BALDWIN, RALPH, Clarendon, Va.: Specimen of fungus, *Amanita strobiliformis*, from Virginia (65386).

BALDWIN, S. W., U. S. National Museum: Chimney swift, *Chaetura pelagica* (66656).

BALLANTYNE, SAM, Boise, Idaho: Collection of fossil plants from Malheur County, Oreg; a fossil leaf of *Platanus* from the same county (65985, 66310).

BANKS, Dr. C. S., Bureau of Science, Manila, P. I.: 126 named mosquitoes from the Philippine Islands (66064); skeleton of a shrew, *Pachyura luzoniensis*, from Manila (66337).

BARBER, Mrs. A. W., care H. S. Barber, U. S. Department of Agriculture: 12 miniature bows collected on the Rosebud Indian Reservation, South Dakota, in 1900 (66632).

BARBER, HERBERT S., U. S. Department of Agriculture, Washington, D. C.: 3 specimens, 2 species, of land shells and 8 small terrestrial isopods from Plummer Island, Md. (66037, 66234).

(See also under E. A. Schwarz.)

BARBER, MANLY D., Knoxville, Tenn.: 229 specimens, 14 species, of freshwater mollusks from Tennessee (65563).

BARBOUR, Prof. EDWIN H. (See under Hon. Charles H. Morrill.)

BARKER, FRANK, Gem, Idaho: a new species of mineral from the Tamarack-Custer mine, Coeur d'Alene District, Idaho (65327).

BARLOW, Miss CATHERINE BRITTEN, Washington, D. C.: Black silk lace scarf bought in Brussels, and presented in memory of the donor's sister, Mary Elizabeth Barlow (65854).

BARLOW, Dr. C. H., Baltimore, Md.: 10 snakes and a lizard from Chekiang Province, China (66386); 5 specimens, 2 species of fresh-water mollusks (66468).

BARLOW, Mrs. MARY MASON, Washington, D. C.: 2 pairs of epaulets worn during the early part of the nineteenth century by an officer of the New York State Militia (6 specimens) (65640).

BARNES, P. T. (See under Pennsylvania Department of Agriculture.)

BARTRAM, EDWIN B., Bushkill, Pa.: 128 plants from Arizona (65705, 65746).

BARTSCH, Dr. PAUL, U. S. National Museum: 2 birds from Florida (66035).

BASSETT, Dr. V. H., Savannah, Ga.: Mosquito, *Psorophora columbiae* (66066); 6 mosquitoes (66084); 6 mosquitoes from Savannah, Ga. (66103).

BATCHELDER, CHARLES F., Cambridge, Mass.: 325 New England plants (65215).

BATTLES, Miss EMILY O. (See under Mrs. George L. Andrews.)

BAUSCH AND LOMB OPTICAL CO., Rochester, N. Y.: 28 pieces of optical glass showing progressive steps in lens manufacture (65446); 8 specimens of optical glass, examples of the first successful production of optical glass in America (65602).

BAXTER, M. S., Rochester, N. Y. (through G. P. Van Eseltine): 25 plants from New York (65425).

BEARPARK, ARTHUR F., Cape Town, South Africa: Parasites from a whale, pieces of a whale, and a fetus, all from Cape Point, South Africa (65946); whale fetus (alcoholic) (66542).

BECKER, Mrs. GEORGE F., Washington, D. C.: 6 relics of the World War (66634).

BEDE, P., Sfax, Tunis, Africa: Collection of invertebrate fossils and minerals from Tunis, Africa (66169, exchange).

BEEKLY, ALBERT L., Tulsa, Okla. (through Dr. T. W. Stanton): 4 lots of Mesozoic invertebrates comprising 56 specimens and about 20 species from Argentina (65823).

BENEDICT, Dr. J. E., U. S. National Museum: Box turtle from Woodside, Md. (65295).

BENHAM, WALTER D., Detroit, Mich.: 2 prints from original negative of the automobile race between Henry Ford and Alexander Winton on Grosse Point track, Detroit, Mich., December 10, 1901, copyrighted 1918 (65397).

BENJAMIN, Mrs. CAROLYN GILBERT. (See under Colonial Dames of America, National Society of.)

BENJAMIN, Dr. MARCUS, U. S. National Museum: Pamphlet entitled "Ode on the Death of Abraham Lincoln," by S. G. W. Benjamin, 1865 (65383); tintype of Esther Kibbe, of Canandaigua, N. Y., made about 1850 (66118).

BENNETT, Mrs. LOUIS, Weston, W. Va.: British and Canadian uniforms worn during the World War by her son, Lieut. Louis Bennett, Fortieth Squadron, Royal Air Force, who was killed in action in France, August 24, 1918, and miscellaneous documents and photographs relative to his military service (65654).

BENNINGTON, ARTHUR. (See under New York World, The.)

BENSON, FRANK W., Salem, Mass.: Etched copper plate, No. 183, "Shoveller Drake," the work of the donor (66728).

BEQUAERT, Dr. J., American Museum of Natural History, New York City: 2 paratypes of flies, *Hiromneura bradleyi* and 1 specimen of *H. texana* (65492); 6 specimens of Hymenoptera, representing 3 species, two of which are new to the Museum collections (66711).

BERLIN - DAHLEM, GERMANY. (See under Botanischer Garten und Museum, Botanisches Museum, and Deutsches Entomologisches Museum.)

BERLINER, Emile, Washington, D. C.: Photograph showing the gyrocopter in flight, June 10, 1920, College Park, Md. (65601); 2 gramophones, one of the commercial type produced in 1893, and the other, the first electrically operated type which was devised by the donor (65948).

BERNICE PAUAHI BISHOP MUSEUM, Honolulu, Hawaii (through Dr. C. H. Edmondson): 10 specimens, 6 species, of crustaceans from Palmyra Island, collected by Dr. C. M. Cooke (66738).

BERRY, Prof. E. W., Johns Hopkins University, Baltimore, Md.: Collection of type specimens of fossil plants from the Tertiary rocks of Mississippi, described in Professional Paper 125A, U. S. Geological Survey (66544).

BETHEL, Ellsworth, State Museum, Denver, Colo. (through Dr. Frederick V. Coville): 73 plants from the western United States (65943).

BEVERLEY, Miss Lucy S., Washington, D. C.: Pair of silver shoe buckles worn during the War of the Revolution by Lieut. Col. Thomas Posey, Seventh Virginia Regiment (65884, loan).

BIERBAUM, Ben, Powder River, Wyo.: Part of a lower jaw of *Coryphodon* (66248).

BIGELOW, Col. John, U. S. Army (retired), Washington, D. C.: Photograph of John Bigelow, minister to France, 1865–66 (65694).

BIRD, Henry, Rye, N. Y.: 10 specimens of Diptera (66133).

BITTERMAN, Capt. Theodore, Medical Administrative Corps, U. S. Army, Washington, D. C.: 3 specimens of glass-sponge "Venus Flower Basket," *Euplectella*, species (65719).

BLACKMORE, E. H., Victoria, British Columbia, Canada: 50 specimens of Lepidoptera collected in British Columbia (65829); 30 moths collected by the donor in Victoria (65934); paratype of a specimen of Lepidoptera, *Eulype albodecorata*, and a specimen of *Pyla*, species (66177).

BLAKE, Dr. S. F., Bureau of Plant Industry, U. S. Department of Agriculture, Washington, D. C.: 7 plants and 6 spotted turtles from Massachusetts (65408, 65940); plant from the District of Columbia (66735).

(See also T. S. Brandegee and New York Botanical Garden).

BLEECKER, Rear Admiral J. V., U. S. Navy (retired), Morristown, N. J. (through Miss M. N. Bleecker): A carved wooden idol from Oahu, Hawaiian Islands (65907).

BLINCHO, Mrs. Laura: A pitcher of Albion ware made at Colbridge Pottery, Staffordshire, England (65303, loan).

BLUMENTHAL & CO., Sidney, New York City: 18 samples of upholstery, dress, and millinery pile fabrics (66732).

BOETTCHER, Mrs. F. W. J., Washington, D. C.: Collection of plants (65242).

BOGOTA, COLOMBIA. (See under Institute de la Salle.)

BONAPARTE, HERBARIUM OF, Prince Roland, Paris, France (through Mr. H. Heuvrard, Curator): 8 fragmentary specimens of ferns from Costa Rica (66739, 65814). Exchange.

BONATI, G., Lure (Haute-Saône), France: 400 plants, mainly from China and New Caledonia (66374, exchange).

BOONE, Miss Pearl L., Hyattsville, Md.: Plant from Maryland (66643).

BOTANISCHER GARTEN UND MUSEUM, Berlin-Dahlem bei Steglitz, Germany: Fern from Haiti (66125); 4 fragmentary specimens of ferns from tropical America (66358). Exchange.

BOTANISCHES MUSEUM, Berlin-Dahlem, Germany: 5 plants, Selaginella (65543, Exchange).

BOURNE, A. I. (See under Massachusetts Agricultural College Experiment Station.)

BOWEN, Mrs. Edna, Hanalei, Kauai, Hawaiian Islands: 87 specimens representing 40 species of marine mollusks from the Hawaiian Islands (65577).

BOWMAN, CHARLES E. (See under John J. Bowman.)

BOWMAN, JOHN J. and CHARLES E., Lancaster, Pa.: A watch, No. 49 of the 50 made by Ezra F. Bowman, Lancaster, Pa., the father of the donors, between 1879–1881. Marked "E. F. Bowman, Lancaster, Pa., No. 49" (66305).

BOYLE, JOHN, Jr., Washington, D. C.: American flag woven during the World War from Navaho blanket yarn by Hosteen Nez Basa, an Indian woman of New Mexico (65608).

BRADLEY, Mrs. J. E., Washington, D. C.: Abnormal, soft-shelled egg of a domestic fowl (65467).

BRADSHAW, R. V., Eugene, Oreg.: 2 plants (65341); 4 plants from Oregon (65573, 65672); 3 specimens of plants, *Salix*, and 2 plants from Oregon, including duplicate type of *Eucephalus vialis* (65745, 66142); plant, *Leptotaenia* (66662).

BRADY, Mrs. SAMUEL, Los Angeles, Calif.: Specimen of sulphur found on the surface of old machinery at Flint Steel Mill, Rockland, Mich. (65976).

BRAINERD, ERASTUS, Washington, D. C.: Medal of award of the Alaska - Yukon - Pacific Exposition, Seattle, Wash., 1909 (65369).

BRANDEGEE, T. S., Department of Botany, University of California, Berkeley, Calif.: 5 plants from Mexico (65285); (through Dr. S. F. Blake) 3 plants from Mexico (65407, 66418).

BRANNER, Dr. J. C., Little Rock, Ark. (through Dr. O. P. Hay): 3 specimens of Discinoid brachiopod from Arkansas (65844).

BRAUN, ANNETTE F., Cincinnati, Ohio: 7 specimens of Microlepidoptera, including 6 paratypes of 4 species (65919).

BRAUNTON, ERNEST C., Los Angeles, Calif.: 17 photographs of plants (65276).

BRICKER, JOSEPH W., Smithville, Ohio: Photograph of a letter written by Gen. U. S. Grant to Mrs. George William Bricker, April 11, 1863, regarding her two sons in the Army under his command (66173).

BRIDWELL, J. C., Bureau of Entomology, U. S. Department of Agriculture, Washington, D. C.: 31 parasitic wasps (3 species) from the Hawaiian Islands (65393).

BRIGHAM, Dr. GERTRUDE, Smithsonian Institution: Bronze memorial tablet designed by Charles Keck and cast from metal recovered from the wreck of the U. S. S. *Maine* (65949).

BRIMLEY, C. S. (See under North Carolina State Department of Agriculture.)

BRITISH GOVERNMENT:

British Museum (Natural History), London, England (through Maj. E. E. Austen): 55 specimens, 21 of them cotypes, representing 32 species of Mexican Diptera (65822); 2 beetle larvae, *Henoticus californicus* (66400); 7 Ordovician cystids (66253). Exchange.

Imperial Bureau of Entomology, London, England (through Mr. James Waterson): 10 specimens of African Tetrastichi representing 6 species, four of them cotypes (66381).

H. M. Office of Works, London, England (through Sir Lionel Earle and the American Ambassador): Section of oak timber from the hammer-beam roof of Westminster Hall, 4 photographs, 2 drawings, and 1 mimeographed copy of "Notes upon the History and Repairs to the Roof," by Sir Frank Baines (65860).

Royal Botanic Gardens, Kew, Surrey, England: 100 miscellaneous plants (6294) Exchange.

(Through War Department): Special sand bag of the type used by the British Army during the World War (65685).

BRITTON, Dr. N. L. (See under New York Botanical Garden.)

BROCKETT, PAUL, Smithsonian Institution: Enlarged halftone, 7 dots to the inch (65981).

BROOKLYN INSTITUTE OF ARTS AND SCIENCES, CENTRAL MUSEUM, Brooklyn, N. Y. (through Charles Schaeffer): Biological material with pupal cells and adult of Sagra beetles from India (65737); 4 bats, *Desmodus rotundus*, alcoholics, collected on Asia Island, Peru (65738).

BROWN, BENJAMIN C., Pasadena, Calif.: 6 soft ground etchings, 1 in brown and 5 in color, the work of the donor (66576).

BROWN, EDWARD J., Los Angeles, Calif.: 4 skins of sandpipers, *Ereunetes*, from Virginia (66683).

BROWN, Lieut. Col. F. W., U. S. Army, Washington, D. C.: 26 specimens of textile fabrics from the Lake Lanao region, Mindinao, P. I. (65211; loan).

BROWN, WILL, San Bernardino, Calif.: Crystal of axinite (65256, exchange).

BROWNE, Mrs. ARTHUR S., Washington, D. C.: Chinese carved ivory cardcase (66208).

BRUES, Dr. C. T., Melrose Highlands, Mass. (through C. F. W. Muesebeck): Paratype of *Apanteles caudatus* and one of *Microplitis stigmaticus* (66429, exchange).

BRYAN, Maj. HARRY S., Springfield, Ohio: Archeological objects and a reproduction from the Valley of Mexico (65938); archeological material from the Valley of Mexico (65939, loan); lacquered box, 2 documents, 5 samplers, and 2 coin dies (66048); ethnological and religious specimens (66049, loan); carved lacquer gourd from Mexico (66122); religious Mexican hieroglyphic painting and a pioneer band saw (66193, loan); obsidian blade from Mexico (66704, loan).

BRYAN, KIRK, Tucson, Ariz.: 8 living cacti from Arizona (66465).

BUCKINGHAM, Mrs. B. F., and Miss I. C. FREEMAN, Washington, D. C.: 6 old plaques, 2 caps, 2 handkerchiefs, 2 embroidered dresses, and 2 petticoats, of the period of 1812, and a bronze statuette (66487).

BUDDINGTON, A. F. (See under Princeton University, Department of Geology.)

BUFFALO SOCIETY OF NATURAL SCIENCES, Buffalo, N. Y.: The type specimen of the fossil turtle, *Bystra nanus* (65488, exchange).

BULLBROOK, J. A., Port-of-Spain, Trinidad, West Indies (through Dr. T. Wayland Vaughan): Collection of invertebrate fossils from Trinidad, and a monkey skeleton (65691).

BURCHARD, E. F., U. S. Geological Survey, Washington, D. C.: 23 lots of fossils from Pedatin district, Mindanao, and 4 lots from Tayabas Province, Luzon, P. I. (66086).

BURLESON, Hon. A. S., Postmaster General, Washington, D. C.: Sword, scabbard, and belt, taken from the body of a Mexican bandit after the raid of Francisco Villa on Columbus, New Mexico, March 9, 1916 (66120).

BURNETT, JEROME B., University of Nebraska, Department of Geology, Lincoln, Neb.: Invertebrate fossils from Colombia, South America, collected by Mr. C. W. Washburne and the donor (65593).

BURT, Mrs. A. S., Washington, D. C.: Portion of a right maxillary, carrying 2 teeth, of a Titanothere (65820).

BUSH, B. F., Courtney, Mo.: 137 plants (66364); 54 plants from Missouri (66716).

BUSHNELL, D. I., jr., Washington, D. C.: Beaded cap, Scotch style, made by a Creek Indian in Georgia for General Gaines (65435, loan).

BYRNE, Col. CHARLES B., U. S. Army, Washington, D. C.: 2 hardwood bars from the Casa Blanca, the reputed residence of Ponce de Leon in Porto Rico (65872).

BYRNE, Miss ELLEN ABERT, Washington, D. C.: Indian objects (66432).

CALADERO PRODUCTS CO., Atascadero, Calif.: 14 samples of dehydrated fruits and vegetables (66754).

CALDERON, Señor SALVADOR, Chief of the Laboratory, Direccion General de Agricultura, San Salvador, El Salvador: About 30 insects from Central America (65307); 61 fishes, Poecilids (66497).

CALIFORNIA ACADEMY OF SCIENCES, San Francisco, Calif. (through Bureau of Entomology, U. S. Department of Agriculture, Washington, D. C.): 7 specimens of Hemiptera, including 4 paratypes of 2 species (66113); (through Miss Alice Eastwood) Plant, *Pilularia*, from California (66391, exchange); 15 living cacti collected in Mexico by Mr. I. M. Johnston (66484, exchange).

CALIFORNIA RAND SILVER (INC.), Randsburg, Calif.: Silver ore (65248).

CALIFORNIA, UNIVERSITY OF, Department of Botany, Berkeley, Calif. (through Prof. H. M. Hall): 48 photographs of type specimens of plants in the Gray Herbarium (66162); 19 photographs of type specimens of plants of the genera *Pyrrocoma*, *Chrysothamnus*, *Eriocarpum* and *Hazardia* in the Green Herbarium at Notre Dame University (66393); Plant, *Dryopteris* (66616). Exchange.

CAMP, R. D., Brownsville, Tex.: 19 plants (66387, 66664, 66560).

CAMPBELL, Prof. ARTHUR S., Upland, Calif.: 6 paratypes of ophiurans, *Ophiocryptus maculosus* and a starfish, *Henricia leviuscula* (66367).

CAMPBELL, WILLIAM J., Philadelphia, Pa.: 4 photostats of plumbeotypes (66348, 65592).

CANADIAN GOVERNMENT:

Department of Agriculture, Entomological Laboratory, Fredericton, New Brunswick (through John Tothill): Paratype of *Ernestia longicornis* (66574).

Department of the Interior, Dominion Parks Branch, Ottawa, Canada: Motion-picture film entitled "Trumpeter Swans" (65935).

Geological Survey, Ottawa, Canada: 77 crustaceans from Canada (65230, exchange).

Department of the Naval Service, Ottawa, Canada: 145 specimens, representing 15 species, of marine and fresh water mollusks from James and Hudson Bays and vicinity (66256).

CANADIAN GOVERNMENT—Contd.

Department of the Naval Service—Continued.

CANTON CHRISTIAN COLLEGE, Canton, China (through Dr. C. W. Howard): 61 specimens of Hymenoptera from Canton, China (66686).

CAPPS, S. R., United States Geological Survey, Washington, D. C.: Fossils from the coast of Thrace (65965).

CARLETON, M. A., Almirante, Panama: 85 plants collected in Panama (66515).

CARLTON, A. E., American Consul, Medan, Sumatra, Netherlands Indies: Samples of the eight commercial grades of Hevea rubber produced and sold in the Medan market (66204).

CARNEGIE INSTITUTION OF WASHINGTON, Washington, D. C. (through Prof. W. A. Setchell, Department of Botany, University of California, Berkeley, Calif.): 75 ferns from Samoa (66055); (through Dr. D. T. MacDougal, Tucson, Ariz.): 3 specimens of cacti (66330).

(See also under Prof. A. L. Treadwell.)

CARNEGIE MUSEUM, Pittsburgh, Pa. (through Dr. W. J. Holland): 19 specimens of parasitic cynipoids (wasps), including 16 species, of which 14 are represented by holotypes (65483, exchange).

CARNEY, J. E., JR., Rio de Janeiro, Brazil: Tourmalines, beryls, and examples of rare minerals from Brazil (66569).

CARR, WILBUR J., Director of the Consular Service, Department of State, Washington, D. C.: Moorish flintlock musket and 3 South African native spears (65605); Moorish dagger; Chinese carving of a mendicant priest, with standard; plumb, lamp, and terra cotta head from ancient Rome; and a piece of carved stone from the Greek theater at Syracuse, Sicily (65758).

CARTERET BOOK CLUB, OF NEWARK, THE, Newark, N. J. (through Rudolph Ruzicka, New York City): 9 specimens, comprising 4 engraved wood blocks and 5 proofs, designed, engraved, and printed by Rudolph Ruzicka (65920).

CARTWRIGHT, L. W., Vallejo, Calif.: A carved wooden image from the Solomon Islands (65572); model of Samoan outrigger canoe (65851).

CASE RESEARCH LABORATORY, Auburn, N. Y.: Dyscrasite sender, receiver, and tube of the type furnished the Signal Corps, U. S. Army, subsequent to November 11, 1918 (65315).

CASTELLANOS, ALBERTO, Buenos Aires, Argentina: 5 specimens of cacti (65535, exchange).

CAUDELL, A. N. (See under Frederick Knab, Estate of.)

CAWTHORN INSTITUTE OF SCIENTIFIC RESEARCH, THE, Nelson, New Zealand (through Dr. R. J. Tillyard): 78 species of Pyralidae, all new to the Museum collections (66650).

CHAMBERLAIN, EDWARD B., New York City: 2 specimens of pteridophyta from Dominica, British West Indies (66270).

(See also under Sullivant Moss Society, The.)

CHAMBERLAIN FUND, FRANCES LEA, Smithsonian Institution: Collection of tourmalines, cut and uncut, and other cut gems (65235); 3 cut blue zircons (65374); 4 carved jades (65783); 2 cabochons of Persian turquoise (65785); 2 cut gems each of Madagascar orthoclase and wernerite, and 1 Australian opal (65786); 4 Australian sapphires, 3 cut blue zircons from Queensland, Australia, and a cut opal weighing 31.9 carats, from Australia (65910, 66224, 66590).

CHAMPLAIN, A. B., Bureau of Plant Industry, Harrisburg, Pa.: 33 specimens of parasitic Hymenoptera (66108, exchange).

CHANDLER, Prof. ASA C. (See under Rice Institute, The.)

CHANSLER, WALTER S., Bicknell, Ind.: 9 small mammal skulls, and a partial skeleton of a dog from Edwardsport, Ind. (65252, 65852).

CHAPIN, E. A., Bureau of Animal Industry, U. S. Department of Agriculture, Washington, D. C.: 22 exotic beetles, including 8 species new to the Museum collections (66145, exchange).

CHAPMAN, Mrs. E. M., Washington, D. C.: Cincinnati china teacup and antique Mexican chair (65906).

CHAPMAN, Dr. F., Victoria, Australia: 5 lots of Tertiary bryozoans from Australia (65678).

CHAPMAN, Mrs. ROBERT HOLLISTER, Washington, D. C.: Ethnological specimens and a lyre-bird tail (66486).

CHASE, Mrs. AGNES, Department of Agriculture, Washington, D. C.: 54 plants (65508).

(See also under Dr. L. H. Bailey.)

CHASE, ENOCH A., Washington, D. C.: Original trade-mark No. 1, issued by the U. S. Patent Office, October 25, 1870, to the Averill Chemical Paint Co.; also Patent Office specification for same (65684, loan).

CHICAGO, UNIVERSITYY OF, WALKER MUSEUM, Chicago, Ill.: Casts of type specimens of invertebrate fossils in the Walker Museum, made by Dr. R. S. Bassler (65569, exchange): 2 skulls of *Diceratherium cooki* from Agate Springs, Nebr.; casts of the skulls of *Edaphosaurus* and *Diadectes* from the Permian of Texas, and a collection of casts of type specimens of invertebrate fossils prepared by Dr. R. S. Bassler (66014, exchange).

CHILDS, L. J., Rialot, Calif.: Specimen of the mineral bayldonite from Riverside County, California (66570).

CHINA, GEOLOGICAL SURVEY OF, Peking, China; V. K. Ting, Director: 4 specimens of fossil crabs, *Macropthalmus latreillei* used as medicine in China (65587).

CHRISTIANIA, NORWAY, ZOOLOGISK MUSEUM OF THE UNIVERSITY: 2 snakes collected by Carl Lumholtz in Borneo (66768, exchange).

CLARK, Austin H., U. S. National Museum: Prehistoric shell implement from Barbados, West Indies (65864).

CLARK, B. P., Boston, Mass.: 263 exotic beetles (66199).

CLARK, H. Walton. (See under Miss Eliza Garvin.)

CLARKE, Louis C. G., London, England: A small jade tiki from New Zealand, and a collection of neolithic stone implements from Great Britain, Ireland, and Greece (65772, 65954). Exchange.

CLARKSON, Grosvenor B., Washington, D. C.: 2 Japanese vases (65525).

CLAUDE-JOSEPH Brother. (See under Instituto de la Salle, Correo Nuñoa, Chile.)

CLEMENS, Mrs. Joseph, Greenville, Calif.: 6 plants (65419); 3 plants from California (66040).

CLEVELAND, Mrs. Francis D., Cambridge, Mass.: The entire collection of insects and rocks, and the scientific portion of the library of the late Dr. Joseph P. Iddings (65750).

CLINTON, H. G., Manhattan, Nev.: Collections of invertebrate fossils from Nevada (65692, exchange).

CLOKEY, Ira W., Denver, Colo.: 13 Colorado plants and 2 ferns (65689, 66223); 271 plants (66110, exchange).

COCKERELL, Prof. T. D. A., Boulder, Colo.: Bee, *Poeciloconalos mimus*, a species and genus new to the Museum collections (65212); 86 specimens of insects from England, mostly named, and 4 paratypes and 4 other named species of beetles from the Seychelles Islands (65927); mollusks, marine invertebrates, echinoderms, insects and plants from the Madeira Islands (66057, 66238, 66281); shells, insects, and flies, beetles, and plants (66174, 66586).

COLE, Elmer E., Washington, D. C.: Powder horn with carved cap and spout, used in the early fifties by Thomas Smiley, Meadville, Pa. (65507, loan).

COLE, Miss Lillian A., Union, Me.: 11 plants (66356, 66564).

COLEGIO DEL SAGRADA CORAZON, Guantanamo, Oriente, Cuba (through Brother Hioram): 26 ferns from Cuba (66316).

COLEGIO DE SAN PEDRO APOSTOL, Cartegena, Colombia (through Brother Heriberto): 161 Colombian plants (65449, 66230).

COLLEGE OF PHYSICIANS AND SURGEONS.

(See under Columbia University.)

COLONIAL DAMES OF AMERICA, NATIONAL SOCIETY OF, Washington, D. C. (through Mrs. Carolyn Gilbert Benjamin): Lady's fan of the colonial period (65396); old English china pitcher presented by the poet James Montgomery to the journalist, Joseph Gales (66404); uniform coat, vest, breeches, and sash worn during the French and Indian Wars by Capt. Ely Dagworthy of the British Army (66546); miscellaneous relics of the colonial period (66552); 4 documents of the eighteenth century (66604); glass tumbler owned by George Washington (66626); collection of uniforms of the type worn by American women, members of war organizations during the World War, 1914–1918 (66674, loan).

COLONIAL WARS, GENERAL SOCIETY OF (through W. W. Ladd, Governor General, New York City): Bronze war service insignia and certificate for civilian service of the type issued by the General Society of Colonial Wars to members of the society in recognition of patriotic services rendered to the United States during the World War, 1917–1919 (66311).

COLORADO SCHOOL OF MINES, Department of Geology, Golden, Colo.: 19 specimens of zeolites from North Table Mountain, near Golden, Colo. (66695, exchange).

COLORADO STATE MUSEUM, Denver, Colo.: 8 plants from New Mexico (66513).

COLORADO, UNIVERSITY OF, Department of Biology, Boulder, Colo.: 26 plants (66430).

COLTON COMPANY, ARTHUR, Detroit, Mich.: An automatic tablet machine complete with punches, dies, and electric motor (66765, deposit).

COLUMBIA UNIVERSITY, COLLEGE OF PHYSICIANS AND SURGEONS, New York, N. Y. (through Dr. George S. Huntington): 172 cases of skeletal material (66480, exchange).

COMMERCE, DEPARTMENT OF:

Coast and Geodetic Survey: 53 bottom samples taken during the summer of 1919 by the Coast and Geodetic Survey steamer *Surveyor* on passage between Norfolk, Va., and San Diego, Calif., via Panama Canal (65683); chronoscope; dip circle, bought between 1848 and 1885; verticle circle, bought between 1885 and 1893; geodetic level, and an astronomical transit, 46 inches, purchased between 1848 and 1852 (65983).

Bureau of Fisheries: 10 Turbellarian worms taken from oysters collected on Port Inglis oyster bar, near Cedar Key, Fla. (65182); 2 plants, *Opuntia*, from North Carolina (65283); 25 + juvenile forms of crabs, *Uca pugilator*, from the sandy beach south of Diver's Island, Beaufort, N. C. (65516); approximately 100,000 fishes collected by the steamer *Albatross* in Philippine waters (65731); 15 specimens of dried sponges from Ikatan Bay, Unimak Island, Alaska, collected by Warden Joseph N. Braun (65787); 360 + lots of sponges collected by the steamer *Albatross*, 250 + of them from the *Albatross* Hawaiian Cruise of 1902, and 110 + from the Eastern Pacific Cruise of 1904–5 (65876); type specimen of *Peristedion gilberti* (65933); 9 skulls of fur seals, *Callorhinus*, from St. Paul Island, and 25 skulls and 1 skeleton of fur seals from St. George Island (65959); 6 skulls of branded 8-year old fur seals, *Callorhinus*, from the Pribiloff Islands, Alaska (65960); skeleton of a leather back turtle, and 72 crustaceans (15 species of amphipods and 5 species of isopods), all from Wood's Hole, Mass. (65977, 66504); (through Samuel W. Geiser) 5 specimens of a new species of amphipod from Chesapeake Bay, collected by the steamer *Fish Hawk* (65993): specimen of croaker, *Micropogon undulatus* (*hermaphroditic*) (66140); 7 type specimens of 16 cotypes of new mala-copterygian fishes (66257); a miscellaneous lot of fishes from the Potomac River and its tributaries (66448); 211 specimens, 38 lots, of mollusks, Sphaeriidae, from Iowa (66449); 54 specimens, 1 species, of landshells from Key West, Fla. (66455); a miscellaneous collection of marine invertebrates, starfishes, mollusks, fish, and stomach contents of fish from Alaska, together with 8 lots of unidentified Philippine sponges (66605); 4 microscopic slides and 2 vials of cestode worms including the type and cotypes of *Phyllobothrium tumidum* (host *Carcharodon carcharias*) and the type of *Phyllobothrium loliginis* from a swordfish (66666).

(See also under N. H. Cowdrey, and Dr. A. R. Stubbs.)

Bureau of Foreign and Domestic Commerce: A skein of tussah silk, Two Deer Brand, produced by the Chun Yi Filature of Mukden, Manchuria (65626); samples of mica from China (66094).

CONGRESS, LIBRARY OF. (See under Ukraine, The Friends of.)

CONNER, GEORGE W., Hollywood, Calif.: Paper currency of the Republic of Texas issued 1838–41 (9 specimens) (65455).

CONNOR, BUCK, Hollywood, Calif.: Lover's flute from the Brule Sioux (65697); catlinite pipe and stem, skin pipe bag, 8 arrows, and 2 stone-head clubs (66350).

CONZATTI, Prof. C., Oaxaca, Mexico: 2 plants, *Mammillaria* (65699); 196 plants from Mexico (65736, 65806, 65838, 66032, 66033); plant, *Diospyros* from Oaxaca (66472); 10 specimens of cacti (66714).

COOK, Dr. E. FULLERTON. (See under United States Pharmacopoeial Convention (Inc.), Board of Trustees of the.)

COOK, Dr. O. F. (See under Miss Ellen D. Schulz.)

COOKE, Dr. C. WYTHE, U. S. Geological Survey, Washington, D. C.: 50 specimens, 6 species, of land and fresh-water shells collected by the donor in Department of Santander, U. S. of Colombia (66267).

COOPE, Miss JESSIE, Washington, D. C.: 18 Chinese ethnological specimens (65240).

COOPER, Prof. WILLIAM S., Department of Botany, University of Minnesota, Minneapolis, Minn.: Plant from Alaska (65268).

COPELAND, E. B., Chico, Calif.: 2 plants, *Selaginella*, from California (65887).

COPENHAGEN, DENMARK, UNIVERSITY OF COPENHAGEN, ZOOLOGICAL MUSEUM (through U. S. Department of Agriculture): Collection of beetle larvae representing 8 species (66339, exchange).

COPPEDGE DRUG STORE, Brownsville, Tex.: Larva of a moth, *Argeus labruscae*, from Brownsville, Tex. (65504).

CORBACHO, Señor JORGE M., Lima, Peru: Peruvian document signed in 1735 by the Marquis of Castel Puerte, viceroy of Peru, 1724–1735 (65278).

CORNELL UNIVERSITY, Ithaca, N. Y. (through Prof. W. W. Rowlee): 50 Central American plants (65850); 5 fragmentary plants, *Selaginella;* (through C. F. W. Muesebeck) 4 paratypes of parasitic Hymenoptera (braconids) (66298, 66306, exchange.)

CORT, Dr. W. W. Department of Medical Zoology, Johns Hopkins University, Baltimore, Md.: About 500 fresh-water snails, *Blanfordia formosana*, from Taichu Province, Formosa (66022).

COUNCIL OF NATIONAL DEFENSE, Washington, D. C. (through E. K. Ellsworth, Acting Director): Silk flag presented by the women of Armenia, through the Armenian National Union, to the women of America, through the Woman's Committee of the United States Council of National Defense, in recognition of the services rendered to women of Armenia by the women of America during the World War (65729).

COVILLE, Dr. FREDERICK V., Bureau of Plant Industry, U. S. Department of Agriculture, Washington, D. C.: Plant, *Azalea arborescens*, from Great Falls, Va. (66273).

(See also under Agriculture, Department of, Bureau of Plant Industry, Ellsworth Bethel, F. W. Hunnewell, and Titus Ulke.)

COWDRY, N. H., Department of Anatomy, Peking Union Medical College, Peking, China: 213 plants from China (65751); (through Department of Commerce, Bureau of Fisheries) 33 Chinese plants (66099).

COX, Prof. PHILIP, Fredericton, New Brunswick, Canada: 10 fishes, sticklebacks (66368, exchange).

CRAMER DRY PLATE CO., G., St. Louis, Mo.: An 8 by 11 inch framed portrait of Mr. Gustav Cramer (66137).

CRANE, W. E., Washington, D. C.: 18 species of Pleistocene (?) shells from a low bluff 15 to 20 miles west of the port of Batavia, Java, on the China Sea (66490).

CROSTHWAITE, Miss FOREST M., Washington, D. C.: Military equipment owned during the Mexican War by Lieut. Baldwin H. Crosswait, Third Ohio Infantry; lady's riding saddle of the period of the Revolution, and riding-habit coat of the period of the Civil War; 2 German religious books of the eighteenth century; and miscellaneous natural history material (65484).

CROTHER, A. H., Laurel, Md.: Egret, *Herodias egretta*, from Maryland (65434).

CURRAN, HOWARD, Orillia, Ontario, Canada: 4 flies (66415).

CURTIS PUBLISHING CO., Philadelphia, Pa. (through Perry R. Long and William Slagle): 98 printed proofs of four-color work and 24 prints as they come from the press, printed in two colors on both sides (66198).

CURTISS AEROPLANE AND MOTOR CORPORATION, Garden City, Long Island, N. Y.: Photographs of airplanes Eagle, Wasp, and Oriole (65558).

CUTLER, Mr. and Mrs. RUSSELL G., Kanab, Utah: Archeological objects found while digging a cellar in Kanab, Utah (65540).

CZECHO-SLOVAK ARMY IN RUSSIA, ARTILLERY SECTION, Vladivostok, Siberia (through the Quartermaster Corps, U. S. Army): Russian 3-inch gun captured with the armored train "Orlik" from bolshevik forces by Czecho-Slovak troops, July, 1918, and used by the latter in their defense of the Trans-Siberian Railroad, 1918–1920 (65821).

DALL, Dr. W. H., U. S. Geological Survey, Washington, D. C.: Artist proof wood-engraving of Asa Gray by Gustav Kruel (1843–1907) (66416).

(See also under J. G. Malone, and C. R. Orcutt.)

DANIEL, ROBERT E. L., Moqui Indian Agency, Keams Canon, Ariz.: 7 sheets of drawings in color illustrating tribal myths of the Kiowa Indians, Fort Sill, Okla., an earthenware jar from Marsh Pass, and a stone figurine of ancient Pueblo manufacture (65566).

DANIEL, ROBERT E. L.—Continued.

DARBY, Miss CHARLOTTE L., Falls Church, Va.: House wren, *Troglodytes aedon*, from Virginia (66630).

DARLING, NANCY, Woodstock, Vt.: Fern, *Polystichum adiantiforme*, from Florida (65760).

DAVIDSON, Dr. A., Los Angeles, Calif.: Plant, *Petrophylon*, from California (65877); 8 plants from California (65777, 66642); 10 plants (65253, 65440).

DAVIDSON, W. M., Vienna, Va.: Syrphus fly, from southern California, collected by the donor (65677).

DAVIS, Prof. DONALD W. (See under Eastern State Hospital, Williamsburg, Va.)

DAVIS, Rev. JOHN, Hannibal, Mo.: 317 plants (65402, 66450).

DAVIS, J. J., Riverton Entomological Laboratory, Riverton, N. J.: 23 paratypes of 8 species and varieties of May-beetles, *Phyllophaga* (65344).

DAY, Prof. A. L. (See under Philippines, University of.)

DAYTON-WRIGHT CO., Dayton, Ohio: Isometric plan of De Haviland 4 battle plane, showing military equipment (3 copies) (66633).

DEAM, CHARLES C., Bluffton, Ind.: 17 plants (65428); 9 plants, *Selaginella*, from the United States and Canada (65889); (through W. W. Eggleston) 66 plants from Indiana (66121).

DEAM, Miss ROBERTA E. (See under Michigan, University of, Museum of Zoology.)

DEAN, F. A. W., Alliance, Ohio: 5 specimens representing 5 species of mollusks (65208); white metal token commemorating the Hudson-Fulton celebration, 1909, and 2 bronze medalets commemorating the Lincoln centennial, 1909 (65236).

DE GOLYER, E., Chief Geologist, Compania Mexicana El Aguila, S. A., New York City (through Dr. T. Wayland Vaughan): Type specimen of the fossil pelecypod, *Sauvagesia degolyeri* (65615).

DEINARD, Ephraim, Arlington, N. J.: Collection of objects of Jewish and Mohammaden religious ceremonial, consisting of textiles, specimens of wood, stone, copper, brass, silver, and manuscripts, chiefly from Palestine (255 specimens) (65324, loan).

DEMERARA BAUXITE CO. (LTD.), Philadelphia, Pa.: Samples of British Guiana bauxite (66318).

DE- NEALE, Miss EDNA, Washington, D. C.: An American Hornbook painted on bone (65390, loan).

DENSLOW, Rev. H. M., New York City: Plant, *Listera*, from New York (66571, exchange).

DE RONCERAY, Miss MARIE ESTELLE, Smithsonian Institution: 3 china doll heads, and a lot of doll clothes, all of the period of 1870, and a lace shawl worn in Porto Rico between 1858 and 1864 by Mrs. Charles de Ronceray (Henrietta Rasalee) (66105).

DESPREZ, Mme. PAUL, Paris, France: Gold mounted and jeweled sword presented by the city of Philadelphia to Maj. General George B. McClellan in 1861 (65865).

DETMERS, Miss FREDA, Ohio Agricultural Experiment Station, Wooster, Ohio: Plant (65250).

DETWILER, FREDERICK KNECHT, New York City: 6 water-color drawings by the donor showing the construction of wooden ships in the United States shipyard at Noank, Conn., during the World War, 1918 (66382).

DEUTSCHES ENTOMOLOGISCHES MUSEUM, Berlin-Dahlem, Germany (through Dr. Walther Horn): 196 sawflies (66531).

DEVEREUX, Mrs. J. RYAN, Chevy Chase, Md.: Harp piano (65526).

DEWEY, Dr. WILLIAM A. (See under Dr. Mary E. Hanks and Dr. Lynn Arthur Martin.)

DIAMOND FLUORSPAR CO., Karbers Ridge, Ill.: Specimen of fluorspar (65610).

DICKENS, Mrs. F. W., Washington, D. C.: 15 pieces of American historical chinaware (66032, loan).

DIRECCION DE ESTUDIOS BIOLOGICOS. (See under Mexican Government.)

DIRECCION GENERAL DE AGRICULTURA. (See under Guatemala.)

DOBBIN, FRANK, Shushan, N. Y.: 55 plants from New York (66341).

DODGE & OLCOTT CO., New York City: Sample of bay leaves, *Pimenta acris*, and 6 medicinal oils (65343, 65870).

DOGNIN, PAUL, Wimille, France: 200 specimens of pyralidae (lepidopterous insects) (66625).

DOUGHTY, EDWARD CROSBY, Williamstown, Mass.: Framed photographic enlargement on Japanese tissue (66396).

DUKES, W. C., Mobile, Ala.: 10 specimens of a moth, *Aegeria tepperi*, new to the Museum collections (66285).

DUNN, L. H., Ancon, Canal Zone: 8 mosquitoes (66201); fly, *Pseudolfersia mexicana* (66228).

DUPLAN SILK CORPORATION, New York City: 7 samples of novelty silk fabric woven at Hazleton, Pa. (66772).

DU PONT DE NEMOURS & CO., E. I., New York City: An embossed bookbinding of fabrikoid, in imitation of leather (66583).

DUTTON, D. LEWIS, Brandon, Vt.: 17 plants, chiefly from Vermont (66063).

DYAR, Dr. H. G., U. S. National Museum: 350 crane flies from the Pacific Northwest (65682).

EARLE, CHARLES T., Palma Sola, Fla.: A collection of fragmentary bones and teeth of fossil vertebrates (66138); 22 specimens of fragmentary bones and teeth from the Pleistocene of Florida (66505).

(See also under Harry Walling).

EARLE, CHARLES T., and HARRY WALLING, Palma Sola, Fla.: Fossil bones and teeth from Bishops Harbor, Fla. (66690).

EARLE, Sir LIONEL. (See under British Government, H. M. Office of Works.)

EASTERN STATE HOSPITAL, Williamsburg, Va. (through Prof. Donald W. Davis): Portions of a fossil whale skeleton (65635).

EBERT, Col. R. G., Vancouver, Wash.: Plant, *Vancouveria hexandra* (65399).

ECLIPSE ELECTROTYPE & ENGRAVING CO., THE, Cleveland, Ohio: A chart showing the various halftone screen effects, 5 photographs, and some miscellaneous pamphlets (15 specimens) (66304).

EDMONDSON, Dr. C. H. (See under Bernice Pauahi Bishop Museum, Honolulu, Hawaii.)

EGBERT, A. O., Prescott, Ariz. (through F. L. Hess): Specimen of hewettite in gypsum from Paradox Valley, Montrose County, Colo. (65914).

EGGLESTON, W. W. (See under Charles C. Deam.)

EIGENMANN, Dr. C. H. (See under Indiana University Museum.)

ELLIOTT, William E., Chicago, Ill. (through F. L. Hess): Sample of rock showing the occurrence of radioactive minerals, and a small piece of pitchblende (65994).

ELLIS, L. L., Oruro, Bolivia (through F. L. Hess): Specimen of crystallized wolframite and 1 of cassiterite from Bolivia (65220).

ELLSWORTH, E. K. (See under Council of National Defense.)

ELLSWORTH, Lincoln, New York City: A piece weighing 78 pounds cut from the Owns Valley, Calif., meteorite (66591, exchange).

EMERY, D. L., St. Petersburg, Fla.: 50 specimens, 3 species, of *Crepidula*, and 11 lots of marine shells from the west coast of Florida (65862, 65575); 3 species of marine shells from St. Petersburg and Longboat Inlet, West Florida (65989); 7 species of marine shells from southwest Florida, between Longboat Inlet and Caseys Pass, and 1 species from San Diego County, Calif. (66132); 4 specimens of mollusks, *Marginella*, 1 of them from Gulfport, Fla., and 50 specimens of *Detracia bulloides*, 1 of them from Boca Ceiga Bay, Fla. (66320).

ENGBERG, Dr. C. C., University of Nebraska, Lincoln, Nebr.: 21 lots of mollusks from the west coast of the United States (65632); 12 specimens representing 3 species of marine shells from Olga, Wash. (65703); 5 specimens, 1 species, of freshwater mollusks from Fidalgo Island, and 1 alga (66512).

ENGELHARDT, George P., Brooklyn Institute of Arts and Sciences, Brooklyn, N. Y.: 100 specimens of Microlepidoptera from Long Island, N. Y. (65559); 3 specimens of robber flies collected by the donor at Great Falls, Va., October, 20, 1920 (65706).

ENTOMOLOGICAL SOCIETY OF WASHINGTON. (See under Prof. Otto Scheerpeltz and Prof. Emil Moczarski.)

EPLER, Mrs. Lulu Hilleary, Govans, Baltimore, Md.: 2 glass decanters formerly owned by Henry Clay (65501).

ESTACIÓN AGRONÓMICA DE HAINA, Santo Domingo, Dominican Republic: 43 plants (66729).

EVANS, Prof. Alexander W., Osborn Botanical Laboratory, Yale University, New Haven, Conn.: Specimen of hepatic from Jamaica (65496).

EVANS, Victor J., Washington, D. C.: 2 hand-print cloths of the Moros, Philippine Islands (66280, exchange).

FAIR, Henry, Spokane, Wash. (through Mr. L. K. Armstrong): Basalts from the environs of Spokane, Wash. (66309).

FAIRMAN, Charles E., Washington, D. C.: 4 gum prints and 1 platinum print (66723).

FANTUS, Bernard, Chicago, Ill.: 49 specimens illustrating candy medication for children (66070).

FARWELL, Oliver A., Detroit, Mich.: Plant, *Amaranthus*, from Michigan (65429); plant, *Lacinaria*, from Mississippi (65839).

FAWCETT, C. T., Fawcett Gap, Va.: Grooved stone ax and 9 chipped arrowheads collected at Fawcett Gap, Va. (66157).

FAYSSOUX, H. A., Hollister, N. C.: 3 pearls found in oysters from Norfok, Va. (66250).

FAZ, ALFREDO, Valparaiso, Chile: A collection of Diptera, comprising 45 species and approximately 130 specimens (65313, exchange).

FELIPPONE, Dr. FLORENTINO, Montevideo, Uruguay: 11 crustaceans (1 barnacle, 6 shrimps, 4 crabs); a sponge, 45 mollusks, 2 echinoderms, 1 fish and a collection of insects (65373); 5 specimens representing 5 species of South American freshwater mollusks (65564, exchange); a miscellaneous lot of specimens, including echinoderms, crustaceans, mollusks, insects, reptiles, and fishes (66165).

FELLOWS, Dr. DANA W., Fort Kent, Me.: 690 plants from Maine (65360).

FERNALD, Dr. H. T., Department of Entomology, Massachusetts Agricultural College, Amherst, Mass.: 2 cuckoo bees (65664).

FERRISS, JAMES H., Joliet, Ill.: 5 specimens of cacti (65430, 65522); 9 plants (cacti) (65460, exchange).

FIELD MUSEUM OF NATURAL HISTORY, Chicago, Ill. (through Dr. C. F. Millspaugh): 22 plants from the Santa Catalina Islands, Calif. (66477, exchange).

FISHBACK, CLIFFORD L., Washington, D. C.: Salamander collected on Blagden's Estate, from a pool near Piney Branch (66235).

FISHER, GEORGE L., Houston, Tex.: 306 plants (65584); 28 plants, chiefly from Texas (66072).

FLEMING, J. H., Toronto, Ontario, Canada: 6 bird skins from Celebes (65922, exchange).

FLETT, J. B., Ashford, Longmire Springs, Wash. (through Prof. C. V. Piper): 20 plants and 7 ferns from Washington (66159, 66379).

FLORANCE, E. L., JR., New York City: Cloth shoulder device of the Eighty-first Division, United States Army, worn during the World War (65866).

FLORIDA STATE MUSEUM, University of Florida, Gainesville, Fla.: Vertebra of a fin-back whale (65992); 2 mollusks from Gulfport, representing the species *Turbonilla* (*Pyrgiscus*) (66333).

FLORIDA, UNIVERSITY OF, Agricultural Experiment Station, Gainesville, Fla. (through J. R. Watson): 20 specimens of thrips (65676).

FLOURNOR, J. C., Laredo, Tex.: Mexican archeological specimens, together with several frauds (66025, deposit).

FLYNN, ASHBY T., U. S. National Museum: Combination jackknife, and a cigar case, gilt lacquer with miniature, about 1800 (65317, 66194).

FOERSTE, Dr. AUGUST F., Steele High School, Dayton, Ohio; Cast of a rare Silurian crinoid type, and a specimen of Dayton flood laminated mud (65725); cast of 32 type specimens of Paleozoic cephalopods (66549).

FOOTE, Dr. J. S., Creighton University, Omaha, Nebr.: A needlework illustration of enlarged microscopic views of animal cells and tissues, and blood crystals, embroidered in colored silks on linen by the wife of the donor (65528).

FORBES, Dr. S. A. (See under Illinois State Natural History Survey, Urbana, Ill.)

FORNANZINI, GERVASO, Valtellina, Lanzada, Italy: Detachable front gun sight for a double-barrel gun (Italian) (65338).

FORTIE, M. J., Indianapolis, Ind.: Mosquito, *Toxorhynchites brevipalpis*, from Africa (66296).

FOSHAG, W. F., U. S. National Museum: A group of pink beryl crystals from San Diego County, Calif. (65289).

FOSS, HAROLD. (See under J. H. Hill.)

FOSTER, C. L., Kiating, Szechuan, China: 16 fragments of rocks, and 14 specimens of invertebrate fossils from China (66592, 65979).

FOUR WHEEL DRIVE AUTO CO., THE, Clintonville, Wis.: Model of four-wheel-drive ammunition truck of the type used by the United States Army during the World War (65267).

FOX, R. A., Dawson, Yukon, Canada. Specimen of asbestos (65883).

FRAME, A. M., Sutton, W. Va.: Specimen of pisolitic siderite (66172).

FRANK, CHARLES L., Washington, D. C.: 300 Japanese match-box labels printed in color and in black and white (65354); lithograph by Jules Arnout partly printed in color, partly colored by hand (66582).

FREEMAN, Miss I. C. (See under Mrs. B. F. Buckingham.)

FREEMAN, O. M., Washington, D. C.: 4 plants from the District of Columbia (65405, 65741, 66561).

FRENCH GOVERNMENT:

Bureau of Information, New York City (through Maj. Jean Malye, Director): Military relics of the World War (47 specimens) (65458).

FRENCH, Col. WILLARD (through Mrs. Louise D. French, Washington, D. C.): Mechanical navigator—a mathematical instrument for the purpose of solving all problems in spherical triangles which arise in navigation (65609, loan).

FRIESE, Dr. H., Schwerin, Mecklenburg, Germany: 45 specimens, representing 30 species, of bees (66299, exchange).

FROST, C. A., Framingham, Mass.: Male cotype of weevil, *Allandrus brevicornis* (65902).

FROST, G. ALLAN, Tubbenden Cottage, Farnborough, Kent, England: 13 specimens of English Silurian and Mesozoic fossils (66454, exchange).

FROST, S. W., School of Agriculture and Experiment Station, the Pennsylvania State College, Arendtsville, Pa.: 195 specimens of parasitic Hymenoptera (65909).

FURTH, CHARLES. (See under Photogravure and Color Co.)

GAERSTE, Dr. THOMAS, Curacao, Dutch West Indies: 2 cicadas, *Fidicina bogotana* (65464); katydid, belonging to the group Pseudophyllinae, and a lizard, *Anolis lineatus* (65509); beetle, *Ligyrus fossor* (65580).

GAINES, MARSHALL R. (See under Dr. Y. Hirase.)

GALE, HOYT S., Hollywood, Los Angeles, Calif.: Samples of thenardite from Rhodes Marsh, Esmeralda County, Nev. (66442).

GALLAUDET AIRCRAFT CORPORATION, East Greenwich, R. I.: Original Gallaudet hydroplane model (66685).

GANDOGER, Dr. MICHEL, Arnos (Rhone) par Villefranche, France: 5 plants (66006).

GARDENER, Mrs. HELEN H. (See under National American Woman's Suffrage Association.)

GARFIELD, ABRAM. (See under Mrs. G. Stanley-Brown.)

GARFIELD, Dr. HARRY A. (See under Mrs. G. Stanley-Brown and Williams College.)

GARFIELD, IRWIN McD. (See under Mrs. G. Stanley-Brown.)

GARFIELD, JAMES R. (See under Mrs. G. Stanley-Brown.)

GARMAN, Prof. H., Kentucky Agricultural Experiment Station, Lexington, Ky.: Plant, and 2 microscopic slides containing fresh-water Entomostraca from Frankfort, Ky. (65191, 65207).

GARRETT, Prof. A. O., Salt Lake City, Utah: 2 plants, *Selaginella*, from Utah (65362, 65385).

GARRETT, C., Cranbrook, British Columbia, Canada: 300 mosquitoes (66144).

GARVIN, Miss ELIZA, Fort Wayne, Ind. (through H. Walton Clark): 144 specimens of Japanese algae, 8 bryozoans, and 5 hydrozoans (66502, 66556).

GEDEIST, OLIVER. (See under Monitor Stove Co., The.)

GEE, Prof. N. GIST, Summerton, S. C.: 84 specimens representing 32 species of marine mollusks from China

GEE, Prof. N. GIST—Continued. (65649); 16 vials of insects and 7 vials of crustaceans (66488); lot of fresh-water sponges from a fish pond and 3 fragmentary specimens of millipeds from Summerton, S. C. (66670).

GEISER, SAMUEL W. (See under Commerce, Department of, Bureau of Fisheries.)

GERMAN SOUTH POLAR EXPEDITION, The Berlin, Germany (through Prof. Dr. R. Hartmeyer): 23 Antartic crinoids (65495).

GEROULD, Dr. JOHN H., Hanover, N. H.: 4 braconids, *Apanteles flaviconchae* (65454).

GERSTENBERG, E., Washington, D. C.: Skull of a hippopotamus (65412).

GIDLEY, J. W., U. S. National Museum: 16 cacti from Arizona (66260, 66284).

GIES, Mrs. EDWARD L., Washington, D. C.: Chinese carved sandalwood fan in a lacquer box (66170).

GIFFARD, WALTER D., Honolulu, Hawaii: 83 specimens, 68 species, of marine shells from Hawaii (65499).

GILBRETH, FRANK B. (Inc.), Montclair, N. J.: 9 photographs illustrating motion study and elimination of fatigue in industry (66763).

GILKEY, Miss HELEN M. (See under Oregon Agricultural College.)

GILL, Mrs. MARY WRIGHT, Washington, D. C.: A Florence lock-stitch sewing machine, No. 69948 (65529, deposit); a blue-and-white double-woven coverlet (66143, exchange).

GILMER, Capt. W. W., U. S. Navy, U. S. Naval Station, Guam: Skull bones found about a half mile north of the village of Yona, between the Pago and Ylig rivers, Guam (65371).

GILPIN, LANGDON & CO. (INC.), Baltimore, Md.: Specimen of sassafras pith (65653).

GLEISSNER, Dr. MAX J., U. S. Geological Survey, Washington, D. C.: Specimen of lava from the 1920 Kilauea flow (66649).

GLOVER, Dr. NORMAN C. (See under American Osteopathic Association).

GLUCKSTEIN, Mrs. SOPHIA ROOS, Washington, D. C. (through her daughters Fannie and Nina Gluckstein. Print on silk, "Apotheosis of Shakespeare" (65376).

GOCHENOUR, Dr. DAVID T., Stuarts Draft, Va.: 38 specimens, 8 species, of mollusks, including the type of a new subspecies, from the Philippines (65224).

GODDARD, Dr. H. S., Vancouver, Wash.: Female Indian skull, found in the hills near the Yakima Indian Reservation, Wash. (65452); 5 chipped blades (66436).

GODING, Dr. F. W., American Consul General, Guayaquil, Ecuador: 1321 specimens of Homoptera, including 38 of Cicadellidae, 58 of Cicadidae, 850 of Membracidae, 300 of Cicopidae, and 75 of Fulgoridae (66147).

GORDON, ALEXANDER, JR., Baltimore, Md.: Silver punch bowl with tray, ladle, and 10 mugs, presented to Col. George Armistead by citizens of Baltimore in recognition of his services in connection with the defense of Fort McHenry, against the British attack in 1814 (66427).

GORDON, Mrs. MARY E., East Franklin, Me.: Copy of the souvenir newspaper entitled "Boston, 1630–1880" issued by Rand Avery & Co., Boston, September 17, 1880 (65624).

GÖTEBORGS BOTANISKA TRADGARD, GÖTEBORG, SWEDEN, Stora Anggarden, Dr. Carl Skottsberg, Director: 84 ferns, mainly from Juan Fernandez (65520, exchange).

GOTTSCHALK, ALFRED LOUIS MOREAU (through Mrs. Louise Josephine Gottschalk, executrix, New York City): Small collection of antiquities, including specimens of Inca potteries, Aztec idol, Trojan lamps, etc., pottery and porcelains from Spanish America, Eastern brasses, and a collection of miscellaneous arms, bequeathed to the National Museum in memory of the late Prof. Otis T. Mason (65571).

GRAHAM, Mrs. A. F., Washington, D. C.: Silk patchwork quilt embroidered with Odd Fellow emblems, made by Mrs. Eliza Rozenkrantz Hussey, grandmother of Mrs. Graham, about 1845 (65537, loan).

GRAHAM, David C., Suifu, Szechuan, China: Collection of insects, reptiles and batrachians, shells, 8 birds, 2 mammals, 2 crabs, 2 fishes, an eel, and parasitic worms (65937); fossils and insects from China (66009); bird skins, fossils, insects, a leech, a bat and a reptile from China (66673).

GRANT, J. M., Langley, Wash.: 45 plants, and 150 specimens of cryptogamic plants from the western United States (66192, 66520).

GRAVES, E. W., Bentonsport, Iowa: 74 plants from Iowa (65840); 72 plants (66275, exchange).

GRAY, L. J., Iron City, Tenn.: Phosphatic minerals from Iron City, Tenn. (65599).

GREENE, F. C., Tulsa, Okla.: 15 ferns from Oklahoma and Missouri; plant, *Ophioglossum*, from Kansas; plant, *Selaginella*, from Oklahoma (65349, 65427, 65521).

GREENE, George M., Philadelphia, Pa.: Dipterous gall on stem of hackberry, *Cecidomyia*, new species (65453).

GREGER, D. K., Fulton, Mo.: Specimen of ammonite from Pettis County, Mo. (65275, exchange); 3 blastoids from the Carboniferous of Oklahoma, and 1 crinoid from the Carboniferous of Texas (66202, exchange); an exhibition specimen of cephalopod from the Lower Mississippian of Missouri (66351); fossil crinoid, *Cactocrinus*, from Marion Count, Mo. (66462, exchange).

GRIFFIN, W. W., Paskenta, Calif.: Skin of a gopher, *Thomomys*, from Paskenta (65662).

GRIFFITH, Chauncey H., New York City: Martin Luther Bible, dated 1748 (66197).

GRIMES, Mrs. G. S., Washington, D. C. (through George Harris): 1 black negative silhouette, made about the year 1895 (65800).

GUATEMALA, GOVERNMENT OF: *Direccion General de Agricultura*, Guatemala City (through Señor Don Adolfo Tonduz): 358 plants, ferns, and cacti from Guatemala (66261, 66371, 66421, 66476, 66602).

GUGGENHEIM BROS., New York City (through F. L. Hess): Copper minerals from Chuquicamata, Chile (66478).

GUITERREZ, Señor José N., Campo Duran, Province de Salta, Argentina, via Embarcación (through Dr. Edwin Kirk): Bead pouch, 4 cord beaded bracelets, and 2 earrings (66598).

GUNNELL, L. C., Smithsonian Institution: 27 specimens of halftone color printing (65329).

HAAGNER, A. K., Pretoria, Union of South Africa: Skin of a monkey, *Lasiopyga pygerythra*, from North Rhodesia, Africa (65892).

HABERYAN, H. D., Farmersville, La.: Dragonfly, *Progomphus*, species (66189).

HAITI, REPUBLIC OF, Department of Public Works, Office of the Engineer in Chief, Port au Prince, Haiti (through Director of the U. S. Geological Survey, Washington, D. C.): 6 boxes of geological material collected in Haiti by Wendell P. Woodring (66093); 17 boxes of geological material from the Republic of Haiti (66511).

HALE, Prof. George E., Mount Wilson Solar Observatory, Pasadena, Calif.: 2 photographs of the moon (65326).

HALL, Mrs. Carlotta C., Berkeley, Calif.: 3 plants, *Selaginella*, from Colorado (65805).

HALL, Prof. H. M. (See under California, University of, Department of Botany.)

HAMILTON WATCH CO., Lancaster, Pa.: Framed panel of parts used in Hamilton watches (66052).

HAMLIN, John, Miami, Fla.: Male and female specimens of the fly *Neorondania* (66229).

HAMMER DRY PLATE CO., St. Louis, Mo.: A framed portrait of Mr. L. P. Hammer (66195.)

HANKS, Dr. Mary E., Chicago, Ill. (through Dr. W. A. Dewey, Ann Arbor, Mich.): An old homeopathic medicine case (66733).

HANSEN, Peter L., Washington, D. C.: Pair of wooden shoes from Blooho, Denmark (66083).

HARDING, James E., Potrerillos, Chile: 28 plants from Chile (65759).

HARLAN, Harry, Louisville, Ky.: A geode simulating a fossil ear of corn (66225).

HARPER, R. M., State Geological Survey, Tallahassee, Fla.: 9 plants (65346, 66419).

HARRINGTON, George L., U. S. Geological Survey, Washington, D. C.: 16 specimens, 10 species, of landshells from Bolivia, Chile, and Argentina, and 20 specimens, 3 species, of marine shells from Alaska (65861, 66038); 2 landshells from Villa Montes, Bolivia (66007).

HARRIS & EWING, Washington, D. C.: A bromoil, framed, of Andrew Carnegie (65924).

HARRIS, George. (See under Mrs. G. S. Grimes.)

HARRIS, Graham H., Casa Marina, Key West, Fla.: Dorsal and anal fins of the threadfish, *Alectis* (66188).

HARRIS, J. Arthur, Grantsville, Utah: 24 amphipod crustaceans, *Gammarus limnaeus*, from Ice Spring Craters, Sevier Desert, Utah (65325).

HARRISON, Mrs. W. La Rue, Dominion Heights, Cherrydale, Va.: Sword and scabbard, belt, sash, pair of gauntlets, and pair of spurs, in oak case, presented to Bvt. Brig. Gen. Marcus La Rue Harrison, U. S. Volunteers, in 1864, when colonel, by the officers and men of his command, the First Arkansas Cavalry (65314).

HARTMAN, Rev. W., Shenchowfu, China (through the American Consul, Changsha, China): 2 original photographs showing poppy fields in bloom (65547).

HARTMEYER, Prof. Dr. R. (See under German South Polar expedition, The.)

HARTNELL, George, Cheltenham, Md.: Ruby-crowned kinglet, *Regulus calendula*, from Maryland (65364).

HARVARD UNIVERSITY, Cambridge, Mass.:

Arnold Arboretum: (Jamaica Plain) (through C. S. Sargent): Plant, *Campnosperma*, from Panama (65590); 2,019 plants from the United States (66149, exchange).

Gray Herbarium (through B. L. Robinson, Curator): 23 plants from Trinidad; 17 photographs of type specimens of plants; 3 plants, *Selaginella*, from the western United States; 2 plants, *Lophiola*, from Nova Scotia (65574, 65742, 65767, 66482, exchange).

Museum of Comparative Zoology: 10 lizards from Peru collected by the Harvard Peru expedition (66437, exchange).

HAWAIIAN SUGAR PLANTERS' ASSOCIATION, EXPERIMENT STATION, Honolulu, Hawaiian Islands (through Dr. Francis X. Williams): 18 paratypes of Philippine wasps (65328); 16 wasps nests from the Philippine Islands, collected by Doctor Williams (65598); (through Mr. P. H. Timberlake) 22 specimens representing 6 species of determined bees, 2 of which are new to the Museum collections, and 6 specimens of an undetermined chrysididid (66731).

HAWVER, Mrs. Elizabeth Parsons, Bolinas, Marin County, Calif.: Fern, *Polystichum munitum*, from California (66068).

HAY, Dr. O. P., Carnegie Institution of Washington, Washington, D. C.: Pueblo Indian skull (66741, exchange).

(See also under Dr. J. C. Branner, Frank Janes, and Dr. Adolph H. Schultz).

HAYES, William McKim, Baltimore, Md.: A lot of 15 pieces representing cetaceans, and several shark's teeth, from Calvert Miocene Cliffs, just below Chesapeake Beach, Md. (65461).

HAYNES, Caroline C., Highlands, N. J.: 29 specimens of Hepaticae from the United States (65867); plant, *Selaginella*, from California (65963).

HAZEN, Prof. T. E., Barnard College, Columbia University, New York City: 26 photographs of Trinidad plants (65216).

HEATON, Mr. and Mrs. Franklin A., Kanab, Utah: Archeological objects from a cave on the east slope of Mount Trumbull, northwestern Arizona (65541).

HEBARD, Morgan, Philadelphia Academy of Natural Sciences, Philadelphia, Pa.: 130 specimens of North American Orthoptera from the private collection of Mr. Hebard (65791, exchange).

HEBERLEIN, C. A., Supai, Ariz.: 14 specimens of lead and vanadium minerals (66715, exchange).

HEIDEMANN, Mrs. Mica, Chevy Chase, Md.: Gold watch, thin model, silver dial, Swiss make, about the period of 1860 (66501).

HEIGHWAY, Dr. A. E., Alexandria, Va.: Samples of tin ore from Battle Mountain, Nev., and of wulfenite from Tecoma, Nev. (65265); 2 specimens of powellite replacing molybdenite (65281); specimen of long-fibered chrysotile asbestos (65443).

HEIKES, Victor C. (See under George H. Short and W. H. Weyher.)

HEITMULLER, Anton, Washington, D. C.: Indian beads, crucifix, wood carving, horn spill holder, brass candlestick, brass swivel lamp, and poker (66434, 66475).

HELLER, A. A., Chico, Calif.: 6 plants from Oregon and California (66317).

HELSINGFORS, FINLAND, LABORATORIUM ZOOLOGICUM UNIVERSITATIS (through Dr. Valio Korvenkontio): 8 skulls and 13 skins of small mammals from Finland (66535, exchange).

HENDERSON, John B., Washington, D. C.: Sponge, hydroid, 8 annelids, 170 crustaceans, 2,500 mollusks, 3 ascidians, 15 fishes, 5 fungi, echinoderms, and about 50 fossils collected in Hawaii by Messrs. Henderson and Bartsch (65581).

HENRY, Miss Caroline, Washington, D. C. (through American Security & Trust Co.): 169 pieces of Japanese blue porcelain (66550, bequest).

HENSHAW, Henry W., Cosmos Club, Washington, D. C.: Plant from Massachusetts (65384).

HERIBERTO, Brother. (See under Colegio de San Pedro Apóstol, Cartagena, Colombia.)

HERRE, Albert C., Washington State Normal School, Bellingham, Wash.: 79 lichens, 58 mounted specimens of plants, and 301 plants (65228, 65264, 65448).

HERRERA, Dr. A. L. (See under Mexican Government.)

HERTRICH, William, San Gabriel, Calif.: Plant (66613).

HESS, Frank L., U. S. Geological Survey, Washington, D. C.: Tin and tungsten ores from Bolivia, collected for the Museum (66469).

(See also under A. O. Egbert, W. E. Elliott, L. L. Ellis, T. Hirabayashi, W. J. Loring, Orser-Kraft Feldspar (Ltd.), Radium Co. of Colorado (Inc.), J. F. Aguilar Revoredo, Alexander R. Shepherd, 2d, Prof. Joseph T. Singewald, and Don Stewart.)

HEUVRARD, H. (See under Bonaparte, Prince Roland, Herbarium of.)

HEWETT, D. F., U. S. Geological Survey, Washington, D. C.: Fossils and minerals from Cuba (65190).

HIBBARD, Raymond R., Buffalo, N. Y.: 87 specimens of Devonian conodonts from western New York (65233); 500 specimens of fossil invertebrates from the Hamilton group, 18 Mile Creek, Erie County, N. Y. (65442); collection of Silurian

HIBBARD, Raymond R.—Continued. and Devonian fossils (conodonts and annelid remains) from New York (65619, exchange).

HIBBERD, Miss Jocelyn P., Washington, D. C.: Collection of stone arrow and spear heads gathered by the donor from Willistown Township, Chester County, Pa., 8 miles from Valley Forge (65749).

HIGGINSON, Mrs. F. L. (See under Woman's Liberty Loan Committee of New England.)

HILL, Frederick W. (See under Andrew J. Leach.)

HILL, Dr. Gerald F., Australian Institute of Tropical Medicine, Hospital, Townsville, North Queensland, Australia (through U. S. Department of Agriculture, Bureau of Entomology, Washington, D. C.): 73 named Australian insects (66200).

HILL, J. H., Managing Director, Ghazipur Opium Factory, Ghazipur, India (through Harold R. Foss, American Consul in Charge, Calcutta, India): 10 photographs of poppy cultivation and opium manufacture in India (65674).

HINE, Prof. James S., Ohio State University, Columbus, Ohio: 3 specimens of Hymenoptera, *Aphelinus semiflavidus*, and 1 specimen of *Phorocera* (65952).

HINKLEY, A. A., Du Bois, Ill.: 414 landshells from Arizona (65287).

HINSDALE, F. Gilbert, New York City: 7 specimens of whaling apparatus (66767, exchange).

HIORAM, Brother. (See under Colegio del Sagrada Corazon, Guantanamo, Oriente, Cuba.

HIPSHER, Edward, Morris College, Barboursville, W. Va.: 4 living plants (65263, exchange.)

HIRABAYASHI, T., Bureau of Mines, Tokyo, Japan (through Mr. F. L. Hess): Samples of rare earth minerals from Japan (65915).

HIRASE, Dr. Y., Okazaki, Kyoto, Japan (through Marshall R. Gaines): A collection of mollusks from the Japanese islands, embracing 3,843 lots (66510).

HITCHCOCK, Prof. A. S. (See under G. C. Munro.)

HOES, Mrs. R. G., Washington, D. C.: Lady's straw bonnet used in Virginia during the period prior to the Civil War (66712, loan).

(See also under Mrs. Isabel Rives, Mrs. Maddin Summers, and Mrs. William H. Walker.)

HOFF, Mrs. John Van Renssalaer, Washington, D. C.: "The Colonel John Van Renssalaer Hoff Collection" comprising Chinese and Japanese jade and bronze, Philippine brass, and Porto Rican and American Indian specimens (65251).

HOGAN, Mrs. Louise, Neponsit, Long Island, N. Y.: Cashmere shawl (66753, loan).

HOLLAND, Dr. W. J. (See under Carnegie Museum, Pittsburgh, Pa.)

HOLLISTER, N., Washington, D. C.: Thrush, *Hylocichla*, species, from Washington, D. C. (65477); head of a ring-necked duck, *Marila collaris*, from Wisconsin (65636).

HOLMES, Joseph A., 2d, Casper, Wyo.: 6 cacti (66559).

HOLWAY, Prof. E. W. D., University of Minnesota, Minneapolis, Minn.: Cactus from Chile (65810).

(See also under Minnesota, University of.)

HOLZMAN, Jacob, Reed College, Portland, Oreg.: 7 slugs from Oregon (66423).

HOPKINS, Mrs. Archibald, Washington, D. C.: Cambric frock worn by Charlotte Brooks Everett about 1830 (65827).

HORN, Dr. Walther. (See under Deutsches Entomologisches Museum.)

HOTCHKISS, Dr. W. O., State Geologist, Madison, Wis. (through Dr. E. O. Ulrich): 1,000 specimens of Upper Cambrian fossils from Wisconsin (65322).

HOUGH, Miss Catherine, U. S. National Museum: 30 Devonian fossils from Pennsylvania (65406).

HOUGH, Dr. Walter, U. S. National Museum: Archeological objects from Keetzeel, and Zuni region, Arizona

HOUGH, Dr. WALTER—Continued.
(65302); 2 beetles collected in Arizona during the summer of 1920 (65754); 2 stone pipes found about 30 years ago, one near Morgantown, W. Va., and the other near Chain Bridge, Md. (65848); lantern, spirit stove, lamp, lighters, etc., hand bracket, saw frame, battledore, and lid of coiled basket (66474).

HOWARD, Dr. C. W. (See under Canton Christian College.)

HRDLIČKA, Dr. A., U. S. National Museum: Skull of a cat, *Felis catus*, from Cleveland Park, D. C. (65661).

HUBBARD, H. W., American Board Mission, Peking, China: 26 bird skins from North China (66652).

HUBERT, H. EDWARD, New Orleans, La.: 5 crawfish, 3 shrimps, 1 earthworm, and 2 fishes (66373).

HUCKEL, EARLE WENTWORTH, Germantown, Philadelphia, Pa.: Collection of prints, consisting of etchings, engravings, lithographs, wood engravings, and photomechanical prints and one sixteenth century bookbinding (125 specimens) (65647); a collection of about 317 Bewick wood engravings and 272 American wood engravings dated about 1825–1835, and 85 miscellaneous prints (674 specimens) (65972).

HUNNEWELL, F. W., Cambridge, Mass. (through Dr. Frederick V. Coville): Plants from the District of Columbia (65679).

HUNTER, DARD, Chillicothe, Ohio: Handmade paper exhibit consisting of rags, half-stuff, animal size, hand molds, and various styles of watermarks, dies, and casts for light and shade watermarks; watermarked paper and photographs of beating machines and one of a model of a handmade paper mill in the Science Museum in London, England (66264); 2 books, The Etching of Figures, by William A. Bradley, with an artist proof etching by William A. Levy, and The Etching of Contemporary Life, by Frank Weitenkampf, with an artist proof etching by Ernest D. Roth, each being entirely the work of the donor, who made the paper, designed the type, cut the steel punches, struck the matrices, cast the type, and printed the books all by hand (66548).

HUNTER, DARD—Continued.

HUNTINGTON, Dr. GEORGE S. (See under Columbia University.)

HYDE, Mrs. CHARLES C., Washington, D. C.: Cowichan Indian blanket with totemic painting (66584).

HYDE, FREDERICK B., Washington, D. C.: Skin and skull of a deer, *Odocoileus*, collected in Maine (65832).

HYDE, JOHN, Washington, D. C.: 2 fans from Capri, a pair of old English pattens, an old English hat stretcher, and an English tassel (or teazle) used in the preparation of woolen cloth (65223).

ICE, Miss CLEO, U. S. National Museum: Grooved stone ax found in the valley of the Cottonwood River, Chase County, Kans., by Mr. R. A. Ice (66176).

IHERING, Dr. HERMANN VON, Buenos Aires, Argentina: 3 specimens, 2 species, of crabs from Florinapolis, Brazil (66232).

ILLINGWORTH, Dr. J. F., Meringa near Cairns, North Queensland, Australia: 66 flies from Australia (65210, 66185).

ILLINOIS STATE NATURAL HISTORY SURVEY, Urbana, Ill. (through Dr. S. A. Forbes): 12 specimens of Cynipidae, "cotypes" of 5 species described by Prof. C. P. Gillette (66635, exchange).

ILLINOIS, UNIVERSITY OF, Urbana, Ill. (through Dr. Frank C. Baker): 16 specimens, 2 species (1 amphipod and 15 isopods) from Winnebago Lake, Wis. (66458).

IMPERIAL BUREAU OF ENTOMOLOGY. (See under British Government.)

INDIA, MYSORE DEPARTMENT OF AGRICULTURE, BANGALOR: The 3 stages, larva, pupa, and adult, of *Sagra*, species, collected at Malleswar, India, November 24, 1920, in the stem of *Chaprada avarc* (65797).

INDIA, ZOOLOGICAL SURVEY OF, Indian Museum, Calcutta, India (through Dr. B. Prashad): 8 specimens, 5 species, of freshwater mollusks from India, Ceylon, and the Solomon Islands (66494, exchange).

INDIANA UNIVERSITY MUSEUM, Bloomington, Ind. (through Dr. C. H. Eigenmann): 250 fishes collected by the Irwin expedition to Chile and Peru, 1919 (66451, exchange).

INSTITUTE OF SCIENCE, Taihoku, Formosa, Japan (through Dr. M. Oshima): 56 specimens, 16 species, of crustaceans from Formosa (66023).

INSTITUTO DE LA SALLE, Bogota, Colombia: Collections of anthropological material and fossils from Colombia (65245) (through Brother Apollinaire-Marie); skins and skulls of 5 small mammals (65803, exchange); (through Brother Ariste-Joseph and J. B. Reeside, jr.): 4 specimens of invertebrate fossils, 5 fossil leaves, and fragmentary remains of vertebrate fossils (66394).

INSTITUTO DE LA SALLE, Correo Nuñoa, Chile (through Brother Claude-Joseph): 72 grasses (65372); 342 plants from Chile (65780, 66601); 97 plants (66507).

INSTITUTO DE LA SALLE, Havana, Cuba (through Brother Leon): 10 specimens of *Passiflora* (65899).

INTERIOR DEPARTMENT:

U. S. Geological Survey: A small collection of carnotite minerals and associated ores made by Hoyt S. Gale, from Routt County, Colo. (65389): A small collection of Eocene fossil plants comprising the types, figured specimens, and other material described by Prof. Edward W. Berry in Professional Paper 125–A, U. S. Geological Survey (65539); a collection of 353 species of Eocene fossil plants comprising the types, figured specimens, and other material described in U. S. Geological Survey Professional Paper 91, by Professor Berry (65542); rocks from the western New England and eastern New York lime belt, collected by Dr. T. Nelson Dale; also 27 boxes of thin sections (65544); 25 crates (250 drawers) of Silurian and Devonian invertebrate fossils, chiefly from Maine, with note books, lists, and other data concerning them by the late Prof. H. S. Williams (65591); portions of skull and jaws of a Plesiosaurian reptile, collected by Mr. John B. Reeside, jr., in southwestern Colorado (65763); 4 small lots of vertebrate fossils collected by Mr. W. T. Thom, jr., in northeastern Montana (65779); foot bones of a fossil camel from near Dayville, Oreg. (65808); miscellaneous rock specimens from Montana, Colorado, and Washington, collected by Messrs. Hancock, Pishel, and Beekley (65966); specimen of creedite from a type locality, Wagon Wheel Gap, Colo., collected and described by Mr. E. S. Larsen (65967); 5 minerals (65980); a large piece of chalcocite from Butte, Mont., collected by Mr. B. S. Butler (66050); 6 miscellaneous mineral specimens (66134); fossils from the Coastal Plain region of Texas, Louisiana, and Florida, collected by Mr. C. B. Hopkins (66209); 128 boxes of miscellaneous geological material, and seven trays of miscellaneous collections (66301, 66443, 66439); 20 specimens and 15 thin sections from the molybdenum mine near Questa, N. Mex., described by Messrs. E. S. Larsen and C. S. Ross in Economic Geology, November, 1920 (66521); 5 specimens of platinum-bearing covellite from Rambler mine, Wyoming (66594); collection of 31 rock

INTERIOR DEPARTMENT—Con.

U. S. Geological Survey—Contd.

INTERIOR DEPARTMENT—Con.
U. S. Geological Survey—Contd.
specimens from Western Australia (66622); rock carrying molybdenum-bearing halotrichite from the south side of Duchesne River, 2 miles southwest of Ouray, Utah, collected by Mr. F. L. Hess in 1917 (66644); 2 specimens of dike rock from Hall Quarry, Mount Desert Island, Me. (66672); duplicate phosphate specimens from western phosphate fields of Utah, Idaho, and Wyoming, collected by Messrs. H. S. Gale, R. W. Richards, and E. Blackwelder (66706).
(See also under Haiti, Republic of, B. Leo Laird and Dr. Frederick W. Sardeson.)

INTERNATIONAL PAPER CO., New York City: Specimen of sandstone used as a pulp stone in grinding wood for paper making (65514).

IOWA STATE COLLEGE OF AGRICULTURE AND MECHANIC ARTS, Ames, Iowa (through Dr. L. H. Pammel): 9 flies and beetles (65493).

IOWA, STATE UNIVERSITY OF, Iowa City, Iowa (through Prof. C. C. Nutting): 71 ophiurans from the University's Barbados-Antigua expedition (65732).

JACKSON, Prof. H. S., Department of Botany, Purdue University, Lafayette, Ind.: Specimen of rust from Indiana (65781).

JACKSON, Ralph W., Cambridge, Md.: 2 skins of horned larks, genus *Otocoris;* 38 specimens, 12 species, of mollusks and larva of 2 species of insects, all from Maryland (65366, 66435); skin and skull of a squirrel, *Sciurus* (66338); 51 specimens, 9 species, of mollusks from Little Choptank River, Md., including one type specimen (66340).

JACKSON, Rear Admiral R. H., U. S. Navy. (See under Mrs. Margaret A. S. Smith.)

JAEGER, Edmund C., Palm Springs, Calif.: 3 plants, *Selaginella,* from California (66407).

JAGGER, Prof. T. A., Volcano House, Hawaii (through Dr. H. S. Washington, Washington, D. C.): A mass of filamentous basalt (Pele's Hair) from Kilauea Crater, Hawaiian Islands (65784).

JAMES, H., Bisbee, Ariz.: Tooth of an extinct species of horse (66247).

JAMES, Mrs. Julian-, Washington, D. C.: Purple boudoir cap (65241, loan); cut-glass night lamp of the period of 1850 (65554); gold locket containing portraits of Mr. and Mrs. James, June 17, 1869 (65565, loan); dress worn by Mrs. Julian-James at the Colonial Ball held at the New Willard Hotel, Washington, D. C., on March 31, 1921, when she represented her sixth great-grandmother, Mrs. Hugh Mason (66445, loan).
(See also under Mrs. George L. Andrews, Mrs. Charles W. Richardson, and Mrs. J. Kearny Warren.)

JANDORF, Morton L., York, Pa.: 5 specimens of zinc minerals (66215, exchange).

JANES, Frank, Truman, Ark. (through Dr. O. P. Hay): Fragment of a tooth and a part of a dorsal vertebra of a mastodon (66428).

JARDIN BOTANICO, Trinidad, Paraguay (Dr. Carlos Fiebrig, Superintendent): 20 living cacti and 3 packages of seeds (65282, exchange).

JENKINS, C. Francis, Washington, D. C.: A model high-speed motion-picture camera for the analysis of motion (66500); a motion-picture camera with a vertical reciprocating motion of lens barrel and film (no lens), and a motion-picture camera with a longitudinal reciprocating motion of lens barrel and film, Tessar Lens, Tessar, No. 133,854, Carl Zeiss (65552, loan).

JOHANSEN, Frits, Victoria Memorial Museum, Ottawa, Canada: 9 specimens of amphipods representing 2 species, consisting of 3 specimens

JOHANSEN, Frits—Continued.
of *Gammarus limnaeus* and 6 specimens of *Hyalella azteca* (65782); 3 specimens of crustaceans, *Lepidurus couesii*, from Alberta, Canada, and 3 specimens of *Hyalella azteca* from James Bay, Ontario (65837); 9 sea urchins, *Strongylocentrotus drobachiensis*, and a starfish, *Asterias acervata borealis*, all from Hudson Bay (66056).

JOHNS HOPKINS UNIVERSITY, Baltimore, Md.: Types and paratypes of mollusca from Bowden, Jamaica, described by W. P. Woodring (65234, deposit).

JOHNSON, Hon. Ben, House of Representatives, Washington, D. C.: Nest of a large wasp (66383).

JOHNSON, C. W., Boston, Mass.: Fly, *Estheria*, species, and 2 beetles, *Niptus hololeucus* (66214).

JOHNSON, D., Clinton, Ky.: 2 adults and 10 larvae of a beetle, *Dynastes tityus* (66388).

JOHNSON, Dr. Duncan S., Johns Hopkins University, Baltimore, Md.: 2 plants, *Oxalis* (65930).

JOHNSON, J. Chester, Marine on St. Croix, Minn.: Australian stone implements (12 specimens) (65363, exchange); coral, *Pocillopora*, species (65550).

JOHNSON, Myrtle E. (See under Scripps Institution for Biological Research.)

JOHNSTON, Ivan M., University of California, Berkeley, Calif.: 25 plants, *Selaginella*, from Colorado (65630).

JOHNSTON, John R., Fruitland Park, Fla.: Worm lizard, *Rhineura floridana*, from Florida (66319).

JOHNSTON, Prof. T. Harvey, Brisbane, Queensland, Australia: 13 specimens of Australian flies, including paratypes of 3 species and named representatives of 4 others (65401).

JONES, R. N., Brooksville, Fla. (through Mr. H. C. Skeels, Bureau of Plant Industry, U. S. Department of Agriculture, Washington, D. C.): 270 plants from Florida (66295).

JORDAN, Dr. David Starr, Stanford University, Calif.: Fishes killed by a lava flow from Mauna Loa, Hawaii, collected by Tom Reinhardt and Carl S. Carlsmith (65901).

JULIAN, George H., Bluntsville, Ala.: Fragment of a branch of a fossil tree, *Lepidodendron*, from Blount County, Ala. (66503).

JURICA, Prof. Hilary S. (See under St. Procopius College.)

KALUSOWSKI, Dr. H. E. (See under National College of Pharmacy.)

KEENAN, Michael, Springer, N. Mex.: Dried lizard and a mollusk (66411).

KELEHER, T. A., Washington, D. C.: A Keleher silk culture exhibit in Riker mount (65627).

KELLERS, Lieut. H. C. (M. C.), U. S. Navy, Washington, D. C.: 3 toads, 2 frogs, 7 lizards, and 14 snakes collected at Bremerton, Wash., and at Gorse Creek, Kitsap County, Wash. (66532).

KERBOSCH, Dr. M., Director of the Government Cinchona Plantations Tjinjiroean, Java, Netherlands, India (through S. W. Zeverijn, Amsterdam, Holland): 10 specimens of cinchona succirubra bark (65950).

KESSLER, Andrew, Washington, D. C.: A series of 9 specimens showing the manufacture of handmade willow baskets (66161).

KETTERLINUS LITHOGRAPHIC MANUFACTURING CO., THE, Philadelphia, Pa.: 10 lithographic prints in color (66211).

KEW, Dr. W. S. W., San Francisco, Calif.: 3 cacti from Mexico (65391): 19 specimens of cacti (65735, 65869).

KEW, SURREY, ENGLAND. (See under British Government.)

KEYSER, E. W., Washington, D. C.: Textile specimens from Peru (66075).

KILLIP, Ellsworth P., U. S. National Museum: 118 plants from New York and New Jersey (65404); 34 plants (65620); 57 plants from Panama (66734); 122 specimens of grasses from the District of Columbia and vicinity (65801).

KIMBALL, Miss KATHERINE D. (See under R. R. Stewart.)

KINSEY, Dr. ALFRED C., Department of Zoology, University of Indiana, Bloomington, Ind.: 32 cotype flies and 11 cotype galls representing 10 species of cynipids new to the Museum collections (66431, exchange).

KIRK, Dr. EDWIN, U. S. Geological Survey, Washington, D. C.: Specimen of wind-polished silicified wood and 4 wind-faceted quartz pebbles, from Neuquen, Argentina (65974); 2 small lots of Cretaceous invertebrate fossils from Argentina and Bolivia, and a small collection of Tertiary invertebrates from Bolivia (66021).

(Se also under Señor José N. Guitérrez.

KLOSS, C. BODEN. (See under Dr. W. L. Abbott.)

KNAB, ESTATE OF FREDERICK (through A. N. Caudell, executor): Bamboo blowgun, quiver and gourd for cotton, from Upper Amazon, South American (65291).

KORNHAUSER, Prof. S. I., Denison University, Granville, Ohio: A microscopic slide with the type of *Clausidium dissimile*, a commensal copepod, taken from *Callianassa* at Cold Spring Harbor, Long Island, N. Y. (65510).

KORVENKONTIO, Dr. VALIO. (See under Helsingfors, Finland.)

LABORATORIUM ZOOLOGICUM UNIVERSITATIS. (See under Helsingfors, Finland.)

LADD, W. W. (See under Colonial Wars, General Society of.)

LAIRD, B. LEO, San Francisco, Calif. (through the Interior Department. U. S. Geological Survey): A collection of Pliocene and Pleistocene invertebrate fossils from the neighborhood of La Purissima, Baja California (66363).

LAKE, STUART N., Rome, N. Y.: Scraper or chisel, probably from the Neolithic period of the Stone Age (66030).

LAMANCE, Mrs. LORA S., Lake Wales, Fla.: Scalp-lock headdress (65988).

LANE, J. R., Yermo, Calif.: Specimen of cerargyrite from Calico District, Calif. (65218).

LANE, M. C., Ritzville, Wash.: 156 beetles from Washington State (66100).

LARSEN, E. S., U. S. Geological Survey, Washington, D. C.: 10 crystals of feldspar from Northern Black Hills, South Dak. (65955).

LEACH, ANDREW J. (through Frederick W. Hill, executor, Chicago, Ill.): Silk handkerchief decorated with portraits of noted Confederate leaders, captured at Cedar Creek, Va., October 19, 1864, by Capt. Andrew J. Leach, First New York Dragoons (66346, bequest).

LE BRETON, THOMAS A., Ambassador of Argentina, Washington, D. C.: A collection of ores and minerals from Argentina and 8 photographs of mining localities (65335).

LEE, FITZHUGH, Newborn, Ga.: Fungus from Georgia (65833).

LEE, OLAN IVAN, New York Mineralogical Club, New York City: Specimen of lava from Mount Erebus, Ross Island, McMurdo Sound, South Victoria Land (65834).

LEIM, A. H. (See under Toronto, University of, Biological Department.)

LEITH, Prof. C. K. (See under Wisconsin, University of.)

LELAND STANFORD JUNIOR UNIVERSITY, Stanford University, Calif. (through Prof. Le Roy Abrams): 5 specimens of *Selaginella* from California and Oregon (65748, exchange); fossil fishes, representing 7 species, from the Miocene diatom beds at Lompoc, Calif. (65765).

LENMAN, Miss ISOBEL H., Washington, D. C.: Anthropological specimens (66043).

LEON, BROTHER. (See under Instituto de la Salle, Havana, Cuba.)

LEONARD, EMERY C., U. S. National Museum. (See under Dr. W. L. Abbott.)

LESTAGE, J. A., Uccle, Brussels, Belgium: 10 specimens of the coffee borer, *Zylotrechus quadripes*, and

LESTAGE, J. A.—Continued.
about 30 specimens of 2 species of braconid parasites of the same (66139).

LEVY, EDWARD, Philadelphia, Pa.: Set of 12 odd-shaped diaphragms and 12 halftone prints showing their effect on the form of the halftone dot (66648).

LEVY, MAX, Germantown, Philadelphia, Pa.: Etched master screen for rotary intaglio work (66020).

LEVY & CO., MAX, Germantown, Philadelphia, Pa.: Ruling indicator (66291).

LEWIS, WALTER P., Phillipsburg, N. J.: 2 fossil bryozoans from Martins Creek, Pa. (66101).

LEWTON, FREDERICK L., U. S. National Museum: Bob-white, *Colinus virginianus*, from Maryland (66408).

LILLY & CO., ELI, Indianapolis, Ind.: 6 sheets of gelatin; 13 elastic gelatin capsules; and 4 globules (65345); 10 medicinal substances (66054).

LINDMAN, Dr. CARL, Riksmuseets Botaniska Avdelning, Vetenskapsakademien, Stockholm, Sweden: 2 photographs of ferns in the Swartz Herbarium (65849, exchange).

(See also under Riksmuseets Botaniska Avdelning.)

LINE, FRANK, Maurertown, Va.: Nest of ruby-throated hummingbird, *Archilochus colubris*, from Virginia (65665).

LONDON, ENGLAND. (See under British Government.)

LONG, The Misses, Washington, D. C.: Flemish linen damask with macrame lace fringe and gentleman's embroidered handkerchief with coronet (66611, loan); folding pocket lantern (Minor's patent, January 24, 1855) (66660).

LONG, PERRY R. (See under Curtis Publishing Co.)

LONGUEUIL, COLLEGE OF, Longueuil, Quebec, Canada (through Rev. Brother Marine-Victorin): 713 plants from Quebec (66402).

LORING, W. J., San Francisco, Calif. (through Mr. F. L. Hess): 2 specimens of gold ore from the Mother Lode, California, and 1 of scheelite from White Pine County, Nev. (66181).

LOTHROP, S. K., Peabody Museum, Cambridge, Mass.: A decorated effigy jar and a decorated tripod bowl, both found near Filadelfia, Nicoya, Costa Rica (66425).

LOUDERBACK, Prof. GEORGE D., University of California, Berkeley, Calif.: 9 cases of fossil invertebrates and plants from China (66528).

LOWE, H. N., Long Beach, Calif.: 2 mollusks, the type and cotype of *Cochlostyla santacruzensis*, from Sauta Cruz Island, P. I. (65531).

LOWE, J. E., Duluth, Ga.: Confederate States Army belt buckle (65259).

LOWERY, ROBERT O., Garfield, Wash.: Dried head of a salmon, *Oncorhynchus gorbuscha* (66268).

LUMMIS, GEORGE M., Fort Myers, Fla.: 3 specimens of mistletoe from Florida (66065).

LUNGREN, CHARLES B., Ozona, Fla.: 10 specimens, 10 species, of mollusks from the Dutch West Indies; 3 specimens, 3 species, of mollusks, including the type of a new species from Florida, and 1 barnacle (66551).

MACBEAN, G. G., Assiniboia, Saskatchewan, Canada: 2 butterflies, *Catagramma lyca* and *Euptychia terrestris* (65274); 267 species of Lepidoptera new to the Museum collections (66538).

MACDOUGAL, Dr. D. T., Tucson, Ariz.: 7 plants from California (65686, 66614); plant, *Populus*, from Tucson, Ariz. (66466); 3 plants, *Echinocereus* (66545).

(See also under Carnegie Institution of Washington.)

MCDOWELL, J. SPOTTS, Pittsburgh, Pa: Samples of hydromagnesite from Soda Springs, Idaho (66004).

MCGREGOR, A. G., Chicago, Ill.: Lantern slide and a transparency made by the McDonough color process (66724).

McGREGOR, E. A., Los Angeles, Calif. (through Prof. Le Roy Abrams): 39 lichens from Santa Catalina Island, Calif. (66095).

MacINNES, Norman, Miami, Fla.: A spider, *Gasteracantha cancriformis*, a species belonging to the Gulf States (66148).

McINTIRE, Bartolomew, San Francisco, Calif. (through Department of State): 4 specimens of lava from the eruption of a volcano in San Salvador in 1917, and 16 photographs (65734).

McKESSON & ROBBINS (INC.), New York City: 9 medicinal substances from the animal kingdom, and 11 medicinal substances (65415, 65871).

McLEOD, C. Y., Clarksdale, Miss.: Posterior half of an upper molar of the American mastodon (65519).

MACE, C. B. (See under Schleswig International Commission.)

MAHIN, Mrs. F. W., Washington, D. C.: 4 pieces of old lace (66426, loan).

MALDONALDO, Mrs. Estelle, Washington, D. C.: 2 specimens of pottery from Guatemala (66053).

MALONE, J. G., Newport, Oreg. (through Dr. W. H. Dall): Plant, *Boschniakia strobilacea* (66452).

MALYE, Maj. Jean. (See under French Government.)

MANN, Dr. W. M., U. S. National Museum: 5 specimens of braiding in fiber illustrating the manufacture of arm bands, from Rubiana Lagoon, New Georgia, British Solomon Islands (65284).

MARINE-VICTORIN, Rev. Brother. (See under Longueuil, College of.)

MARSHALL, Ernest B., Laurel, Md.: 5 specimens of Cooper's hawk, *Accipiter cooperi*, and a sharp-shinned hawk, *Accipiter velox*, all from Maryland (65478, 66380, 66509); skin and skull of a squirrel, *Sciurus*, and skulls of two opossums, *Didelphys*, from Maryland (65524, 65845, 66091); skull of an opossum, *Didelphys*, and 2 skulls of minks, from Laurel, Md. (66155); bat, *Eptesicus* (alcoholic) (66334).

MARSHALL, George, U. S. National Museum: Fishes collected from the Patuxent River near Laurel, Md. (65332); skull of a fox, *Vulpes*, from Fairland, Montgomery County, Md. (65846); skeleton of a gray fox, *Urocyon*, from Camp Meade, Md. (65908); skin of a cedar waxwing, *Bombycilla cedrorum*, with unusual markings (65945); bird from Maryland (66658).

MARSHALL, Henry R., Wilson, N. C.: 2 birds from North Carolina (66378).

MARTIN, Dr. Lynn Arthur, Binghamton, N. Y. (through Dr. W. A. Dewey, Ann Arbor, Mich.): An old homeopathic medicine case owned and used for many years by Dr. Titus L. Brown, of Binghamton, N. Y. (66736).

MASSACHUSETTS AGRICULTURAL COLLEGE EXPERIMENT STATION, Department of Entomology, Amherst, Mass. (through A. I. Bourne): Lepidoptera larvae collected in eastern Massachusetts (65752).

MATTHEWS, Ransom, Selma, Calif.: A collection of automobile and motor cycle spark plugs and a vulcanizing outfit (65294, loan).

MAYNE, Bruce, Delta, Utah: 2 flies, *Tabanus productus* (65293).

MAYNARD, E. A., Jamaica, Long Island, N. Y.: 16 polished crystals of chiastolite from Lancaster, Mass. (65441, exchange).

MEDINA, Lieut. Col. Frederic Diez de, Bolivian Legation, Washington, D. C.: A sheet of gold, gold tassel or pendant, specimens of arrow points and fragments, and a textile woven in colors, all from the State of La Paz, Bolivia (65769, exchange).

MELBOURNE, VICTORIA, AUSTRALIA, THE NATIONAL MUSEUM: 8 lots of Tertiary bryozoans from Australia (65701, exchange).

MERRILL, Dr. George P., U. S. National Museum: 37 wood engravings by American engravers of about 1830, comprising 8 by Alexander An-

MERRILL, Dr. GEORGE P.—Continued. derson, 5 by J. H. Hall, 17 by Abel Bowen, and 7 unknown (65358); microscope and accessories in case, owned during the period 1830–1870 by Rev. Elijah Jones, pastor of the Congregational Church at Minot Center, Androscoggin County, Me. (65655).

MERRILL, Mrs. GEORGE P., Washington, D. C.: A cut topaz weighing 92.4 carats (66151, loan).

MESSMANN, GEORGE, New York City (through the National Geographic Society, Washington, D. C.): Piece of scrimshawed whalebone (65342).

MEXICAN GOVERNMENT:

Department of Agriculture, Mexico, D. F.: About 1,000 beetles representing 700 species (66757).

Direccion de Estudios Biologicos, Mexico, D. F. (through Dr. A. L. Herrera, Director): 483 Mexican plants (65243, exchange); 2 phyllopod crustaceans, *Estheria complexmanus*, from Guadalupe Hidalgo (65562); 7 specimens, representing 7 species, of marine mollusks from Lower California (65576); 2 photographs of a specimen of a starfish, *Acanthaster ellisii*, from Lower California (65721); 15 scorpions *Vaejovis subcristatus* (66492, exchange).

MEYER, Dr. REINHOLD, Landsberg a/W, Germany: 122 specimens, representing 23 species of bees (66213, exchange).

MIAMI AQUARIUM ASSOCIATION, James Asbury Allison, President, Miami, Fla.: Skeleton of a whale, *Balaenoptera*, found on Pablo Beach, Fla. (65394).

MICHIGAN, UNIVERSITY OF, Museum of Zoology, Ann Arbor, Mich.; 2 vials of isopod crustaceans, 3 frogs and 2 garter-snakes from Washington, all collected by Dr. F. N. Blanchard (65789); 4 tadpoles of *Ascaphus truei*, collected in Washington by T. M. and H. T. Gaige (65798); (through Dr. A. G. Ruthven, director) shrimp, *Macrochrahium jamaicense*, from Colombia (65836); (through Miss Roberta E. Deam) 550 plants, chiefly from Michigan and Ontario (duplicates from the C. K. Dodge Herbarium) (66689, exchange); frog, paratype of *Eleutherodactylus megalops*, collected in San Lorenzo, Santa Marta Mountains, Colombia, by Dr. Ruthven (66405).

MILLAR, M. A., Venus, Fla.: Old wooden idol plowed up on the north shore of Lake Okeechobee, Fla. (66473).

MILLE, Rev. LOUIS, S. J., Quito, Ecuador: Cactus from Ecuador (65398).

MILLER, Prof. ARTHUR M., University of Kentucky, Lexington, Ky.: A block of oolitic carbonate iron ore from Preston, Ky. (65726).

MILLER, GERRIT S., jr., U. S. National Museum: Skeleton of a mink, *Mustela*, from Fairfax County, Va. (65395); mollusks, egg and 2 skulls of the wedge-tailed shearwater, *Puffinus cuneatus*, and 2 incomplete skeletons of Bulwer's petrel, *Bulweria bulweri;* also 6 skins and skulls of rats and 1 rat skeleton, all from the Hawaiian Islands (65604, 66573; 3 plants from California (66745).

MILLER, Dr. M. G., Philadelphia, Pa.: Indian skull from a shell heap near Cape Blanco, Caloosahatchee River, Lee County, Fla. (65239).

MILLIKEN, F. B., Manhattan, Kans.: 14 oil beetles, representing 3 species, namely, *Epicanta callosa*, *Nemognatha lutea*, and *Cantharis biguttata* (65296).

MILLS, Mrs. STEPHEN C., Washington, D. C.: Tonto Apache basket bowl and a Tlinkit basket, from the collection of her father, Gen. G. C. Lee (66579).

MILLSPAUGH, Dr. C. F. (See under Field Museum of Natural History.)

MINASSIAN, KIRKOR, New York City: Postage stamps of Afghanistan and Kashmir (55 specimens); also 6

MINASSIAN, KIRKOR—Continued.
leaves (5 of paper and 1 of vellum) from Arabic and Turkish manuscripts (65300).

MINNESOTA, UNIVERSITY OF, Minneapolis, Minn. (through Prof. C. O. Rosendahl): 4 specimens of *Selaginella* (66158, exchange); specimen of *Selaginella* from British Columbia (66287); (through Prof. E. W. D. Holway): 749 plants from western South America (66314).

MISSOURI BOTANICAL GARDEN, St. Louis, Mo.: Plant, *Abronia*, from western Colorado (65622); 2 plants, *Selaginella* (66357, exchange).

MITCHELL, H. H., Regina, Saskatchewan, Canada: Dried skin of a tiger salamander, *Ambystoma tigrinum*, from Saskatchewan (65817).

MITCHELL, MASON, American Consul, Queenstown, Ireland: Egg of the dodo pigeon, or tooth-billed pigeon, *Didunculus strigirostris*, from Samoa, new to the Museum collections (65548).

MOCZARSKI, Prof. EMIL. (See under Prof. Otto Scheerpeltz.)

MONITOR STOVE CO., THE, Cincinnati, Ohio (through Oliver Gedeist, Director of Publicity): Model of caloric pipeless furnace, invented by W. J. Doyle, 1909 (65249).

MOORE, ALFRED F., Los Angeles, Calif.: A rat, 7 insects, and a collection of rocks and fossils collected near Calama, Chile (65987).

MORELEY, SYLVANUS G., Carnegie Institute of Washington, Washington, D. C.: 4 lots of potsherds from 4 localities in Central America and Mexico (65863).

MORRILL, Hon. CHARLES H., Lincoln, Nebr. (through Prof. Edwin H. Barbour): A collection of exhibition and study specimens of Carboniferous foraminifera (65277).

MORRIS, Mrs. GOUVERNEUR, Washington, D. C.: Hale piano decorated by Cottier of New York (66347).

MORROW, Miss C. F., St. Thomas, Virgin Islands of the United States: 133 plants from St. John and St. Thomas, Virgin Islands of the United States (66171, 66302, 66489, 66730).

MORSE, EDWARD L., Pittsfield, Mass.: Original specimen of a message recorded by the Morse register, May 25, 1844 (65555).

MOSELEY, E. L., Bowling Green, Ohio.: 91 plants (65422); 3 plants, *Lacinaria* (66328).

MOSONYI, EMILIO, New York City: A highly embellished, cylindrical earthenware vase from "Ataco," northwestern part of Salvador, and a bronze ax blade found in "San Jose Villaneuva," in the southwestern part of the same Republic (65351).

MOTTER, Dr. MURRAY GALT, Washington, D. C.: 4 photographs of prominent members of the American Pharmaceutical Association (66348).

MOUSLEY, H., Hatley, Quebec, Canada: 12 ferns (65221, exchange).

MOXLEY, GEORGE L., Los Angeles, Calif.: Plant from southern California (65447); ferns, *Asplenium* and *Cheilanthes*, from California (65900, 66258); plant, *Selaginella watsoni* (66327); 15 specimens of *Selaginella* from California (66370, exchange); 3 plants from California (66637).

MUESEBECK, C. F. W. (See under Dr. C. T. Brues and Cornell University, Department of Entomology.)

MULFORD CO., H. K., Philadelphia, Pa.: 4 specimens of antitoxin serums (65614); 15 charts mounted with specimens, photographs, etc., showing the preparation and use of vaccines and serums for the prevention and treatment of diphtheria, smallpox, pneumonia, tetanus, meningitis, and hay fever; also 1 30cc. vacule package of digitol (66727).

MULLIS, Miss FRANCES, Friday Harbor, Wash.: 5 specimens, 4 species, of crustaceans from Friday Harbor, Washington, one of them, *Spirontocaris grandimana*, being for the first time recorded from American waters (65831).

MUNDER & CO., NORMAN T. A., Baltimore, Md.: 125 specimens of type and halftone printing (65639); 2 halftones of Lincoln, 2 halftones of Franklin, and 2 broadsides (66349).

MUNRO, G. C., Keomuko, Lanai, Hawaii (through Prof. A. S. Hitchcock): 12 plants (65898).

MUNZ, Dr. PHILLIP A. (See under Pomona College, Claremont, Calif.)

MURDOCK, Miss ELEANOR P., Washington, D. C.: A book of poems and songs by Robert Burns, in wooden binding (66220).

MUSEO NACIONAL. (See under San José, Costa Rica.)

MUSEU PAULISTA, Sao Paulo, Brazil (through A. d'E. Taunay, Director): Parasitic worm, *Tristoma* species, 14 isopods, representing 3 species, and 3 amphipods, representing 2 species, from Brazil; also a collection of Brazilian annelids, one lot of barnacles, and a small collection (duplicates) of parasitic copepods (65681); 8 skins and skulls of bats from Brazil (66600).

MUSEUM OF THE AMERICAN INDIAN, THE HEYE FOUNDATION, New York, N. Y. (through Dr. Marshall H. Saville): Obsidian from ancient quarry refuse from near Fiscal, Guatemala (65527); Potawatomi sacred medicine bundle (Oklahoma) (65896, exchange).

MUSEUM OF HISTORY, SCIENCE, AND ART, Los Angeles, Calif.: A box of shell fragments with bryozoans from the Pleistocene of California (66002).

MUSGRAVE, W. E. (See under Agriculture, Department of, Bureau of Biological Survey.)

MUSKEGON MACHINE CO., Muskegon, Mich.: 23 dovetailed wood samples showing the work of the Linderman automatic dovetail glue jointer (66692).

MYER, W. E., Nashville, Tenn.: An adult skeleton and the skeletons of two children found by the donor in a stone slab grave 9 miles northeast of Nashville (65222); skull of a young adult female, found in a stone slab grave at the Love Mound on Whites Creek, 6 miles north of Nashville (65451); skull, 2 skeletons, and a lot of miscellaneous human bones (66631).

MYERS, GEORGE HEWITT, Washington, D. C.: 38 Oriental ruggs (66773, loan).

MYRICK, F. M., Johannesburg, Calif., Specimens of blue chalcedony, jasper, and myrickite from California (65331).

NATIONAL AMERICAN WOMAN'S SUFFRAGE ASSOCIATION, New York, N. Y. (through Mrs. H. H. Gardener and Miss Lucy Anthony): Gold and enamel flag pin presented to Miss Susan B. Anthony by ladies of Wyoming on the occasion of her eightieth birthday, 1900, and distinguished service medal awarded to Dr. Anna Howard Shaw in recognition of distinguished services as chariman of the Woman's Committee of the Council of National Defense during the World War (65773); (through Mrs. Gardener, U. S. Civil Service Commission, Washington, D. C.) Official copy of the certification of the Secretary of State to the effect that the amendment to the Constitution extending the right of suffrage to women has become valid, and the pen used by Secretary Bainbridge Colby when signing the original document, August 26, 1920 (66218); (through Mrs. Gardener) gold badge presented to Susan B. Anthony by the Citizens Suffrage Association of Philadelphia, 1881 (66335).

NATIONAL COLLEGE OF PHARMACY, Washington, D. C. (through Dr. H. E. Kalusowski): A suppository machine made before 1873 by James Dominic O'Donnell, Washington, D. C. (66307).

NATIONAL GEOGRAPHIC SOCIETY, Washington, D. C.: 1,180 plants from Alaska, collected by the Katmai expeditions under the direction of Prof. Robert F. Griggs (66087); arche-

NATIONAL GEOGRAPHIC SOCIETY—Continued.
ological material collected by the National Geographic Society's expedition of 1920 (Neil M. Judd, Director), from ancient ruins in the Chaco Canyon National Monument, N. Mex., and the Canyon de Chelly, Ariz. (65958).

(See also under George Messmann.)

NATIONAL RESEARCH COUNCIL, Washington, D. C.: Chemical exhibit consisting of topographical model representing a group of chemical industries; charts; collection of dyes, explosives, medicinals, etc.; and a series of molecular models (66664, deposit).

NATIONAL SILICA CO., Oregon, Ill.: Specimen of siliceous sandrock used for industrial purposes (66028).

NAVY DEPARTMENT: United States Navy model F–5–L seaplane with accessories, aeromarine 39–B seaplane complete with OXX Curtiss engine, and 16 enlarged photographs of naval airplanes (65717); flying suits and accessories of the type used by the United States Navy during the World War (28 specimens) (65856, loan); collection of naval models, ordnance, signal, and marine instruments of the type used by the United States Navy during the War with Germany, 1917–18, and German naval material captured during the same period (66742); relics recovered from the wreck of the U. S. battleship *Maine* in Habana Harbor, 1911 (66761).

NELSON, J. C., Salem, Oreg.: 4 plants from Oregon (66720).

NELSON, Norman E., Fort Worth, Tex.: 47 specimens of Lower Cretaceous bryozoans from Texas (65755, exchange).

NEW ALMADEN MINING CO., New Almaden, Calif.: Specimen of cinnabar from Senator mine, New Almaden, Calif. (65238).

NEWTON, Rev. J. C., Calhoun, Kawnesi Gakuin, Kobe, Japan: Photograph of the Dragon God (Dai Ja) in Idzumo, Japan (66708).

NEWTON, S. H., Reno, Nev.: About 100 specimens representing 6 species of mollusks (65612).

NEW YORK BOTANICAL GARDEN, Bronx Park, New York City (through Dr. N. L. Britton, Director): 25 plants, 190 ferns, 70 specimens of hepatics, 3 specimens of Rubiaceae, 6 plants, 46 mosses, plant, *Achyranthes*, plant, *Salvinia*, plant, *Passiflora;* (through Dr. S. F. Blake) 5 specimens of Polygala, all from Trinidad (65189, 65722, 66687, 65778, 65911, 66078, 66160, 66568, 66639, 66726, 65932); 77 plants from Trinidad and Jamaica (65743); 1,513 plants, chiefly from Trinidad, Cuba, and Jamaica (65984); 46 living plants (65200); 36 plants (65201, 65246, 65262, 65888, 66096, 66725); 14 mosses and 10 specimens of *Opuntia* from Florida (65321, 66655); 3 living plants, *Opuntia* (65368); cactus from Pennsylvania (65418); 61 plants from South America (65436); plant, *Campnosperma*, from Panama (65487); 25 ferns, from Cuba (65660, 66717); (through Dr. S. F. Blake) plant, *Senecio*, from Cuba (65947); fern, *Woodsia scopulina*, from North Carolina (65730); 47 ferns, collected by Doctor Underwood and Mrs. E. G. Britton in Jamaica, 5 specimens of ferns, *Hymenophyllum*, from Jamaica (65956, 66045); 48 West Indian plants (65999); 19 ferns and 2 specimens of cacti, from Tobago, West Indies (65807, 66481); 49 plants from the Southern States, collected by Dr. F. W. Pennell (66332); plant from Long Island, N. Y. (66243, exchange).

NEW YORK STATE COLLEGE OF AGRICULTURE, Cornell University, Ithaca, N. Y. (through Prof. K. M. Wiegand): 286 plants, chiefly from central New York (66680, exchange).

NEW YORK UNIVERSITY, New York City: A bromide enlargement of the original daguerreotype made of Miss Draper by Prof. John W. Draper, the first photographic portrait ever made (66292).

NEW YORK WORLD, THE, New York City (through Mr. Arthur Bennington): Original photograph of an Indian sent by wire; bromide general view of sending apparatus; bromide of Mr. Edward Belin, the inventor, and assistant, and a bromide of Mr. Belin at the sending instrument (66080).

NORTH CAROLINA, STATE DEPARTMENT OF AGRICULTURE, Agricultural Experiment Station, Raleigh, N. C. (through C. S. Brimley): 1 tachinid fly (exchange), 1 ortalid fly (gift), 2 tachinid flies (loan) (65714); 3 flies, 2 presumably new, collected at Raleigh, North Carolina (65757).

NORTON, J. B., Hartsville, S. C.: 53 plants from South Carolina (66019, exchange).

NOYES, I. G., Somerville, Mass.: 2 plants, *Mammillaria* and *Cereus* (66617, 66699).

NUTTING, Prof. C. C. (See under Iowa, State University of.)

NYLANDER, Olaf O., Caribou, Me.: 50 Devonian fossils from Maine (66012).

O'DONIGHUE, Prof. Charles H., University of Manitoba, Winnipeg, Manitoba, Canada: 3 specimens of Diptera, 4 of Hymenoptera, 5 of Coleoptera, and a leech (66184).

O'KEEFE, Mrs. Mills, Hyattsville, Md.: Photo-engravings and souvenir post cards relating to the Pilgrim Tercentenary, 1920 (13 specimens) (66116).

OLDROYD, Mrs. Ida S., Stanford University, Calif.: 12 specimens representing 8 species of mollusks, and 13 specimens, 4 species, of land and marine mollusks, all from California (65704, 65996).

OLIVA, Señora Ignacia G., Guadalajara, Mexico: 122 Mexican grasses (65336).

OPPERMANN FUR CO., THE, Saginaw, Mich.: The skin of a melanistic wildcat (lynx) (66131).

ORCUTT, C. R., San Diego, Calif.: 3 specimens of barnacles, *Balanus orcutti, B. amphitrite inexpectatus*, first United States record, and *Tetraclita squamosa rubescens* form *elegans*, from La Jolla, (65718); 8 specimens of cacti from California (66262); (through Dr. W. H. Dall) 15 species of fossils from San Quentin Bay, Lower California, probably Pliocene or early Pleistocene (66620).

ORCUTT, C. R.—Continued.

OREGON AGRICULTURAL COLLEGE, Corvallis, Oreg.: 11 plants (65424); 6 plants from Oregon (65621): (through Miss Helen M. Gilkey, curator) plant, *Centaurea*, from Oregon (66016).

ORSER-KRAFT FELDSPAR (LTD.), Perth, Ontario, Canada (through Mr. F. L. Hess): Samples of euxenite ore (65480).

ORTEGA, Señor Don Jesus G., Mazatlan, Sinaloa, Mexico: 111 plants from Mexico (65923); 7 plants (66274).

OSHIMA Dr. M. (See under Institute of Science, Taihoku, Formosa, Japan.)

OSTERHOUT, George E., Windsor, Colo.: 9 plants (66565, exchange).

OTIS, Ira C., Seattle, Wash.: 106 plants from western United States (65912).

OTTAWA, CANADA. (See under Canadian Government.)

OTTOLENGUI, Dr. R., New York City: 10 noctuid moths, including 2 cotypes and 2 others new to the collection (65560).

OWEN, Virgil W., Los Angeles, Calif.: 12 beetles (66491).

PACIFIC MINERALS & CHEMICAL CO., Glendale, Calif.: Specimen of crude talc from Acme, Death Valley, Calif. (65518).

PALMER, Dr. E. C., Philadelphia, Pa.: Stone club of the Maori, New Zealand (65304).

PALMER, William, U. S. National Museum: Black snake, and 7 crabs, *Rhithropanopeus herrisii*, all from South Chesapeake Beach, Md., the latter collected by the donor (65370, 65517); 3 birds from the vicinity of Washington, D. C., including a

PALMER, WILLIAM—Continued.
snow bunting, *Plectrophenax nivalis* (65506); salamander from Plummer Island, Md., collected by Mr. H. S. Barber, and a musk turtle from Chesapeake Beach (65642).

PAMMEL, Dr. L. H. (See under Iowa State College of Agriculture and Mechanic Arts.)

PARISH, S. B., Berkeley, Calif.: 2 specimens of cacti (66413) (through G. P. Van Eseltine): Plant, *Selaginella*, from California (65473).

PARISI, Dr. BRUNO, Milan, Italy: Specimen of thalassimid, *Typhlocaris lethaea* (66240, exchange).

PARKE, DAVIS & CO., Detroit, Mich.: 22 photographs showing laboratory operations in the manufacture of pharmaceutical preparations (65472); 5 specimens of medicinal substances (65953).

PARKER, Dr. A. C., Altmar, N. Y.: Young ring-necked snake from Altmar, N. Y. (66681).

PARMAN, D. C., Uvalde, Tex.: 33 living cacti from Texas (66283).

PATTEN, Mrs. L. DEAR, Washington, D. C.: Ethnologica from the Oglala-Teton Sioux, Pine Ridge, S. Dak. (65596, loan).

PATTISON, Mrs. S. L., Canutillo, Tex.: 18 specimens of cacti (66244, 66359).

PEABODY MUSEUM, Salem, Mass.: 2 photographs of models of the vessels *Friendship* and *Rising States* (65880).

PEABODY MUSEUM OF NATURAL HISTORY. (See under Yale University.)

PEARSE, Dr. A. S., University of Wisconsin, Madison, Wis.: 36 slides of fish parasites from Lake Valencia, Venezuela (65886); 23 microscopic slides of parasitic worms, representing 21 species, 7 of which are types (66536); 2 slides of parasitic worms, *Crepidostomum biloba*, type and cotypes from Lake Pepin, and *Capillaria catostomi*, type, from Sturgeon Bay (66588).

PECK, L. H., Delta, Utah: Topaz in matrix and 2 topaz crystals (66117).

PELLETT, FRANK C., American Bee Journal, Hamilton, Ill.: 50 bees and wasps (65712).

PELLOUX, Prof. ALBERTO, Genoa, Italy: 24 specimens of minerals (66409, exchange).

PENNSYLVANIA DEPARTMENT OF AGRICULTURE, Harrisburg, Pa. (through P. T. Barnes, Executive Assistant): 9 specimens, 1 species, of slugs, *Limax maximus* (66467).

PENNY, F. W., Pointe-à-Pierre, Trinidad, British West Indies: 14 fossil corals from Trinidad, from type locality of corals described by P. M. Duncan from St. Croix, Trinidad (65929).

PEREZ, GILBERT, Bureau of Education, Lucena, Tayabas, Luzon, P. I.: 27 Philippine Island land shells (65217, exchange).

PERKINS, JOHN U., Smithsonian Institution: Photogravure by Goupil of Winslow Homer's painting The Herring Net (66422).

PERRY, Mrs. RUTH HARMISON, Washington, D. C.: Rifle and powder horn (66688).

PHILIPPINE ISLANDS, GOVERNMENT OF, Bureau of Science, Manila, P. I.: Skin of a crane, *Antigone sharpei*, and 20 mammals from the Philippine Islands (65339, deposit); 33 plants from Borneo (65423, exchange); 2,905 plants, chiefly from the Philippine Islands (65568, exchange).

PHILIPPINES, UNIVERSITY OF, Manila, P. I. (through Prof. A. L. Day): 28 specimens, representing 9 species, of named freshwater shrimps (65969, exchange).

PHOTOGRAVURE & COLOR CO., New York City (through Karl Arvidson and Charles Furth): Photogravures in black and white and 3 colors; photogravures in colors at one impression; photogelatin prints in black and white and 3 colors; historical specimens and Muybridge material (66226).

PICHON, Miss EUGENIE C., Upperville, Va.: 2 beaded bags, 2 beaded necklaces, beaded belt and a mortar (66746).

PICKETT, R. V., Edgewater, Colo.: 9 cacti from Colorado (66615, exchange).

PICKREL VENEER CO., New Albany, Ind. (through American Walnut Manufacturers' Association, Chicago, Ill.): Specimen of black walnut showing method of cutting veneers (66760).

PIEDMONT RED CEDAR CHEST CO., Statesville, N. C.: Piedmont red cedar chest (65696).

PILKINGTON, H. M., New York City: Plant from Haiti, and 10 cacti, and 2 specimens of cactus wood (65842, 65936).

PILLING, Mrs. James W., Coyoacan, D. F., Mexico: Small and finely woven Navaho blanket from Arizona (66352).

PINCHOT, ESTATE OF MRS. MARY E. (through the executors, care of Hon. Gifford Pinchot, Milford, Pa.): Collection of period costumes (31 specimens) and 5 small ecclesiastical embroideries (65616).

PIPER, Prof. C. V., Bureau of Plant Industry, U. S. Department of Agriculture, Washington, D. C.: Plant, *Chenopodium*, from Maryland (65651); 3 specimens, 2 species, of land shells from Key West, Fla., and 6 specimens, 1 species, of freshwater shells from Everglades, Fla. (65921); plant, *Selaginella*, from Briitsh Columbia (66124).

(See also under Department of Agriculture, Bureau of Plant Industry, and J. B. Flett.)

PITTIER, Dr. H., care U. S. legation, Caracas, Venezuela: Ethnological objects from Central America, consisting of a lime gourd, perforated rattle, bone-handle rattle, spindle, and cotton for spinning (65286); 750 plants from Venezuela (66493, 65421, 65747, 66259); 17 species of land and fresh-water mollusks from Venezuela (65975).

POCAHONTAS MEMORIAL ASSOCIATION, THE, Washington, D. C.: 3 dolls representing the Indian princess Pocahontas, 1 in native costume, and 2 in English dress (65470).

POMONA COLLEGE, Claremont, Calif. (through Dr. Philip A. Munz, Curator, Department of Botany): 361 plants from southern California (65298, exchange); 10 plants (type collection of *Selaginella leucobryoides*, from California (66597, exchange) (through G. P. Van Eseltine); 2 plants, *Selaginella*, from California (65474, exchange); 49 specimens representing 17 species of crustaceans from California (65675); fern, *Pellaea*, from the Providence Mountains, Calif. (66710, exchange).

POOLE, A. J., U. S. National Museum: 22 specimens, representing 4 species, of land and fresh-water mollusks from Niagara Falls, N. Y. (65534).

PORTER, Dr. Carlos E., Santiago, Chile: 6 isopods representing apparently new species of the family Idotheidae (66233).

PORTER, Mrs. John Biddle, Washington, D. C.: Doll's furniture and doll's china owned by the children of Hon. Richard Rush, United States minister to Great Britain, 1817–25, and member of the first Board of Regents, Smithsonian Institution (65995, loan).

PORTS, Percy L., Clarendon, Va.: 4 cacti from Bolivia (65377, 66245).

(See also under Señor Ignacio Arana.)

POST OFFICE DEPARTMENT: 15 sets of specimen stamps, etc., in triplicate (4,413 specimens), received from the International Bureau of the Universal Postal Union, Berne, Switzerland (65192, 65271, 65381, 65410, 65411, 65561, 65753, 65809, 65835, 66061, 66217, 66322, 66343, 66471, 66606); collection of postage stamps, post cards, and stamped paper (65875); United States 1, 2, and 5 cent postage stamps of the Pilgrim Tercentenary commemorative issue, and $2 postage stamp of the current issue, in triplicate (12 specimens) (65970).

(See also under Ukraine, The Friends of.)

POWERS - WEIGHTMAN - ROSENGARTEN CO., Philadelphia, Pa.: 20 specimens of medicinal chemicals (65812).

PRASHAD, Dr. B. (See under India, Zoological Survey.)

PRENTISS, Dr. Elliott C., El Paso, Tex.: 2 specimens of cacti (65673).

PRICE, Ernest B., Vice Consul in charge at Canton, China (through Department of State, Washington, D. C.): 7 photographs of poppy fields in Fukien Province, China (66603).

PRINCETON UNIVERSITY, Department of Geology, Princeton, N. J.: (through A. F. Buddington): 3 specimens of minerals from New York (65702, exchange).

PRUITT, Bertie, Lomax, N. C.: Eggs of a luna moth (66345).

PURDUE UNIVERSITY, Department of Botany, La Fayette, Ind.: 26 specimens of rusts (65728).

PURPUS, Dr. J. A., Botanical Garden, Darmstadt, Germany: 8 plants (65723, exchange).

QUEHL, L., Halle bei Saale, Germany: plant, *Mammillaria* (66719, exchange).

RADIUM CO. OF COLORADO (INC.), THE (through Mr. F. L. Hess): 2 specimens of "Kentsmithite" from Long Park, Montrose County, Colo., collected by James S. James (65986).

RADIUM INFORMATION SERVICE, New York City: 3 specimens of carnotite ore from the Long Park, Colo., properties of the Radium Luminous Material Corporation (66623).

RADIUM TREATMENT AND SANATORIUM CO., THE, Silver City, N. Y.: Samples of torbernite from White Signal, Grant County, N. Mex. (66694).

RAINBOW RIDGE MINING CO. (through Archie Rice, New York City): A series of opal specimens in the rough, from the mines of the Rainbow Ridge Mining Co., located in Humboldt County, Nev. (65978).

RAMSDEN, Dr. C. T., Guantanamo, Cuba: A collection of reptiles, batrachians, moths, and isopods, the latter comprising the type and 14 paratypes of *Cubaris ramsdeni*, new species, from "El Ocujal," Guantanamo, Cuba (65586), 10 isopods representing a new species of Pseudarmadillo (66312).

RAMSDEN, Dr. C. T.—Continued.

RAVENEL, William deC., U. S. National Museum: Memorial certificate issued by the United States Government and memorial certificate issued by the French Government in commemoration of the death of Second Lieut. William deC. Ravenel, jr., U. S. Air Service, killed in line of duty June 30, 1918; also a bronze victory service medal awarded to Lieutenant Ravenel by the U. S. War Department, and a bronze cross awarded by the citizens of the District of Columbia (65502); hobble of finely braided rawhide from Argentina, South America (65585); an old pharmaceutical balance (65893).

REED, Dr. Edwyn P., Valparaiso, Chile (through Dr. Alexander Wetmore): Snake and 3 lizards collected in Valparaiso (66595).

REED, Lieut. Richard C., U. S. Navy, Supply Corps, U. S. Navy, Tutuila, Samoa: 12 bird skins, 1 fish, parasitic flies and centipede eggs, all from Samoa (66102, 66440).

REESIDE, J. B., Jr. (See under Instituto de la Salle, Bogota, Colombia.)

REICHE, Karl, Mexico, Mexico: 23 plants (66398, 66619).

REID, Earl D., U. S. National Museum: 33 fishes, and 16 invertebrates from Chesapeake Beach, Md. (65205, 65333); 60 pairs of ear stones (otoliths) dissected from the heads of fishes obtained in the Washington markets (66186).

REINHARD, E., Buffalo, N. Y.: 8 specimens of Silurian and Devonian fossils from New York State (66003).

REINHARD, H. J., Texas Agricultural Experiment Station, College Station, Tex.: Mollusk, *Succinea luteola*, and a dermestid beetle, *Trogoderma*, species, from College Station (66618).

REKO, Dr. Blas P., Oaxaca de Juarez, Mexico: 6 plants (65841, 66433).

REMBRANDT INTAGLIO PRINTING CO. (LTD.), Queens Mill, Lancaster, England: 20 specimens of rotary intaglio printing, 17 in black and white and 3 in color, the earliest specimen dated 1894 and the latest 1920 (65476).

RENSON, Señor Don Carlos. (See under San Salvador, El Salvador.)

REVOREDO, J. F., Aguilar, Oruro, Bolivia (through Mr. F. L. Hess): Specimen of wolframite from Chicote Hill, east of Oruro, Bolivia (65513).

RICE, Archie. (See under Rainbow Ridge Mining Co.)

RICE, A. P., Brookline, Mass.: 4 ears of corn in the husk and 2 samples of cotton from Yucatan (66653).

RICE INSTITUTE, THE, Houston, Tex. (through Prof. Asa C. Chandler): Specimen of skate, new species, and a minnow, *Zygonectes henshalli* (66069).

RICE, J. R., Washington, D. C.: Specimen of black granite (gabbro) from Rowan County, N. C. (66417).

RICHARDS, Dr. Theodore W., U. S. Navy, Washington, D. C.: Collection of several thousand birds' eggs, chiefly from North America (65320).

RICHARDSON, Mrs. Charles W., Washington, D. C. (through Mrs. Julian-James): Leghorn straw poke bonnet (65567, loan).

RICHARDSON, W. D., Fredericksburg, Va.: 4,380 beetles, comprising the donor's collection, except the family Dryopidae (65775).

RICKER, P. L., U. S. Department of Agriculture, Washington, D. C.: Land planarian from a greenhouse, Fourteenth and B Streets, Washington, D. C. (65532).

RIDGWAY, Robert, Olney, Ill.: 3 bird skins from Illinois (65365).

RIKSMUSEETS BOTANISKA AVDELNING, Stockholm, Sweden (through Dr. Carl Lindman, Director): 280 plants, Bryophyta, from northern Europe (65644); 880 plants, largely algae and grasses (66282, exchange).

RIVES, Mrs. Isabel, Washington, D. C. (through Mrs. R. G. Hoes): Smoking cap, Scotch style, embroidered in moose hair, from Canada (65437, loan).

ROBERTS, E. W., Cincinnati, Ohio: 14 detail photographs of Hiram Maxim's early flying machine, and copy of a photograph of him, also a copy of the Journal of the Society of Automotive Engineers, April, 1918, containing a description of the machine (65903).

ROBERTSON, Miss Lida B., Livingston Normal School, Livingston, Ala.: Plant, *Firmiana platanifolia* (65266); plant (65311).

ROBINSON, Col. Wirt, U. S. Army, West Point, N. Y.: Shrew (alcoholic), *Microsorex winnemanna* (65305).

ROCK, Prof. Joseph F., U. S. Department of Agriculture, Washington, D. C.: 4 plants, *Kokia*, from the Hawaiian Islands (65199).

ROCKWOOD, L. P., Forest Grove, Oreg.: 2 type specimens of Diptera (66210).

RODDY, Dr. H. Justin, Millersville, Pa.: 332 Cambrian fossils from Lancaster County, Pa. (65258).

ROEBLING, Col. Washington A., Trenton, N. J.: 3 specimens of minerals from Sweden (65352).

ROGERS, L. E., Washington, D. C.: The nest of a wasp collected at Shin Pond, Patten, Me. (65740).

ROIG, Dr. Mario Sanchez, Havana, Cuba: Selenite from Cuba, also 8 specimens, 2 species, of terrestrial isopods (65904, 65968).

ROMAN, Dr. A., Entomologiska Afdelning, Naturhistoriska Riksmuseet, Stockholm, Sweden: 2 ichneumon flies, *Polysphincta carbonator* (65792).

ROSENDAHL, Prof. C. O. (See under Minnesota, the University of.)

ROSS, C. S., U. S. Geological Survey, Washington, D. C.: Specimen of onyx from Lime Creek, Del Norte Quadrangle, near Bidell, Colo. (66051).

ROST, E. C., Alhambra, Calif.: 8 cacti (65657, 66414, exchange); 27 cacti (66444, 66744).

ROWLEE, Prof. W. W., Department of Botany, Cornell University, Ithaca, N. Y.: 3 plants, *Ochroma*, from Central America (65690).

(See also under Cornell University).

ROWLETT, Mrs. S. C., Halifax, Va.: 8 plants (66453, 66562).

ROYAL BOTANIC GARDENS. (See under British Government.)

ROYAL ELECTROTYPE CO., Philadelphia, Pa.: Exhibit showing lead-molding electrotype and McKee process of treating electrotypes (66196); 6 photographs of the Royal Electrotype Co.'s plant (66526).

ROYAL TYPEWRITER CO. (INC.), THE, New York City (through G. E. Smith, President): Royal typewriter, No. 10, latest model; Royal typewriter, skeleton model, to afford inspection of all working parts, working model, double size, of the Royal typewriter accelerating key lever action, and working model of the Royal typewriter roller trip escapement (65698).

RUNYON, Robert, Brownsville, Tex.: 27 cacti from Texas (65652, 65700, 65830, 66067); 29 plants (66424, 66518, 66558, 66657, 66747); 8 plants, *Lophophora*, from Texas (66031).

RUSH, Mrs. Paul J., Proctor, Tex.: Skin and skull of a pallid white-footed mouse, *Peromyscus maniculatus pallescens* (65247).

RUST, Henry J., Coeur d'Alene, Idaho: Collection of fossil plants from Coeur d'Alene (66154).

RUTH, Prof. Albert, Polytechnic, Tex.: 48 plants, 4 plants from Texas, and a plant, *Opuntia* (65403, 66041. 66721).

RUTHVEN, Dr. A. G. (See under Michigan, University of, Museum of Zoology.)

RUZICKA, Rudolph. (See under the Carteret Book Club, of Newark.)

ST. PROCOPIUS COLLEGE, Lisle, Ill. (through Prof. Hilary S. Jurica) 176 specimens of miscellaneous insects (160 from Lisle, Dupage County, Ill., and 16 collected in the Key Islands, Dutch East Indies) (65973).

SANCHEZ, Dr. Mario, Sr., Habana, Cuba: 19 specimens, 9 species, of mollusks from Cuba, including the types of 5 new species (65231); 9 specimens, representing 8 species, of fossil mollusks from Vedado, near Habana, Cuba (65669).

SAN JOSÉ, COSTA RICA, MUSEO NACIONAL (through Dr. A. Alfaro): 23 crane flies representing 17 species, including the type of a new species, from Costa Rica (65671, exchange).

SAN SALVADOR, EL SALVADOR, LABORATORIO DE AGRICULTURA (through Señor Don Carlos Renson): 14 plants from El Salvador (65931).

SAO PAULO, BRAZIL. (See under Museu Paulista.)

SARDESON, Dr. Frederick W., Minneapolis, Minn. (through Interior Department, U. S. Geological Survey): Collection of Cretaceous invertebrate fossils including about 12 species and over 200 specimens from the Arcturus, Hill, and Walker mines of the Mesabi Iron Range, Minn. (66361).

SARGENT, C. S. (See under Harvard University, Arnold Arboretum.)

SASAKI, Madoka, Sapporo, Japan: 337 specimens, 34 species, of crustaceans from Japan (66769).

SAUNDERS, C. F., Pasadena, Calif.: 3 plants, *Selaginella*, from California (66107, 66636).

SAVAGE, M. F., New York City: 4 photographs, a daguerreotype, and 2 tintypes of the period of the Civil War, and a souvenir badge issued on the occasion of the dedication of Grant's Tomb, 1897 (65641); iron lamp said to have been found in the trench warfare on the Austrian front in the region of Venice, Italy, and bought in Rome, Italy (66321).

SAVILLE, Dr. MARSHALL H. (See under Museum of the American Indian, the Heye Foundation.)

SCALCO, SALVATORE, Washington, D. C.: Banana possum (*Marmosa*) (65388).

SCHAEFFER, CHARLES. (See under Brooklyn Institute of Arts and Sciences, Central Museum, Brooklyn, N. Y.)

SCHAUS, WILLIAM, U. S. National Museum: 800 specimens of Lepidoptera representing 400 species, new to the Museum collections, and 55 water color paintings of rare species of butterflies to represent these species in the collection (66534).

SCHEERPELTZ, Prof. OTTO and Prof. EMIL MOCZARSKI, Staatsrealschule, Vienna, Austria (through the Entomological Society of Washington): 244 specimens of cave and subterranean Coleoptera, representing 100 species new to the Museum collections (66077).

SCHIEFFELIN & CO., New York City: 6 specimens of pharmaceutical preparations (65874).

SCHLESWIG INTERNATIONAL COMMISSION, Kollund, Schleswig (through C. B. Mace, Secretary General): 3 sets of postage stamps issued during the international commission's administration of the plebiscite area in Schleswig, 1919–20 (65359).

SCHMID, EDWARD S., Washington, D. C.: 24 birds, including 2 Amazon parrots (66303, 66447, 66621, 66661).

SCHOCK, OLIVER D., Harrisburg, Pa.: 2 photographs of a shrub from Pennsylvania (65957); plant, trailing juniper, from Pennsylvania (65962).

SCHROEDER, Miss EM-SIDELL, Washington, D. C.: A bark cloth (Kapa) pillow cover, 2 samples of hand weaving, and a specimen of a chundri with knots united (65433).

SCHUCHERT, Prof. CHARLES. (See under Yale University.)

SCHULTZ, Dr. ADOLPH H., Carnegie Laboratory, Johns Hopkins Medical School, Baltimore, Md. (through Dr. O. P. Hay): Left ramus of lower jaw, containing two molars, of the fossil peccary, *Tayassu lenis*, from the Pleistocene, Calvert County, Maryland; also an X-ray negative (66362).

SCHULZ, Miss ELLEN D., San Antonio, Tex.: 212 plants from Texas (2 through Prof. O. F. Cook) (65270, 65498, 66166, 66269, 66682); 161 plants from Texas and New Mexico (65583); 2 plants, *Mammillaria* (66563).

SCHWARZ, Dr. E. A., U. S. Department of Agriculture, Washington, D. C: About 200 beetles, Tenebrionidae, representing genera not in the Museum collections (66749): 100 beetles collected at Plummer Island, Md., in 1920 (65762).

SCHWARZ, Dr. E. A., and HERBERT S. BARBER, U. S. Department of Agriculture, Washington, D. C.: 1,000 beetles from Plummer Island, Md. (66758).

SCIDMORE, Miss ELIZA RUHAMAH, Washington, D. C.: 2 Korean straw figures (65511).

SCIENCE AND AGRICULTURE DEPARTMENT, Division of Biology, Georgetown, Demerara, British Guiana: 3 vials of shipworms, mollusks, from British Guiana (65530).

SCOLLICK, J. W., U. S. National Museum: Daguerreotype, silhouette portrait, and an ambrotype portrait, also a turtle from Bennings, D. C. (65323, 65413).

SCOTT, GEORGE, Hollywood, Calif.: African ethnologocal and archeological specimens (66755).

SCRIPPS INSTITUTION FOR BIOLOGICAL RESEARCH, La Jolla, Calif.: 453 specimens representing 45 species of crustaceans from California, and 7 crabs, *Pilumnus spinohirsutus* (65633, 66401); (through Myrtle E. Johnson): 4 coelenterates from California (66255).

SEBASTIEN, E., St. Thomas, Virgin Islands of the United States: Fruit of the screw pine, *Pandanus sylvestris* and a photograph of the same (65260).

SECHRIST, E. Lloyd, Washington, D. C.: Model of Tahitian outrigger canoe, and 3 photographs of scenes in Tahiti (66392).

SÉGUY, Mons. E., Museum d'Historie Naturelle, Paris, France: 24 specimens of mosquitoes, and 29 specimens, 12 species of named mosquitoes (66242, 66300).

SEIFRIZ, Dr. William, Johns Hopkins University, Baltimore, Md.: 2 ferns from Java (66128).

SELLS, Mrs. Cato, Washington, D. C.: White lace veil and black lace veil made by Miss Abigail Sias, of Danville, Conn., about 1830 (66629).

SEOANE, Lieut. Col. C. A., Signal Corps, U. S. Army, Seattle, Wash.: Polychaete worm, type of new species (66027).

SETCHELL, Prof. W. A. (See under Carnegie Institution of Washington.)

SEYMOUR, Mrs. Henry, Ancon, Canal Zone: Earthenware double jar of recent make, from Honduras; metate of cellular lava and a pottery jar with painted designs, both from Honduras, also a stone image from Mexico (65350).

SHANNON, R. C., Entomological Department, Cornell University, Ithaca, N. Y.: Specimen of an unknown drosophilid from Camp Meade, Md., 2 specimens of a very small species of anthomyidae collected at Ithaca, N. Y., and 602 beetles from Washington State (65739, 65776, 66106).

SHARKIE, Rev. Antonius, Washington, D. C.: Wooden balance for weighing money from Syria (66420).

SHAW, Dr. E. W., Washington, D. C.: 200 specimens, 6 species, of land shells from Bolivia (66141).

SHEPHERD, Alexander R., 2d, Tungstonia, Nev. (through Mr. F. L. Hess): Specimen of hubnerite from 60 miles northeast of Ely, Nev. (65505).

SHEPPARD, M. J., Washington, D. C.: Fossil pecten from the Tertiary rocks of Contra Costa County, Calif. (66074).

SHEPPARD, Walter B., Jackson, Wyo.: Small collection of plants from Wyoming (66036).

SHIDELER, Prof. W. H., Miami University, Oxford, Ohio: Collection of rare Upper Ordovician fossils from Oxford, Ohio (65818, exchange).

SHORT, George H., Salt Lake City, Utah (through Victor C. Heikes): Specimen of sphalerite from the Judge mine, Park City, Utah (65667).

SHREVE, Dr. Forest, Desert Laboratory, Tuscon, Ariz.: Plant, cactus, from Arizona (65658).

SHUFELDT, Dr. R. W., U. S. Army (retired), Washington, D. C.: 7 small mammals from South America (65523); plant, *Meibomia*, from the District of Columbia (65579); 2 skeletons of fishes, a dried fish, and skeleton of a hawk (66277).

SHUFELDT, Dr. R. W., U. S. Army (retired), Washington, D. C., and Dr. A. d'E. TAUNAY, Sao Paulo, Brazil: 3 skeletons of fishes (66278).

SHUFELDT, Mrs. R. W., Washington, D. C.: Common swift from Great Falls, Md. (65471).

SHURTLEFF, Arthur A., Boston, Mass.: Original atomizer or vaporizer made about August 27, 1871, by Asahel M. Shurtleff, Boston, Mass. (66665).

SIGMUND, Louis, Goldfield, Nev.: Samples of fibrous opal from Esmeralda County, Nev. (65184).

SIMONS, Mrs. Carrie L., San Diego, Calif.: 10 mollusks representing the species *Schismope californica*, from North Coronado Island, Lower California (66024).

SIMPSON, Charles T., Little River, Fla.: 36 specimens, 22 subspecies, of mollusks, *Liguus*, from Florida, representing type lots of new subspecies described by the donor (65209).

SINGEWALD, Prof. Joseph T., Johns Hopkins University, Baltimore, Md. (through Mr. F. L. Hess): Specimen of wolframite and cassiterite from Carmen Mine, Yungas, Bolivia (65916).

SITHENS, E. H., Millville, N. J.: Victor "ordinary" bicycle (66457). (See also under Lawrence Worstall.)

SKEELS, H. C. (See under R. N. Jones.)

SLAGLE, Wm. (See under Curtis Publishing co.)

SLOANE, William, New York City: Gold watch seal owned by Gen. George Washington and presented by him to Judge Bushrod Washington (66076).

SLOCUM, A. W., Chicago, Ill.: Small collection of fresh-water shells from Crooked Lake, Bay View, Mich., and post-glacial shells and marl from Mud Lake, Mich. (65444).

SMALL, Hon. John M., House of Representatives, Washington, D. C.: Silver loving cup presented in 1920 by the Chinese Chamber of Commerce, Peking, China, to a party of American Congressmen (of which Mr. Small was chairman) on a tour through China and Japan (66168, deposit).

SMITH, Mrs. F. M., Baltimore, Md.: Sword, sash, and 4 belts owned during the Civil War by Bvt. Capt. Frank M. Smith, First Maryland Volunteers (65536).

SMITH, G. E. (See under Royal Typewriter Co. (Inc.).)

SMITH, Dr. Hugh M., Bureau of Fisheries, Washington, D. C.: A series of specimens illustrating the chank industry of India (65643).

SMITH, J. A., Canon City, Colo.: Specimen of fossil brachiopod from the Manitou limestone, near Canon City, Colo. (65855).

SMITH, Capt. John Donnell, Baltimore, Md.: 10 plants from Nicaragua, collected by A. Tonduz (66114).

SMITH, Mrs. Margaret A. S., New York City (through Rear Admiral R. H. Jackson, U. S. Navy): Plaster death mask of Rear Admiral William T. Sampson, U. S. Navy (1840–1902) (66759).

SMITH, Miss Mary, Arcola, Va.: Double egg of a domestic fowl (66369).

SMITH, Miss Olga, Honolulu, Hawaii: 48 specimens, 36 species, of Hawaiian marine shells (65494); 36 specimens, representing 5 species of land shells from the island of Oahu, Hawaii (65597).

SMITHSONIAN INSTITUTION:

An oil painting representing the Pterodactyl Ornithostoma (65185); iron wedge used by Abraham Lincoln when a resident of New Salem, Ill., 1830–1834, and given by him to his instructor in surveying, Mentor Graham (65826); 2 bronze replicas of the medal designed by A. Bonnetain, 1919, in commemoration of the services of Marie Depage and Edith Cavell (65828); oil portrait of Rear Admiral William Harkness, U. S. Navy, and gold chronometer owned by him (65847); about 6,000 Cambrian fossils (66540); bronze medal commemorating the centennial anniversary of the University of Virginia, 1921 (66628, deposit).

Smithsonian African expedition under the direction of Edmund Heller in conjunction with the Universal Film Manufacturing Co. (collected by H. C. Raven): 5 mammals, 3 birds, 3 reptiles, and 1 fish (65475); collection of mammals, birds, reptiles, mollusks, and insects (65771); collection of mammals, birds, reptiles, fish, mollusks, insects, and 3 vials of helminths from East Africa (65961); collection of mammals, birds, reptiles, fishes, mollusks, insects, and helminths from East Africa (66059); collection of parasites, insects, and a lizard (66097).

Bureau of American Ethnology: Skull, bones, and lower jaw, found at a village site near Gatesville, Tex., and presented to Dr. J. W. Fewkes in April,

SMITHSONIAN INSTITUTION—Continued.

Bureau of American Ethnology—Continued.

1919 (65334); archeological specimens and human bones found at Indian Hill, Fla., sent to the Bureau by Mr. Charles T. Earle, Palma Sola, Fla. (65551); stone arrow polisher, presented to the Bureau of American Ethnology by Dr. Walter Roth, of Georgetown, British Guiana (65625); archeological material collected in the spring of 1920 in northwestern Arizona and southwestern Utah by Mr. Neil M. Judd (65764); a pseudo stone implement of limestone found by Rev. E. N. Kremer, Harrisburg, Pa., in the vicinity of Camphill, Cumberland County, Pa., and presented by him to the Bureau (65795); 3 human skulls and a quantity of human bones collected by Dr. J. W. Fewkes from the Fire Temple group of ruins on the Mesa Verde National Park, Colo., during the summer of 1920 (66011); 25 skeletons collected during the summer of 1920 from the Fewkes and Gordon Mounds near Nashville, Tenn., by Mr. William E. Myer, of Nashville (66115); archeological material collected by Mr. J. A. Jeancon for the Bureau of American Ethnology from a ruin near Taos, N. Mex., in the summer of 1920 (66156); antique Russian ax head found at Port Graham, Alaska, in 1913 (66290).

National Museum, collected by members of the staff: Bassler, R. S.: 10 slabs of fossils illustrating an Ordovician sea beach (65819). Foshag, W. F.: Collection of minerals from California, obtained in May, 1920 (65416). Gidley, J. W.: 14 specimens of cacti (66191, 66324); 16 plants (66390); collection of

SMITHSONIAN INSTITUTION—Continued.

National Museum—Continued.

vertebrate remains—mostly mammalian—representing a new Pilocene fauna, from the San Pedro and Sulphur Springs Valleys, Ariz. (66702); a large slab containing numerous fossil bones from the "bone quarry" at Agate, Nebr. (66703). Gilmore, C. W.: A small collection of mammalian fossils from Santa Fe Marls, near Espanola, N. Mex. (66610). Hough, Walter, a small collection of invertebrate fossils from Polacca, Hopi Reservation, Ariz. (65244); archeological material collected at Polacca, Ariz., during the summer of 1920 (65301). Maxon, William R.: 75 plants from New York, Maryland, and Virginia (65306). Walcott, Charles D.: Skin and skull of a mule deer, *Odocoileus*, 2 goats, *Oreamnos*, and a porcupine, *Erethizon*, collected in Alberta, Canada (65897).

National Museum, obtained by purchase: Bronze medal commemorating the achievements of the American Red Cross War Council, 1917–1919 (2 specimens) (66212); medal of honor, distinguished service cross, and distinguished service medal, of the type awarded by the United States Navy Department for services during the World War, 1917–18 (65766); 3 prints showing 3 states of the etching of plate No. 183. "Shoveller Drake" (66728); 112 Mexican plants, collected by C. A. Purpus (65799); silver Indian peace medals (6 specimens) (66770); 112 plants from Painted Desert, Ariz. (65761); 109 Uganda plants (65254, 66389); 225 specimens of Missouri Lower Devonian fossils (65971); collection of bees containing 222 specimens, 150

SMITHSONIAN INSTITUTION—Continued.

National Museum—Continued.

species, of which 72 are paratypes (65466); 98 beetles of the family Tenebrionidae, including cotypes of 64 species (65486); 90 plants from Kamerun (65198, 65309); effigy jar made by the so-called mound builders (66459); 1,838 plants collected by Mr. E. H. Wilson, in eastern Asia (66129); 394 Chinese plants collected in Yunnan by Schoch, and 400 Chinese plants collected by Purdon (66326); 250 plants from Yunnan, China, collected by Simeon Ten (66365); 729 plants from Paraguay (65553); 160 plants from Oregon and California (66317); 25 mosses (66342); paper currency of the type issued in Germany and Austria during the World War, 1914–1918 (450 specimens) (65292); 6 volcanic rocks from Hegau and Schemnitz (66126); a fossil elephant skull (65481); 579 specimens of Diptera, including 215 types and cotypes (66060); patchwork quilt, specimens of Javanese cotton fabric, and 2 specimens of printed India calico (65628); 2 United States silver half dollars commemorating the Pilgrim Tercentenary, 1920 (65607); foreign postage stamps issued 1914–1920 (688 specimens) (65378); 250 plants from Ecuador (65290); exhibition slab of Silurian crinoids (66693); bronze commemorative medals of the World War, 1914–1918 (9 specimens) (66112); 5 lamps (66046); 24 specimens of carved ivory from Africa (66589); 3 specimens of minerals consisting of maucherite, phosphosiderite, and klaprothite (66008).

National Museum, made in the Anthropological Laboratory: Plaster casts (in triplicate) of a stone pipe found on the south bank of Snake River in Garfield County, Wash., original furnished by Mr. E. W. Gibson, of Pomeroy, Wash. (65438); 4 plaster casts of medicine or pigment plate, the original of which is the property of Mr. A. G. Curtis, Prescott, Ariz. (66175): 2 plaster casts of an old Indian pipe, the original of which is in the custody of Mr. Edward Butts, curator, Library Museum, Kansas City Public Library, Kansas City, Mo. (66289); 3 plaster casts of jadeite "Bird God" (Tuxtla statuette) (66325); 2 plaster casts of a celt from Brazil, original the property of Dr. H. S. Washington, Geophysical Laboratory, Washington, D. C. (66668).

National Museum, made in the Mechanical Technology Laboratory: Model of Leonard da Vinci's aircraft 1490 A. D., made from da Vinci's own notes, scale one-fourth (65503); model of Hensen's "Aerial steam carriage" (66366).

National Zoological Park: Griffon vulture, *Gyps fulvus*, crowned crane, *Balcarica pavonia*, 2 specimens of European robin, *Erithacus rubecula*, 3 specimens of red-billed hilltit, *Liothrix luteus*, mute swan, *Cygnus gibbus*, upland goose, *Chloephaga leucoptera*, scarlet ibis, *Guara rubra*, whistling swan, *Olor columbianis*, spur-winged goose, *Plectropterus gambensis*, Australian crested pigeon, *Ocyphaps lophotes*, and egg of king vulture, *Sarcoramphus papa* (65237); skin and skeleton of a deer, *Mazama simplicicornis*, and skin and skeleton of a rat, *Myocastor coypus* (65337); young lion, *Felis leo* (65603); bandicoot, *Perameles nasuta* (alcoholic), kangaroo, *Petrogale penicillata*

SMITHSONIAN INSTITUTION—Continued.

Nataional Zoological Park—Con. (alcoholic), skull of a coyote, *Canis latrans*, and skin and skull of a kangaroo, *Macropus giganteus* (65804); skin and skull of a fox squirrel, *Sciurus niger*, and skin and skeleton of a sooty paca, *Cuniculus paca* (65941); golden pheasant, *Chrysolophus pictus*, little brown crane, *Grus canadensis* (2 specimens); white eyed duck, *Nyroca nyroca*, kea parrot, *Nestor notabilis*, white-faced tree-duck, *Dendrocygna viduata*, sultana, *Porphyrio calvus*, scarlet ibis, *Guara rubra* (2 specimens); roseate spoonbill, *Ajaja ajaja* (66042); skin and skull of a goat, *Oreamnos montanus*, and a monkey, *Macaca rhesus* (alcoholic) (66088); egg of the large Indian paroquet, *Conurus nepalensis* (66178); skin and skeleton of a hunting dog, *Lycaon pictus* (66265); skin and skeleton of a monkey, *Papio hamadryas*, skin and skeleton of a bandicoot, *Perameles nasuta*, and a nine-banded armadillo, *Dasypus novemcinctus* (alcoholic) (66566); piping-crow-shrike, *Gymnorhina tibicen*, and a sun-bittern, *Eurypyga helias* (66624).

SÖDERSTROM, Ludovic, Quito, Ecuador: Bulbs of 2 species of plants from Ecuador (65431).

SOHNER, Harry L., Washington, D. C.: Indian chief's beaded coat from Valdez, Alaska (66029).

SOLIS, Señor Dr. Octavio, Mexico City, Mexico: 3 plants from Mexico (66412, exchange); 3 plants (cacti) from Mexico (66516).

SOMMER, Dr. H. Otto, Washington, D. C.: A love flute of the Ute Indians, Ute Mt., S. E. Colorado (65316).

SOUTH DAKOTA, UNIVERSITY OF, Department of Geology, Vermillion, S. Dak. (through Prof. Freeman Ward, State Geologist): Skeletal material, consisting of 3 complete skeletons, 11 skulls, and a few miscellaneous bones, excavated and collected by the University of South Dakota in connection with the State Geological Natural History Survey, from the old Arikara and Mandan village sites on the flood plains of the Missouri River in South Dakota (65650); 140 plants from South Dakota (65744).

SOUTHERN COAL, COKE & MINING CO., St. Louis, Mo.: Jawbone with teeth intact of the fossil shark, *Edestus heinrichsii*, from the Shiloh mine, near Shiloh, Ill. (65964).

SPAULDING, Irwin, Honolulu, Hawaii: 85 specimens, 69 species, of marine shells from the Hawaiian Islands (65500).

SPIER, George W., Chevy Chase, Md.: English silver watch, about 200 years old, marked on the works "G. Windle, London, #3926" (65613); French silver watch marked "L'Epine a Paris," and an English silver watch, "Charles Dunning, London" (65646); lady's gold watch, Swiss make, 1860; gold watch, engraved gold dial, English make, 1840; silver double-case watch, Irish make, 1760; silver double-case watch, English make, 1820, and old-time gold watch key (66499).

SPITZKA, Dr. Edward Anthony, Bureau of War Risk Insurance, Washington, D. C.: Human brains, ethnological and archeological specimens, shells, fossils, minerals, and 11 echinoderms (66608, 66609).

SPRINGER, Dr. Frank, East Las Vegas, N. Mex.: Samples of molybdenite, from near East Las Vegas (66152).

SQUIBB & SONS, E. R., New York City: 15 specimens of pharmaceutical preparations (66203).

STAHEL, Dr. Gerold, Paramaribo, Surinam: 3 specimens of cacti from Surinam (65392).

STANBROUGH, William Monell, Custodian, Falls House Memorial Collection, Newburgh, N. Y.: Cast of fragment of carved soapstone Indian head (65853).

STANDLEY, J. E., Seattle, Wash.: Freak tooth of a walrus from the Arctic region (65489).

STANLEY-BROWN, Mrs. G., James R. GARFIELD, Dr. Harry A. GARFIELD, Abram GARFIELD, and Irwin McD. GARFIELD (through Mrs. G. Stanley-Brown, Kew Gardens, Long Island, N. Y.): Lavender satin dress worn by Mrs. Lucretia A. Garfield at the inaugural ball on the occasion of the inauguration of her husband, President James A. Garfield, in 1881 (66111).

STANTON, Dr. T. W. (See under Albert L. Beekly, and R. K. Thomas.)

STAPLES, A. H., Douglas, Ga.: Fossil teeth of mammoth, mastodon, and shark (66671).

STARR, Douglas N., Washington, D. C.: Gold, nickel, and silver coins of the United States, Germany, Great Britain, Japan, and China (17 specimens) (65457, loan); 2 United States silver half dollars commemorating the Pilgrim Tercentenary, 1920 (65575, loan); United States and German coins issued 1834–1913 (8 specimens) (65656, loan); a Filipino spearhead from Luzon, an Indian spearhead from Montana, an Indian-made frontier knife, and a pair of Sioux moccasins (65843); United States silver half dime issued in 1795, Bechtler gold dollar, and a United States twenty-dollar gold piece issued in 1850 (66554, loan).

STATE DEPARTMENT: Bronze replicas (set in marble) of the obverse and reverse of the gold medal of honor presented by the Italian National Committee, founded for that purpose, to King Victor Emanuel III as commander in chief of the army and navy, as a national testimonial of the deeds of heroism and sacrifice performed by the Italian people during the World War (65545).

(See also under Bartolomew McIntire, and Ernest B. Price.)

STEEPLES, Dan P., Sumner, Wash.: A large sheet of "fungus paper," the mycellium of the quinine fungus, *Fomes laricis*, taken from a cavity in a 4-foot Douglas fir at Hillsboro, Oreg., 1893 (66764).

STEVENS, Prof. O. A., Agricultural College, N. Dak.: 15 plants from North Dakota (65687); 10 named specimens of bees representing 6 species, of which 4 are represented by types (65796).

STEWART, Don, Oruro, Bolivia (through Mr. F. L. Hess): Specimen of wolframite from the Con de Auqui district, Bolivia (66150).

STEWART, R. R., Gordon College, Rawalpindi, India (through Miss Katherine D. Kimball, Bureau of Plant Industry, U. S. Department of Agriculture, Washington, D. C.): 32 specimens of Himalayan ferns (66293).

STILL, Dr. George A., Kirksville, Mo.: Bust and medallion of Dr. Andrew Taylor Still, founder of osteopathy (66537).

STOCKHOLM, SWEDEN. (See under Riksmuseets Botaniska Avdelning.)

STOW, Norman C., Washington, D. C.: Pair of epaulets worn by Col. E. W. Chastain, Eighth Georgia Regiment, Confederate States Army, during the Civil War (66506, loan).

STUBBS, Dr. A. R., Tampico, Mexico (through Department of Commerce, Bureau of Fisheries, Washington, D. C.): 9 specimens of fish, *Gambusia nicaraguensis*, from Tuxpam, Mexico (66553).

SUFFERN, Robert A., Plainfield, N. J.: Small collection of Pleistocene shells from a marl bed at Marksboro, N. J. (65917).

SUKSDORF, W. N., Bingen, Wash.: 14 plants, *Selaginella*, chiefly from the western United States (66044.)

SULLIVANT MOSS SOCIETY, THE, New York City (through Mr. Edward B. Chamberlain): 60 mosses (66495, exchange).

SUMMERS, Mrs. Maddin, Washington, D. C. (through Mrs. R. G. Hoes: Laces, bed spread, and pillow shams (11 specimens) (66771, loan).

SURR, Gordon, San Bernardino, Calif.: 2 varieties of minerals, asbolite and alexandrolite (?), from Tulare County, Calif. (65882).

SWALES, B. H., U. S. National Museum: 13 bird skins from the Old World representing species mostly new to the Museum (65595); egg of emu, *Dromiceius novaehollandiae* (66179); 8 bird skins, mostly new to the Museum collections (66276); 20 bird skins from the Old World (66701).

SWARTS, Clifton R., Guaymas, Sonora, Mexico: Living cactus from Mexico (66519).

SWASEY, Ambrose, Cleveland, Ohio: Bronze portrait plaque of the donor designed by Victor D. Brenner, 1915 (66081).

SWISHER, C. Lee: An exhibition specimen of Devonian starfish from Tucker County, W. Va. (65629).

SYDNEY, NEW SOUTH WALES, AUSTRALIA. (See under Australian Museum.)

TABER, Prof. Stephen, University of South Carolina, Columbia, S. C. (through Dr. T. Wayland Vaughan): Fossil coral from Swan Island, West Indies (66479).

TABOR, I. C., Danbury, Wis.: Moth. *Telea polyphemus* (66677).

TAUNAY, A. d'E. (See under Museu Paulista, and Dr. R. W. Shufeldt.)

TAYLOR, Mrs. Frances Long, Athens, Ga. (through Miss Katherine Wootten, Washington, D. C.): Printed documents relating to the first use of ether as an anaesthetic in surgery in 1842 by Dr. Crawford W. Long (65997); articles and documents relating to the life and career of Dr. Crawford W. Long, the first to use ether as an anaesthetic in surgery (66216, loan).

TAYLOR, Capt. William, Granbury, Tex.: Cast from the interior of a fossil mollusk (66104).

TEXAS, UNIVERSITY OF, Austin, Tex.: Specimen of the Throup, Tex., meteorite (65858, deposit).

THOMAS, R. K., Navajo, Ariz. (through Dr. T. W. Stanton): Specimens of mollusks, *Oreohelix utahensis*, from Hardscrabble Draw, near Zuni Sacred Lake, Apache County, Ariz. (66646).

THOMPSON, Charles A., Hillsdale, Mich.: Specimen of the fossil cephalopod, *Huronia* (66073).

THOMPSON, Dr. Lewis R., Fincastle, Va.: Bat, reptiles, and insects collected in the southwestern part of the Hunan Province, China (65432); (through the American Consul, Changsha, China) original photograph showing poppy field in bloom (65546); 9 bees and wasps and 15 reptiles and amphibians (66079).

THOMPSON, Mrs. Otto, Glacier Park, Mont.: 21 plants from Montana (65204).

THORNBER, Prof. J. J., University of Arizona, Tucson, Ariz.: Cactus from Arizona (65891).

THORNTON, C. W., Nome, Alaska: 35 plants from Alaska (65707).

THORPE, Col. G. C., U. S. Marine Corps, Washington, D. C.: Specimens from Santo Domingo, in ethnology, ceramics, American archeology, and mechanical technology (66707, loan).

TILLES, George, Jr., Wilmington, N. C.: 2 living specimens of Venus's fly-trap, *Dionaea muscipula*, from North Carolina (66508).

TILLYARD, Dr. R. J., Nelson, New Zealand: 6 specimens of rare two-winged flies from New Zealand, including two named species (65462).

(See also under Cawthron Institute of Scientific Research, the).

TIMBERLAKE, P. H., Honolulu, Hawaii: 32 specimens of determined Opiinae, representing 5 species, with paratypes of one (65768).

(See also under Hawaiian Sugar Planters' Association, Experiment Station.)

TINSLEY, R. W., Southwestern University, Georgetown, Tex.: Skin of a bridled weasel, *Mustela frenata* (66581).

TITTLE, Walter, New York City: 2 dry-point artist-proof etchings from life of President Harding (profile and full face), by the donor (66547).

TOLMAN, R. P., U. S. National Museum: 5 photographs (portraits) by M. B. Brady and 60 silver prints, plain (portraits) (65330); a photograph of General Sherman, by M. B. Brady (65556).

TONDUZ, Señor Don A., San José, Costa Rica: Cactus from Costa Rica, and 2 plants, *Ficus*, from Central America (66005, 66183).

(See also under Guatemala.)

TORONTO, UNIVERSITY OF, Biological Department, Toronto, Canada (through A. H. Leim): 20 specimens, 3 species, of amphipods from Nova Scotia (66529).

TORRE, D. Carlos, de la, University of Habana, Habana, Cuba: 8 specimens representing 2 species of terrestrial isopods from Cuba (65206).

TOTHILL, John. (See under Canadian Government, Department of Agriculture.)

TOTTEN, Maj. George Oakley, Jr., Washington, D. C.: 2 specimens of the Yucatan goldfinch, *Astragalinus psaltria jouyi*, from Merida, Yucatan (66355).

TREADWELL, Prof. A. L., Vassar College, Poughkeepsie, N. Y. (through Carnegie Institution of Washington): 2 marine mollusks, *Cryptoplax oculatus*, from Samoa (65815); 2 specimens of a myriopod, *Leodice rubro-vittata*, from Tobago, British West Indies (66136).

TREASURY DEPARTMENT:

Bureau of Internal Revenue 14 specimens of opium products (65756).

TREMPER, Dr. R. H., Los Angeles, Calif.: 6 land shells, *Epiphragmophora traskii zechae*, from California (66525).

TRUE, W. J., East Falls Church, Va.: Snake from East Falls Church (66446).

TSUDA, Miss Umé: Brass crucifix from Italy (66709).

TWEED, Mrs. Mary R., Washington, D. C.: Child's doll and lady's bonnet of 1850 (65905).

TYLOR, J. E., Washington, D. C.: Congo eel, *Amphiuma means*, from Fort Myers, Fla. (66496).

UKRAINE, THE FRIENDS OF, Washington, D. C. (through the Post Office Department): Postage stamps of the Ukrainian People's Republic (14 specimens) (66236); (through the Library of Congress) postage stamps of the Ukranian People's Republic (14 specimens) (66254).

ULKE, Titus, Washington, D. C.: A framed portrait of Lord Elgin taken in 1855 by Henry Ulke, one of the first photographic portraits worked up in water color and Indian ink (66555, loan); through F. V. Coville; 5 plants from the vicinity of Washington, D. C. (66678); 2 plants from the vicinity of Washington, D. C. (66700).

ULREY, Dr. A. B. (See under Venice Marine Biological Station.)

ULRICH, Dr. E. O. (See under Dr. W. O. Hotchkiss.)

UNITED STATES MARINE CORPS, Washington, D. C.: Bronze statue, entitled "Crusading for the Right," designed by Charles Raphael Peyre, in commemoration of the services of the United States Marines at the battle of Chateau-Thierry (65733).

UNITED STATES PHARMACOPOEIAL CONVENTION (INC.), BOARD OF TRUSTEES OF (through Dr. E. Fullerton Cook, Chairman of the Revision Committee, Philadelphia, Pa.): Manuscripts, proofs, and historical documents relating to the Sixth, Seventh, and Eighth Revision of the United States Pharmacopoeia (65788); (through Dr. Murray Galt Motter, Washington, D. C.): A typewritten copy of the Proceedings of the Seventh, Eighth, and Tenth Decennial Conventions of the U. S. Pharmacopoeial Convention (Inc.), for the Revision of the U. S. Pharmacopoeia (66344, deposit).

UNIVERSAL FILM MANUFACTURING CO., New York City: Copies of the films of the picture "Shipwrecked Among the Cannibals" (66207).

(See also under Smithsonian Institution.)

UPPERCU, INGLIS M., New York City: Gasoline automobile, the second machine designed and constructed by Charles E. Duryea, and tested on the road early in September, 1893 (65715).

VANATTA, E. G., Philadelphia, Pa.: 6 mollusks, *Opeas pumilium*, living in decayed boards of fences in Philadelphia (65202).

VAN ESELTINE, G. P., Bureau of Plant Industry, U. S. Department of Agriculture, Washington, D. C.: 64 plants, chiefly from the United States (65802).

(See also under S. B. Parish, and Pomona College.)

VAN ZWALUWENBURG, R. H., U. S. Entomological Laboratory, Stonehenge, Charlottesville, Va.: 4 type specimens of a beetle, *Melanotus hyslopi* (66463).

VAUGHAN, Dr. T. WAYLAND, U. S. Geological Survey, Washington, D. C.: 150 specimens, 18 lots, of land and fresh-water shells from Mexico (66460).

(See also under J. A. Bullbrook, E. De Golyer, and Prof. Stephen Taber.)

VAUPEL, F., Botanisches Garten, Dahlem, Berlin, Germany: Plant, cactus, from Peru (65680).

VEATCH, CHARLES, Kansas City, Mo.: Mollusk, *Tellina idae*, collected by the donor in the vicinity of Long Beach, Calif. (66667).

VENICE MARINE BIOLOGICAL STATION, University of Southern California, Los Angeles, Calif. (through Dr. A. B. Ulrey): 10 plus specimens, 3 species, including the type of 2 new species of parasitic copepods from fishes in the aquaria at the Venice Marine Biological Station (65617); a collection of

VENICE MARINE BIOLOGICAL STATION—Continued.

mollusks, hydroids, trematodes, bryozoans, echinoderms, and salpa collected in the vicinity of the Venice Marine Biological Station off southern California (65631).

VONSEN, M., Petaluma, Calif.: 16 specimens of minerals from California (65219); specimen of selenite in colemanite, from Borate, Calif. (66627). Exchange.

WAITE, M. B., Bureau of Plant Industry, U. S. Department of Agriculture, Washington, D. C.: Plant from Maryland (65774).

WALCOTT, Mrs. CHARLES D., Washington, D. C.: 3 specimens of lichens from Alberta, Canada (65944); 3 plants, *Trillium* (66514).

WALFORD, EDWIN A., F. G. S., West Bar, Banbury, England: 28 specimens of fossil invertebrates from the neighborhood of Banbury, England (65257).

WALKER, H. EDWARD, *Baltimore*, Md.: 464 miscellaneous microscopic mounts of natural history objects in mahogany slide case, 1 small reducing lens for use with microscope, and 1 stone ax (65279).

WALKER MUSEUM. (See under Chicago, University of.)

WALKER, ROBERT S., Chattanooga, Tenn.: Gall from Tennessee (65308).

WALKER, Mrs. WILLIAM H., Washington, D. C. (through Mrs. R. G. Hoes): Articles of infant's costume from the Walker family of Washington, period of 1815–30 (65459, loan).

WALLING, HARRY (through Charles T. Earle, Palma Sola, Fla.): 10 specimens of fossil bones from the east coast of Tampa Bay, Manatee County, Fla. (66353).

WAR DEPARTMENT:

General Staff of the United States Army: Historical Branch: 5 reproductions on tracing paper, actual size, of character sketches found on the walls of a German dugout in the Mont-Sec region, France, by the American Expeditionary Forces, 1918 (65479).

WAR DEPARTMENT—Continued.

Air Service: Specimens representing 4 standard grades of cotton and linen airplane and balloon fabrics, together with samples of converted balloon and airplane cloth (65668); chemicals used in waterproofing and fireproofing airplane wings (22 specimens) (65813); military airplane engines of the type used during the World War (8 specimens) (66743).

Motor Transport Corps: 2 German motor trucks and a German tractor captured by American Expeditionary Forces in 1918 during the World War (65361).

Ordnance, Office of the Chief of: Progress boards illustrating the manufacture of military explosives used during the World War (7 specimens) (65515, loan).

Quartermaster General, Office of: Wound certificate and death certificate of the type used by the War Department in recognition of services during the World War, 1914–1918 (65299); United States Army medals and decorations (14 specimens), also 2 victory ribbon bars (65340); United States Army nurse's uniform and insignia (21 specimens) (65469); United States Army standard B truck with accessories (66043); uniform and equipment of Dutch infantryman, period of the World War, 1914–1918 (66239).

Signal Corps: Carrier pigeon Cher Ami which flew from American lofts during the World War and died June 13, 1919, from the effects of a wound received in action in France (65696); 99 sepia bromide enlargements (65878); 109 Brady Civil War photographs (65879).

(See also under British Government.)

WARD, Prof. FREEMAN. (See under South Dakota, University of.)

WARDS NATURAL SCIENCE ESTABLISHMENT, Rochester, N. Y.: 2 examples of the Forsyth County, N. C., meteoric iron, and 1 of Chinautla, Guatemala (65375); a crystal of blue zircon from Queensland, Australia (65606); 100 Ordovician fossils from Nevada (65727); skull and lower jaw of an elephant, and a tooth of an elephant from the Pleistocene at Otranto, Italy (65824); 62 specimens of minerals (65825); a small collection of Ste. Genevieve fossils from Fountain Creek, near Waterloo, Ill. (66127); skull of the fossil reptile, *Stephanosaurus*, (66153); specimen of lapiz lazuli from Persia (66180); 3 trilobites from the Devonian of Gerolstein (66219); a kilogram of uraninite from Bohemia (66669): Exchange.

WARNER, Maj. MURRAY (through his widow Mrs. Margaret E. Warner), Eugene, Oreg.: Collection of objects of Buddhist religious art (66533).

WARREN, Mrs. J. KEARNY, New York City (through Mrs. Julian-James, Washington, D. C.): Cluny lace sunshade with ivory handle (66539, loan).

WASHINGTON, CHARLES S., U. S. National Museum: 10 crustaceans, 50 insects, 6 frogs, and 2 lizards collected by the donor at Hopkins, Richland County, S. C. (65533).

WASHINGTON, Dr. H. S., Geophysical Laboratory, Carnegie Institution of Washington, Washington, D. C.: A columbite crystal from (?) Haddam, Conn. (65711); specimen of aphthitalite from Kilauea, Hawaii (65857); specimen of rhyolite from Sardinia (65894); 2 analyzed specimens of augite (66047).

(See also under Prof. T. A. Jagger.)

WATERSON, JAMES. (See under British Government, Imperial Bureau of Entomology.)

WATSON, Mrs. H. W., Pinos Altos, N. Mex.: 3 prayer sticks from a cave in Steamboat Canon, near Pinos Altos (65417).

WATSON, J. R. (See under Florida, University of, Agricultural Experiment Station.)

WEED, Mrs. Charles R., Seat Pleasant Station, Washington, D. C.: Wool spinning wheel, yarn reel, Virginia-grown raw flax, 3 willow baskets, and 2 candle molds (65709).

WEEKS PHOTO-ENGRAVING CO., Philadelphia, Pa.; 6 prints made from electrically etched copper plate (66607).

WEIK, Karl W., Lakeside, Conn.: Specimen of igneous rock from Lakeside (66182).

WEIR, Dr. James R., Laboratory of Forest Pathology, Spokane, Wash.: Plant, *Selaginella*, from Washington (65288).

WELD, L. H., Bureau of Entomology, U. S. Department of Agriculture, Washington, D. C.: 517 specimens of gall-making wasps, Cynipidae, representing 34 new species, described by the donor (65491); 30 determined Cynipidae, representing 9 species, 6 of which are cotypes (66751).

WESTLAKE, S. R., Ironwood, Mich.: 12 specimens of iron minerals from Ironwood (66313, exchange).

WETMORE, Dr. Alexander. (See under Dr. Edwyn P. Reed.)

WEYHER, W. H., Alta, Utah (through Victor C. Heikes): Specimen largely of bismuthinite from the Sells mine, Alta, Utah (65666).

WHERRY, Dr. Edgar T., Bureau of Chemistry, U. S. Department of Agriculture, Washington, D. C.: Specimen showing glauberite crystal cavities in shale, from York County, Pa. (65269); 30 ferns from the eastern United States (65688); plant from Maryland (65724); plant, *Selaginella*, from Maryland (66557); 2 plants from the District of Columbia (66641, 66698).

(See also under P. B. Arnold.)

WHITALL TATUM CO., Philadelphia, Pa.: 6 pieces of pharmaceutical apparatus (65273); a suppository machine with a set of molds (65353); 7 specimens of pharmaceutical equipment (65716).

WHITE, Mrs. John Jay, New York City: 2 mounted heads of African antelopes, *Oreotragus* (65490, deposit).

WHITE, Capt. S. A., Wetunga, Fulham, South Australia: 2 bird skins, *Aphelocephala pectoralis*, and *A. nigricincta*, both species new to the Museum collections (65382).

WHITFORD, H. N., School of Forestry, Yale University, New Haven, Conn.: Plant, *Cordia*, from Mexico (65890).

WICKHAM, H. F., University of Iowa, Iowa City, Iowa: 11 beetles from the Bahama Islands (65357).

WIEGAND, Prof. K. M. (See under New York State College of Agriculture.)

WILDER, Dr. George D., American Board Mission, Peking, China: 18 bird skins from North China (66651).

WILLETT, G., Wrangel, Alaska: 4 mollusks and 3 foraminifera from Forrester Island, Alaska (65611).

WILLIAMS, Col. Charles A., U. S. Army (retired), Washington, D. C.: Myriopods (65623).

WILLIAMS COLLEGE, Williamstown, Mass. (through Dr. H. A. Garfield, President): Bronze medal of the type awarded in 1919 by Williams College to all Williams men in good standing, who served in the Army or Navy of the United States, or any of the Allies during the World War (2 specimens) (65708).

WILLIAMS, Dr. Francis X. (See under Hawaiian Sugar Planters' Association.)

WILLIAMSON, E. B., Bluffton, Ind.: 26 dragon-flies and damsel flies from the United States, also food of 3 species (65463); skull of a bat, *Artibeus jamaicensis*, from Rio Frio, Colombia (66354); 61 dragon-flies (66485).

WILLIAMSON, Thomas N., Graham, Va.: Pigeon hawk, *Falco columbarius*, from Virginia (65468).

WILLIS, Mrs. Lewis, Beahm, Va.: Horned grebe, *Colymbus auritus*, from Virginia (65942).

WILLYS-OVERLAND CO., Toledo, Ohio: One sectional Willys-Knight one-cylinder gasoline motor (operating), showing the sleeve valves and other working parts in operative relation (66187).

WILSON, Miss MARGARET, Washington, D. C.: Dress of Ellen Louise Wilson, first wife of President Woodrow Wilson, worn during his first administration, 1913–1917 (66384, loan).

WINSLOW, Prof. E. J. Auburndale, Mass.: Plant, *Lycopodium sabinaefolium*, from Vermont (66647).

WINTERS, FRED E., Santa Barbara, Calif.: 14 specimens of water-beetles from Santa Barbara and Pasadena, Calif. (66130, exchange).

WISCONSIN, UNIVERSITY OF, Department of Geology, Madison, Wis. (through Prof. C. K. Leith): Samples of greenalite from Mesabi district, Minn. (66585).

WOMAN'S LIBERTY LOAN COMMITTEE OF NEW ENGLAND (through Mrs. F. L. Higginson, Boston, Mass.): 2 paintings by Arthur M. Hazard, entitled "Not by Might" and "The Spirit of the Armistice" used in connection with the Fourth United States Liberty Loan, and the United States and Canadian Victory loans (66470).

WOODIN, J. F., Lexa, Ark.: Male Indian skull and female Indian lower jaw (66527).

WOOTTEN, Miss KATHERINE. (See under Mrs. Frances Long Taylor.)

WORCH, HUGO, Washington, D. C.: Dulcitone from Glasgow, Scotland (65482); 11 pianos (65928); Bach harpsichord (66271); grand piano made by André Stein, Vienna, Austria (66705).

WORSTALL, LAWRENCE, Millville, N. J. (through E. H. Sithens): Columbia "ordinary" bicycle (66456).

WYND, J. L., Fall Creek, Oreg.: 10 plants from Oregon (66737).

YALE UNIVERSITY, PEABODY MUSEUM OF NATURAL HISTORY, New Haven, Conn. (through Prof. Charles Schuchert): Specimens of Miocene(?) fossils from Zorritos, northern Peru, collected by Dr. E. T. Nelson (66098).

YAZOO COMMERCIAL CLUB, Yazoo City, Miss.: Fossilized lower jaw of a mastodon (65589).

YOSHIDA, Dr. SADAO: About 300 specimens of fresh-water mollusks, *Blanfordia nosophora*, from Kurume, Kyushi, Japan, the intermediate host of *Schistosomum japonicum* (65637).

ZETEK, J., Ancon, Canal Zone: 10 vials of miscellaneous beetles (65918).

ZEVERIJN, S. W. (See under Dr. M. Kerbosch.)

ZOOLOGICAL MUSEUM. (See under Copenhagen, Denmark.)

ZOOLOGISK MUSEUM, UNIVERSITY. (See under Christiania, Norway.)

ZUNDEL, GEORGE L., State College, Pullman, Wash.: 21 fungi (66315, exchange).

LIST OF PAPERS BY MEMBERS OF THE MUSEUM STAFF AND OTHERS, BASED DIRECTLY OR INDIRECTLY ON MATERIAL IN THE NATIONAL COLLECTIONS, PUBLISHED BY THE MUSEUM AND ELSEWHERE DURING THE FISCAL YEAR 1920–1921.[1]

ALDRICH, J. M. Coloradia pandora Blake, a moth of which the caterpillar is used as food by Mona Lake Indians.

Annals Ent. Soc. Amer., vol. 14, no. 1, Mar. 1921, pp. 36–38.

——— The Muscoid genera Pseudeuantha and Uramvia (Diptera).

Insecutor Inscitiae Menstruus, vol. 9, nos. 4–6, Apr.–June, 1921, pp. 83–92.

——— The anthomyiid genus Atherigona in America (Diptera).

Insecutor Inscitiae Menstruus, vol. 9, nos. 4–6, Apr.–June, 1921, pp. 93–98, fig. 2.

——— (See also under M. C. Van Duzee.)

ALEXANDER, C. P., and W. L. McATEE. Diptera of the superfamily Tipuloidea found in the District of Columbia.

Proc. U. S. Nat. Mus., vol. 58, no. 2344, Dec. 7, 1920, pp. 385–435, pl. 26.

ASCHEMEIER, C. R. On the gorilla and the chimpanzee.

Journ. Mam., vol. 2, no. 2, May 2, 1921, pp. 90–92.

BANGS, OUTRAM, and THOMAS E. PENARD. Notes on some American birds, chiefly neotropical.

Bull. Mus. Comp. Zool., vol. 64, no. 4, Jan., 1921, pp. 365–397.

BARBER, H. S. (See under H. F. Dietz.)

BARBOUR, THOMAS. Some reptiles from Old Providence Island.

Proc. New Eng. Zool. Club, vol. 7, May 6, 1921, pp. 81–85.

——— and G. K. NOBLE. Amphibians and reptiles from southern Peru collected by the Peruvian expedition of 1914–15 under the auspices of Yale University and the National Geographic Society.

Proc. U. S. Nat. Mus., vol. 58, no. 2352, Jan. 6, 1921, pp. 609–620.

BARTSCH, PAUL. A new shipworm.

Proc. Biol. Soc. Washington, vol. 33, July 24, 1920, pp. 69, 70.

——— The west American mollusks of the families Rissoellidae and Synceratidae and the Rissoid genus Barleeia.

Proc. U. S. Nat. Mus., vol. 58, no. 2331, Nov. 9, 1920, pp. 159–176, pls. 12, 13.

——— The Caecidae and other marine mollusks from the northwest coast of America.

Journ. Washington Acad. Sci., vol. 10, no. 20, Dec. 4, 1920, pp. 565–572.

——— A new classification of the shipworms and descriptions of some new wood-boring mollusks.

Proc. Biol. Soc. Washington, vol. 34, Mar. 31, 1921, pp. 25–32.

[1] A few papers published prior to this fiscal year are included, having been inadvertently omitted from previous reports.

BARTSCH, PAUL. New marine mollusks from the west coast of America.
Proc. Biol. Soc. Washington, vol. 34, Mar. 31, 1921, pp. 33–39.

——— (See also under John B. Henderson.)

BASSLER, R. S. The Cambrian and Ordovician deposits of Maryland.
Maryland Geol. Surv., Cambrian and Ordovician, 1919, pp. 1–424, pls. 1–58.

——— (See also under Ferdinand Canu.)

BEAN, BARTON A. (See under Henry W. Fowler.)

BELOTE, THEODORE T. Commemorative medals of the World War.
Daughters Amer. Rev. Mag., Dec., 1920, pp. 667–699, illustrated.

BENT, A. C. The probable status of the Pacific coast Skuas.
Condor, vol. 23, no. 3, June 3, 1921, pp. 78–80.

BERRY, EDWARD W. A palm nut from the Miocene of the Canal Zone.
Proc. U. S. Nat. Mus., vol. 59, no. 2356, June 10, 1921, pp. 21, 22, text figs. 1–3.

——— Tertiary fossil plants from Costa Rica.
Proc. U. S. Nat. Mus., vol. 59, no. 2367, June 14, 1921, pp. 169–185, pls. 22–27.

——— Tertiary fossil plants from the Dominican Republic.
Proc. U. S. Nat. Mus., vol. 59, no. 2363, June 28, 1921, pp. 117–127, pl. 21.

BERRY, S. STILLMAN. Preliminary diagnosis of new cephalopods from the western Atlantic.
Proc. U. S. Nat. Mus., vol. 58, no. 2335, Nov. 10, 1920, pp. 293–300, pl. 16.

BLAKE, S. F. Nine new plants of the genus Stylosanthes.
Proc. Biol. Soc. Washington, vol. 33, July 24, 1920, pp. 45–53.

BLAKE, S. F. Five new species of Cedrela.
Proc. Biol. Soc. Washington, vol. 33, Dec. 30, 1920, pp. 107–111.

——— Two new Salvias from Guatemala.
Proc. Biol. Soc. Washington, vol. 33, Dec. 30, 1920, pp. 113–115.

——— New trees and shrubs from Mexico and Guatemala.
Proc. Biol. Soc. Washington, vol. 33, Dec. 30, 1920, pp. 117–120.

——— Neomillspaughia, a new genus of Polygonaceae, with remarks on related genera.
Bull. Torrey Bot. Club, vol. 48, no. 3, Mar., 1921, pp. 77–88, pl. 1.

——— The American species of Maximilianea (Cochlospermum).
Journ. Washington Acad. Sci., vol. 11, no. 6, Mar. 19, 1921, pp. 125–132, figs. 1, 2.

——— New trees and shrubs from Yucatan.
Proc. Biol. Soc. Washington, vol. 34, Mar. 31, 1921, pp. 43–46.

——— Revisions of the genera Acanthospermum, Flourensia, Oyedaea, and Tithonia.
Contr. U. S. Nat. Herb., vol. 20, pt. 10, June 20, 1921, pp. 383–436, pl. 23.

——— New Meliaceae from Mexico.
Proc. Biol. Soc. Washington, vol. 34, June 30, 1921, pp. 115–117.

——— A new Aspilia from Trinidad.
Proc. Biol. Soc. Washington, vol. 34, June 30, 1921, pp. 119, 120.

BLANCHARD, FRANK N. Three new snakes of the genus Lampropeltis.
Occasional papers, Mus. of Zool., Univ. of Mich., 81, Apr. 28, 1920, pp. 1–10, pl. 1.

——— A synopsis of the king snakes, genus Lampropeltis Fitzinger.
Occasional papers, Mus. of Zool., Univ. of Mich., 87, June 24, 1920, pp. 1–7 and table.

BOONE, PEARL L. A new Chinese Isopod, Ichthyoxenus geei.
Proc. U. S. Nat. Mus., vol. 57, no. 2319, July 27, 1920, pp. 497–502, pls. 40, 41.

——— A new genus and species of Isopod from Chile.
Rev. Chilena Hist. Nat., anno. 24, no. 2, Mar.–Aug. 1920, pp. 25–31, pl. 2, 2 figs.

——— The Isopoda of the Canadian Arctic and adjoining regions.
Rept. Canadian Arctic Expedition, 1913–18, vol. 7, crustacea, pt. D, Isopoda, Nov. 10, 1920, pp. 1D–40D.

——— Report on the Tanaidacea and Isopoda collected by the Barbados-Antigua Expedition from the University of Iowa in 1918.
Univ. Iowa Studies; Studies in Nat. Hist., vol. 9, no. 5, Mar. 15, 1921, pp. 91–98, pl. 1.

BOULENGER, G. A. A monograph of the American frogs of the genus Rana.
Proc. Amer. Acad. Arts and Sci., vol. 55, no. 9, Aug., 1920, pp. 413–480.

BOVING, ADAM G. and A. B. CHAMPLAIN. Larvae of North American beetles of the family Claeridae.
Proc. U. S. Nat. Mus., vol. 57, no. 2323, Aug. 21, 1920, pp. 575–649, pls. 42–53.

BRITTON, N. L. and J. N. ROSE. The Cactaceae: Descriptions and illustrations of plants of the cactus family. 2.
Carnegie Institution of Washington, pub. no. 248, vol. 2, Sept. 9, 1920, pp. i–viii, 1–239, pls. 1–40, text figs. 1–305.

——— Necabbottia, a new cactus genus from Hispaniola.
Smithsonian Misc. Colls., vol. 72, no. 9, June 15, 1921, pp. 1–6, plates 1–4, text figs. 1, 2.

BUSCK, AUGUST. A new Gracilaria injurious to Avocado (Lepid.).
Can. Ent., vol. 52, no. 10, Oct., 1920.

CANU, FERDINAND, and RAY S. BASSLER. Fossil Bryozoa from the West Indies.
Carnegie Institution of Washington, pub. no. 291, 1919, pp. 73–102, pls. 1–7.

——— North American Early Tertiary Bryozoa.
Bull. U. S. Nat. Mus., no. 106, June 30, 1920, pp. i-xx, 1–879, text figs. 1–279. Plates 1–162, July 26, 1920.

CASANOWICZ, I. M. Descriptive catalogue of the collection of Buddhist art in the United States National Museum.
Proc. U. S. Nat. Mus., vol. 59, no. 2371, June 18, 1921, pp. 291–347, pls. 44–92.

CAUDELL, A. N. Cockroaches.
Chapter 26 of *Sanitary Entomology* by W. D. Pierce, pp. 374–382, figs. 71–73, 1921.

——— Some new Orthoptera from Mokanshan, China.
Proc. Ent. Soc. Washington, vol. 23, no. 2, Feb. 1921, pp. 27–35, figs. 1, 2.

——— Hippiscus olancha Caudell, an apparently undescribed grasshopper from California.
Ent. News, vol. 32, no. 5, May, 1921, pp. 149–151.

CHAMBERLAIN, RALPH V. The Annelida Polychaeta. Reports on an exploration off the west coasts of Mexico, Central and South America, and off the Galapagos Islands, in charge of Alexander Agassiz, by the U. S. Fish Commission steamer *Albatross*, during 1891, Lieut. Commander Z. L. Tanner, U. S. Navy, commanding. XXXVIII. Reports on the scientific results of the expedition to the tropical Pacific, in charge of Alexander Agassiz, by the U. S. Fish Commission steamer *Albatross*, from August, 1899, to March, 1900, Commander Jefferson F. Moser, U. S. Navy, commanding, XX. Reports on the scientific results of the expedition to the eastern tropical Pacific,

CHAMBERLAIN, RALPH V.—Contd.
in charge of Alexander Agassiz, by the U. S. Fish Commission steamer *Albatross*, from October, 1904, to March, 1905, Lieut. Commander L. M. Garrett, U. S. Navy, commanding, XXXI.
Mem. Mus. Comp. Zool., vol. 48, July, 1919, pp. 1–514, pls. 1–80.

CHAMPLAIN, A. B. (See under Adam G. Boving.)

CHAPIN, JAMES P. Description of four new birds from the Belgian Congo.
Amer. Mus. Novitates, no. 7, April 4, 1921, pp. 1–9.

CHAPMAN, FRANK M. The distribution of bird life in the Urubamba Valley of Peru. A report on the birds collected by the Yale-National Geographic Society's expeditions.
Bull. U. S. Nat. Mus., no. 117, June 29, 1921, pp. 1–138, pls. 1–9.

CHASE, AGNES. The Linnean concept of pearl millet.
Amer. Journ. Bot., vol. 8, no. 1, Jan., 1921, pp. 41–49.

——— The North American species of Pennisetum.
Contr. U. S. Nat. Herb., vol. 22, pt. 4, Feb. 12, 1921, pp. 209–234, figs. 63–76.

CLARK, AUSTIN H. A new unstalked Crinoid from the Philippine Islands.
Proc. Biol. Soc. Washington, vol. 33, pp. 21, 22, July 24, 1920.

——— Report on the Crinoids collected by the Barbados-Antigua expedition from the University of Iowa in 1918.
University of Iowa Studies; Studies in Natural History, vol. 9, no. 5, pp. 3–28, Mar. 15, 1921.

——— Report on the Ophiurans collected by the Barbados-Antigua expedition from the University of Iowa in 1918.
University of Iowa Studies; Studies in Natural History, vol. 9, no. 5, pp. 29–63, Mar. 15, 1921.

CLARK, AUSTIN H. Sea-lilies and feather stars.
Smithsonian Misc. Colls., vol. 72, no. 7, Apr. 28, 1921, pp. 1–47, pls. 1–16.

——— The steps in the evolution of animals.
Journ. Washington Acad. Sci., vol. 11, no. 9, pp. 207, 208, May 4, 1921.

CLARK, HOWARD WALTON. (See under B. W. Evermann.)

COCKERELL, T. D. A. A new Trigonalid from India (Hym.).
Proc. Ent. Soc. Washington, vol. 22, no. 7, Oct. 1920, pp. 191, 192.

——— Some neotropical meliponid bees.
Bull. Amer. Mus. Nat. Hist., vol. 42, art. 11, Dec. 1920, pp. 459–468.

——— Some fossil fish scales from Peru.
Proc. U. S. Nat. Mus., vol. 59, no. 2355, June 10, 1921, pp. 19, 20, text figs. 1–7.

——— Some Eocene insects from Colorado and Wyoming.
Proc. U. S. Nat. Mus., vol. 59, no. 2358, June 27, 1921, pp. 29–39, pl. 8, text figs. 1–9.

COOKE, CHARLES WYTHE. Tertiary mollusks from the Leeward Islands and Cuba.
Carnegie Institution of Washington, pub. no. 291, 1919, pp. 103–156, pls. 1–16.

COOKE, MAY THACHER. Birds of the Washington region.
Proc. Biol. Soc. Washington, vol. 34, Mar. 31, 1921, pp. 1–21.

COLE, F. R. (See under M. C. Van Duzee.)

COVILLE, FREDERICK V. The influence of cold in stimulating the growth of plants.
Journ. Agric. Research, vol. 20, no. 2, Oct. 15, 1920, pp. 151–160, pls. 20–35.

COVILLE, FREDERICK V. A new hybrid—the Katherine blueberry.
Journ. Hered., vol. 8, no. 11, Nov.–Dec., 1920 (frontispiece, with explanatory text).

CRAM, ELOISE B. (See under Brayton H. Ransom.)

CUSHMAN, JOSEPH AUGUSTINE. Fossil foraminifera from the West Indies.
Carnegie Institution of Washington, pub. no. 291, 1919, pp. 21–71, pls. 1–15, text figs. 1–8.

——— The American species of Orthophragmina and Lepidocyclina.
Prof. Paper U. S. Geol. Surv., no. 125–D, July 26, 1920, pp. 39–108, pls. 7–35, text fig. 3.

——— Lower Miocene Foraminifera of Florida.
Prof. Paper U. S. Geol. Surv., no. 128–B, Aug. 12, 1920, pp. 67–74, pl. 11.

——— The foraminifera of the Atlantic Ocean, Part 2, Lituolidae.
Bull. U. S. Nat. Mus., no. 104, Oct. 6, 1920, pp. 1–111, pls. 1–18.

——— Foraminifera from the North Coast of Jamaica.
Proc. U. S. Nat. Mus., vol. 59, no. 2360, June 10, 1921, pp. 47–82, pls. 11–19, figs. 1–16.

CUSHMAN, R. A. The North American Ichneumon-flies of the tribes Lycorini, Polysphinctini, and Theroniini.
Proc. U. S. Nat. Mus., vol. 58, no. 2326, Sept. 3, 1920, pp. 7–48, pl. 2.

——— North American Ichneumon-flies, new and described, with taxonomic and nomenclatorial notes.
Proc. U. S. Nat. Mus., vol. 58, no. 2334, Nov. 8, 1920, pp. 251–292, fig. 1.

——— North American Ichneumon-flies of the tribe Ephialtini.
Proc. U. S. Nat. Mus., vol. 58, no. 2340, Nov. 10, 1920, pp. 327–362, pl. 21, fig. 1.

CUSHMAN, R. A. The males of the Ichneumonid genera Myersia and Thaumatotypidea, with descriptions of new species.
Proc. Ent. Soc. Washington, vol. 23, no. 5, May, 1921, pp. 109–112, fig. 1.

——— and S. A. ROHWER. Notes on Hellen's "Beitrage zur Kenntnis der Ichneumoniden Finlands: Subfamilie Pimplinae."
Insecutor Inscitae Menstruus, vol. 8, nos. 7–9, Oct. 15, 1920, pp. 161–164.

DALL, WILLIAM HEALEY. Pliocene and Pleistocene fossils from the Arctic coast of Alaska and the auriferous beaches of Nome, Northern Sound, Alaska.
Prof. Paper U. S. Geol. Surv., no. 125–C, Jan. 27, 1920, pp. 23–37, pls. 5, 6.

——— A new Alaskan Chiton.
Nautilus, vol. 34, July, 1920, pp. 22, 23.

——— Turritidae vs. Turridae.
Nautilus, vol. 34, July, 1920, pp. 27, 28.

——— Two new Pliocene Pectens from Nome, Alaska.
Nautilus, vol. 34, no. 3, Jan., 1921, pp. 76, 77.

——— Species names in the Portland catalogue: I, American.
Nautilus, vol. 34, no. 3, Jan., 1921, pp. 97–100.

——— Summary of the marine shell bearing mollusks of the northwest coast of America, from San Diego, Calif., to the Polar Sea, mostly contained in the collection of the United States National Museum, with illustrations of hitherto unfigured species.
Bull. U. S. Nat. Mus., no. 112, Feb. 24, 1921, pp. 1–217, pls. 1–22.

——— Molluscan species named in the Portland catalogue, 1786, part 2, foreign species.
Nautilus, vol. 34, no. 4, Apr., 1921, pp. 124–132.

DALL, WILLIAM HEALEY. Two new South American shells.
Nautilus, vol. 34, no. 4, Apr., 1921, pp. 132, 133.

——— New fossil invertebrates from San Quentin Bay, Lower California.
The West American Scientist, vol. 19, no. 2, Apr. 27, 1921, pp. 17, 18.

——— New shells from the Pliocene or Early Pleistocene of San Quentin Bay, Lower California.
The West American Scientist, vol. 19, no. 3, June 15, 1921, pp. 21–23.

DAUBNEY, Capt. R. The life histories of Dictyocaulus filaria (Rud.) and D. viviparus (Bloch).
Journ. Comp. Path. and Therap., vol. 33, no. 4, Dec. 31, 1920, pp. 225, 226, figs. 1, 2.

DE CANDOLLE, CASIMIR. New species of piper from Central America.
Bot. Gaz., vol. 70, no. 3, Sept., 1920, pp. 169–189.

DEWEY, W. A. Smithsonian Institution Exhibit of Homeopathy.
Journ. Amer. Inst. Homeopathy, vol. 13, o. 7, Jan., 1921, pp. 608, 609, illustrated.

DIETZ, H. F., and H. S. BARBER. A new avocado weevil from the Canal Zone.
Journ. Agric. Research, vol. 20, no. 2, Oct. 15, 920, pp. 114, 115, pls. 7–9.

DIXON, H. N. Reports upon two collections of mosses from British East Africa.
Smithsonian Misc. Colls., vol. 72, no. 3, Sept. 1, 1920, pp. 1–20, pls. 1, 2.

DYAR, HARRISON G. The classification of American Aedes (Diptera).
Insecutor Inscitiae Menstruus, vol. 8, nos. 7–9, July–Sept., 1920, pp. 103–106.

——— The American Aedes of the stimulans group (Diptera).
Insecutor Inscitiae Menstruus, vol. 8, nos. 7–9, July–Sept., 1920, pp. 106–120.

DYAR, HARRISON G. The larvae of Aedes campestris Dyar and Knab (Diptera).
Insecutor Inscitiae Menstruus, vol. 8, nos. 7–9, July–Sept., 1920, p. 120.

——— A note on Aedes niphadopsis Dyar and Knab (Diptera).
Insecutor Inscitiae Menstruus, vol. 8, nos. 7–9, July–Sept., 1920, pp. 138, 139.

——— The Grabhamia group of Psorophora (Diptera).
Insecutor Inscitiae Menstruus, vol. 8, nos. 7–9, July–Sept., 1920, pp. 140, 141.

——— A new Noctuid from Oregon (Lepidoptera).
Insecutor Inscitiae Menstruus, vol. 8, nos. 7–9, July–Sept., 1920, p. 146.

——— The Aedes of the mountains of California and Oregon (Diptera).
Insecutor Inscitiae Menstruus, vol. 8, nos. 10–12, Oct.–Dec., 1920, pp. 165–173.

——— A new Culex from Panama (Diptera).
Insccutor Inscitiae Menstruus, vol. 8, nos. 10–12, Oct.–Dec., 1920, pp. 173, 174.

——— Notes on Aedes fulvus Wiedemann (Diptera).
Insecutor Inscitiae Menstruus, vol. 8, nos. 10–12, Oct.–Dec., 1920, pp. 174, 175.

——— A collection of mosquitoes from the Philippine Islands (Diptera).
Insecutor Inscitiae Menstruus, vol. 8, nos. 10–12, Oct.–Dec., 1920, pp. 175–186.

——— New Lepidoptera, chiefly from Mexico, with synonymic notes.
Insecutor Inscitiae Menstruus, vol. 8, nos. 10–12, Oct.–Dec., 1920, pp. 187–198.

——— Note on the distribution of the flood mosquitoes of the West (Diptera).
Insecutor Inscitiae Menstruus, vol. 8, nos. 10–12, Oct.–Dec., 1920, pp. 198, 199.

DYAR, HARRISON G. The earliest name of the yellow-fever mosquito (Diptera).

Insecutor Inscitiae Menstruus, vol. 8, nos. 10–12, Oct.–Dec., 1920, p. 204.

——— Comment on "Notes on South American Mosquitoes in the British Museum." By J. Bonne-Wepster and C. Bonne.

Insecutor Inscitiae Menstruus, vol. 9, nos. 1–3, Jan.–Mar., 1921, pp. 26–31.

——— The male of Psorophora coffini Dyar and Knab (Diptera).

Insecutor Inscitiae Menstruus, vol. 9, nos. 1–3, Jan.–Mar., 1921, p. 31.

——— The swarming of Culex quinquefasciatus Say (Diptera).

Insecutor Inscitiae Menstruus, vol. 9, nos. 1–3, Jan.–Mar., 1921, p. 32.

——— Ring-legged Culex in Texas (Diptera).

Insecutor Inscitiae Menstruus, vol. 9, nos. 1–3, Jan.–Mar., 1921, pp. 32–34.

——— Three new mosquitoes from Costa Rica (Diptera).

Insecutor Inscitiae Menstruus, vol. 9, nos. 1–3, Jan.–Mar., 1921, pp. 34–36.

——— Notes on the North American species of Choeroporpa (Diptera).

Insecutor Inscitiae Menstruus, vol. 9, nos. 1–3, Jan.–Mar., 1921, pp. 37–39.

——— New American Noctuidae and notes (Lepidoptera).

Insecutor Inscitiae Menstruus, vol. 9, nos. 1–3, Jan.–Mar., 1921, pp. 40–45.

——— Two new American mosquitoes (Diptera).

Insecutor Inscitiae Menstruus, vol. 9, nos. 1–3, Jan.–Mar., 1921, pp. 46–50.

DYAR, HARRISON G. A new mosquito from East Africa (Diptera).

Insecutor Inscitiae Menstruus, vol. 9, nos. 4–6, Apr.–June, 1921, pp. 51, 52, fig. 1.

——— New forms of American moths (Lepidoptera).

Insecutor Inscitiae Menstruus, vol. 9, nos. 4–6, Apr.–June, 1921, pp. 59–68.

——— The American Aedes of the punctor group (Diptera).

Insecutor Inscitiae Menstruus, vol. 9, nos. 4–6, Apr.–June, 1921, pp. 69–80, pl. 1.

——— Note on Schizura apicalis G. and R. (Lepidoptera).

Insecutor Inscitiae Menstruus, vol. 9, nos. 4–6, Apr.–June, 1921, p. 99.

——— Change of preoccupied name (Lepidoptera).

Insecutor Inscitiae Menstruus, vol. 9, nos. 4–6, Apr.–June, 1921, p. 99.

——— Two new culex from Costa Rica (Diptera).

Insecutor Inscitiae Menstruus, vol. 9, nos. 4–6, Apr.–June, 1921, p. 100.

EIGENMANN, CARL H. The fishes of the rivers draining the western slope of the Cordillera Occidental of Colombia, Rios Atrato, San Juan, Dagua, and Patia.

Ind. Univ. Studies, vol. 7, no. 46, Sept., 1920, pp. 1–19, map.

——— A. The fresh-water fishes of Panama east of longitude 80° W. B. The Magdalena Basin and the horizontal and vertical distribution of its fishes.

Ind. Univ. Studies, vol. 7, no. 47, Dec., 1920, pp. 1–34, pls. 1–4.

EVERMANN, BARTON WARREN, and HOWARD WALTON CLARK. Lake Maxinkuckee, a physical and biological survey.

Dept. of Conservation, State of Ind., pub.

EVERMANN, BARTON WARREN—Con.
no. 7, vols. 1, 2, 1920; vol. 1, pp. 1–660, 9 half tone pls., 38 colored pls., 23 text figs., 1 map; vol. 2, pp. 1–512.

EWING, H. E. A Gamasid mite annoying to man.
Journ. Parisitol., vol. 6, 1920, pp. 195, 196, fig. 1.

——— New predaceous and parasitic mites of the superfamily Gamasoidea (Acarina).
Ent. News. vol. 31, no. 10, Dec., 1920, pp. 286–293, figs. 1–11.

——— The genus Trombicula Berlese, in America and the Orient.
Ann. Ent. Soc. Amer., vol. 13, no. 4, Dec., 1920, pp. 381–390, figs. 1–3.

FOSHAG, WILLIAM F. Sulphohalite from Searles Lake, Calif.
Amer. Journ. Sci., vol. 49, Jan., 1920, pp. 76, 77.

——— Thaumasite (and spurrite) from Crestmore, Calif.
Amer. Mineralogist, vol. 5, Apr., 1920, pp. 80, 81.

——— Apthitalite (Glaserite) from Searles Lake, Calif.
Amer. Journ. Sci., vol. 49, May, 1920, pp. 367, 368.

——— Illustration of the hexagonal system. Hematite from New Mexico.
Amer. Mineralogist, vol. 5, no. 8, Aug., 1920, pp. 149–152, text, fig. 31.

——— The chemical composition of hydrotalcite and the hydrotalcite group of minerals.
Proc. U. S. Nat. Mus., vol. 58, no. 2329, Sept. 9, 1920, pp. 147–153.

——— Some recent accessions to the mineral collections of the United States National Museum.
Proc. U. S. Nat. Mus., vol. 58, no. 2337, Nov. 13, 1920, pp. 303–305, pls. 18–20.

FOSHAG, WILLIAM F. Plazolite, a new mineral.
Amer. Mineralogist, vol. 5, no. 11, Nov., 1920, pp. 183–185.

——— The origin of the colemanite deposits of California.
Econ. Geol., vol. 16, no. 3, Apr.-May, 1921, pp. 199–214.

——— The isomorphic relations of the sulphosalts of lead and copper.
Amer. Journ. Sci., vol. 1, May, 1921, pp. 444–446.

FOWLER, HENRY W. and BARTON A. BEAN. A small collection of fishes from Soochow, China, with descriptions of two new species.
Proc. U. S. Nat. Mus., vol. 58, no. 2338, Nov. 3, 1920, pp. 307–321, figs. 1, 2.

GAHAN, A. B. New reared parasitic Hymenoptera from the Philippines.
Philippine Journ. Sci., vol. 17, no. 4, Oct., 1920, pp. 343–351.

——— On the identity of several species of Chalcidoidea (Hymenoptera).
Proc. Ent. Soc. Washington, vol. 22, no. 9, Dec., 1920, pp. 235–243.

——— Remarks on the genus Pleurotropis with description of a parasite of Trachelus tabidus Fabricius (Hymenoptera: Chalcidoidea).
Proc. Ent. Soc. Washington, vol. 23, no. 5, May, 1921, pp. 113–120, figs. 1, 2.

GIDLEY, JAMES WILLIAMS. New species of Claenodonts from the Fort Union (Basa Eocene) of Montana.
Bull. Amer. Mus. Nat. Hist., vol. 41, Dec. 8, 1919, pp. 541–555, pl. 28, text figs. 1–10.

——— Pleistocene peccaries from the Cumberland cave deposit.
Proc. U. S. Nat. Mus., vol. 57, no. 2324, June 18, 1920, pp. 651–678, pls. 54, 55.

——— (See also under Gerrit S. Miller.)

GILBERT, CHARLES HENRY and CARL L. HUBBS. The Macrouroid fishes of the Philippine Islands and the East Indies.

Bull. U. S. Nat. Mus., no. 100, vol. 1, pt. 7, Oct. 5, 1920, pp. 369–588, figs. 1–40.

GILMORE, CHARLES W. Dimetrodon gigas, a giant spiny lizard from Texas bone beds.

Sci. Amer. Suppl., no. 2271, July 12, 1919, pp. 20, 21, 3 figs.

——— New fossil turtles, with notes on two described species.

Proc. U. S. Nat. Mus., vol. 56, no. 2292, July 30, 1919, pp. 113–132, pls. 29–37, text figs. 1–8.

——— An ornithomimid dinosaur in the Potomac of Maryland.

Science (n. s.), vol. 50, no. 1295, Oct. 24, 1919, pp. 394, 395.

——— A mounted skeleton of Dimetrodon gigas in the United States National Museum, with notes on the skeletal anatomy.

Proc. U. S. Nat. Mus., vol. 56, no. 2300, Dec. 15, 1919; pp. 525–539, pls. 70–73, text figs. 1–8.

——— Reptilian faunas of the Torrejon, Puerco, and underlying Upper Cretaceous formations of San Juan County, N. Mex.

Prof. Paper U. S. Geol. Surv., no. 119, 1919, pp. 1–71, pls. 1–26, text figs. 1–33.

——— Osteology of the carnivorous Dinosauria in the United States National Museum, with special reference to the genera Antrodemus (Allosaurus) and Ceratosaurus.

Bull. U. S. Nat. Mus., no. 110, Sept. 9, 1920, pp. i–xi, 1–159, pls. 1–36, text figs. 1–79.

——— A new horned dinosaur from Canada.

Sci. Amer. Monthly, vol. 3, no. 1, Jan., 1921, pp. 7, 8, text figs. 1–3.

GILMORE, CHARLES W. An extinct sea lizard from western Kansas.

Sci. Amer., vol. 124, no. 14, Apr. 2, 1921, pp. 273 and 280, 3 text figs.

——— Fossil footprints of Texas.

Sci. Amer., vol. 124, no. 17, Apr. 23, 1921, pp. 333 and 340, 4 text figs.

GIRAULT, A. A. New Serphidoid, Cynipoid and Chalcidoid Hymenoptera.

Proc. U. S. Nat. Mus., vol. 58, no. 2332, Sept. 9, 1920, pp. 177–216.

GREENE, CHARLES T. A new genus of Bombyliidae (Diptera).

Proc. Ent. Soc. Washington, vol. 23, no. 1, Jan., 1921, pp. 23, 24, fig. 1.

——— Dipterous parasites of saw flies.

Proc. Ent. Soc. Washington, vol. 23, no. 2, Feb., 1921, pp. 41–43.

——— Further notes on Ambopogon hyperboreous Greene (Diptera).

Proc. Ent. Soc. Washington, vol. 23, no. 5, Apr., 1921, pp. 107–109.

——— Two new species of Diptera.

Proc. Ent. Soc. Washington, vol. 23, no. 6, June, 1921, pp. 125–127, fig. 1.

——— Common flies and how to tell them apart.

Chapter 9 of *Sanitary Entomology*, by W. D. Pierce, pp. 138–152, pl. 4, figs. 10–30.

——— (See also under W. D. Pierce.)

GRINNELL, JOSEPH. Revised list of the species in the genus Dipodomys.

Journ. Mam., vol. 2, no. 2, May 2, 1921, pp. 94–97.

GRISCOM, LUDLOW, and J. T. NICHOLS. A revision of the seaside sparrows.

Abstr. Proc. Linn. Soc. New York, no. 32, Nov. 3, 1920, pp. 18–30.

HALL, MAURICE C. Parasitic worms of swine and diseases due to them.
Poland China Journ., vol. 6, no. 23, July 25, 1920, pp. 196, 197, 200, figs. 1, 2.

——— Apparent atrophy of spicules associated with increasingly close and permanent union of the male and female Syngamus.
Journ. Parasitol., vol. 7, no. 2, Jan., 1921, p. 100.

——— Parasites and parasitic diseases of sheep.
Farmers' Bull., U. S. Dept. Agric., no. 1150, Jan. 4, 1921, pp. 1–53, figs. 1–34.

——— Carbon tetrachlorid for the removal of parasitic worms, especially hookworms.
Journ. Agric. Research, U. S. Dept. Agric., vol. 21, no. 2, Apr. 15, 1921, pp. 157–175.

——— (See also under Brayton H. Ransom.)

HAUSMAN, LEON AUGUSTUS. A micrological investigation of the hair structure of the Monotremata.
Amer. Journ. Anat., vol. 27, Sept., 1920, pp. 463–495.

——— Mammal fur under the microscope.
Natural History, vol. 20, no. 4, Sept.–Oct., 1920, pp. 434–444, 9 figs.

——— Structural characteristics of the hair of mammals.
Amer. Nat., vol. 54, Nov.–Dec., 1920, pp. 496–523, pls. 1–7.

HAY, OLIVER P. Descriptions of some mammalian and fish remains from Florida of probably Pleistocene age.
Proc. U. S. Nat. Mus., vol. 56, no. 2291, July 31, 1919, pp. 103–112, pls. 26–28.

——— Descriptions of some Pleistocene vertebrates found in the United States.
Proc. U. S. Nat. Mus., vol. 58, no. 2328, Oct. 12, 1920, pp. 83–146, pls. 3–11, text figs. 1–4.

HAY, WILLIAM PERRY. The Crawfishes (in "Lake Maxinkuckee, a physical and biological survey").
Dept. of Conservation, State of Ind., pub. no. 7, vol. 2, pp. 83–86.

HEINRICH, CARL. Coleophora notes with descriptions of two new species (Lepid.).
Proc. Ent. Soc. Washington, vol. 22, no. 7, Oct., 1920, pp. 159–162.

——— The pea moth, a new species.
Can. Ent., vol. 52, Nov., 1920, pp. 257, 258, figs. 24, 25.

——— Synonymical note in Oecophoridae (Lepid.).
Proc. Ent. Soc. Washington, vol. 22, no. 9, Dec., 1920, p. 232.

——— New synonymy in a recent paper on the European corn-borer (Lepid.).
Ent. News, vol. 32, no. 2, Feb., 1921, pp. 57, 58.

——— Some Lepidoptera likely to be confused with the pink bollworm.
Journ. Agric. Research, vol. 20, no. 11, Mar. 1, 1921, pp. 807–836, pls. 93–109.

HENDERSON, JOHN B. A monograph of the east American Scaphopod mollusks.
Bull. U. S. Nat. Mus., no. 111, Oct. 6, 1920, pp. 1–177, pls. 1–20.

——— and PAUL BARTSCH. A classification of the American operculate land mollusks of the family Annulariidae.
Proc. U. S. Nat. Mus., vol. 58, no. 2327, July 8, 1920, pp. 49–82.

HEWETT, D. F. and EARL V. SHANNON. Orientite, a new hydrous silicate of manganese and calcium from Cuba.
Amer. Journ. Sci., vol. 1, June, 1921, pp. 491–506, text figs. 1–5.

HITCHCOCK, A. S. Genera and supergenera.
Science, (n. s.), vol. 52, no. 1335, July 30, 1920, pp. 107, 108.

HITCHCOCK, A. S. Report on a recent trip to British Guiana.
Journ. N. Y. Bot. Gard., vol. 21, no. 247, July, 1920, pp. 129–137, pls. 248, 249.

——— Revisions of North American grasses: Isachne, Oplismenus, Echinochloa, and Chaetochloa.
Contr. U. S. Nat. Herb., vol. 22, pt. 3, Nov. 1, 1920, pp. 115–208, pls. 25–32, figs. 21–62.

——— A manual of farm grasses.
Washington, 1921, pp. i–x, 1–175, figs. 1–35.

——— The type concept in systematic botany.
Amer. Journ. Bot., vol. 8, no. 5, May, 1921, pp. 251–255.

HOAGLAND, RUTH A. Polychaetous annelids collected by the United States Fisheries steamer *Albatross* during the Philippine expedition of 1907–1909.
Bull. U. S. Nat. Mus., no. 100, vol. 1, pt. 9, Mar. 24, 1921, pp. 603–635, pls. 46–52.

HOLLISTER, N. Popular Guide, National Zoological Park, Washington, D. C.
Published by the Smithsonian Institution, Oct., 1920, pp. 1–59, pls. 1–46, map.

——— The names for two genera of African Artiodactyla.
Proc. Biol. Soc. Washington, vol. 34, Mar. 31, 1921, pp. 77–80.

——— A new name for the West African pygmy squirrel.
Proc. Biol. Soc. Washington, vol. 34, June 30, 1921, p. 135.

——— (See also under Gerrit S. Miller, jr.)

HOUGH, WALTER. The cliff-dweller housekeeper.
The Amer. Indian Mag., vol. 7, no. 4, Aug., 1920, pp. 7–10, 7 text figs.

——— Torches and candles. Early development of artificial lighting facilities.
Sinclair's Mag., vol. 4, no. 5, Dec., 1920, pp. 10–15, 6 text figs.

HOUGH, WALTER. Lamps—new and old.
Sinclair's Mag., vol. 4, no. 6, Jan., 1921, pp. 11–15, 4 text figs.

HOWE, MARSHALL A. Tertiary calcareous algae from the islands of St. Bartholomew, Antigua, and Anguilla.
Carnegie Institute of Washington, pub. no. 291, 1919, pp. 9–19, pls. 1–6.

HOWELL, ARTHUR H. Description of a new species of beach mouse from Florida.
Journ. Mam., vol. 1, no. 5, Nov., 1920, pp. 237–240, fig. 1.

HRDLIČKA, ALÉS. The anthropology of Asiatic peoples.
Anat. Sup. to *China Med. Journ.*, July, 1920, pp. 1–10.

——— The anthropological problems of the Far East.
Science (n. s.), vol. 52, no. 1355, Dec. 17, 1920, pp. 567–574.

——— Shovel-shaped teeth.
Amer. Journ. Phys. Anthrop., vol. 3, no. 4, Oct.–Dec., 1920, pp. 429–465, pls. 1–6.

——— Physical Anthropology: Its scope and aims; its history and present status in America.
Wistar Inst. Anat. & Biology, 1920, pp. 1–164, pls. 1–2.

——— Anthropometry.
Wistar Inst. Anat. & Biology, 1920, pp. 1–163, text figs. 1–20.

HUBBS, CARL L. (See under Charles Henry Gilbert.)

HYSLOP, J. A. Genotypes of the Elaterid beetles of the world.
Proc. U. S. Nat. Mus., vol. 58, no. 2353, Apr. 9, 1921, pp. 621–680.

JACKSON, HARTLEY H. T. The status of Merriam's shrew. (Sorex merriami.)
Journ. Mam., vol. 2, no. 1, Feb. 10, 1921, pp. 29–31, fig. 1.

JOHANSEN, FRITS. The larger fresh-water crustacea of Canada and Alaska.

Canadian Field-Nat., vol. 34, no. 7, Oct., 1920, (=Feb. 9, 1921), pp. 126–132.

——— The larger fresh-water crustacea from Canada and Alaska, II—Isopoda.

Canadian Field-Nat., vol. 34, no. 8, Nov., 1920, (=Mar. 11, 1921), pp. 145–148.

——— The larger fresh-water crustacea from Canada and Alaska, III—Euphyllopoda (Branchiopoda).

Canadian Field-Nat., vol. 35, no. 2, Feb., 1921 (=June 22, 1921), pp. 21–30.

——— Fresh-water crustacea from Canada.

Canadian Field-Nat., vol. 35, no. 2, Feb., 1921 (=June 22, 1921), p. 36.

JORDON, ERIC KNIGHT. Notes on a collection of shells from Trinidad, Calif.

Proc. U. S. Nat. Mus., vol. 58, no. 2325, Sept. 8, 1920, pp. 1–5, pl. 1.

KENDALL, WILLIAM CONVERSE. Peritoneal membranes, ovaries, and oviducts of Salmoniod fishes and their significance in fish-cultural practices.

Bull. Bur. Fisheries, vol. 37, doc. no. 901, Mar. 28, 1921, pp. 184–208, figs. 1–11.

KNOWLTON, F. H. A catalogue of the Mesozoic and Cenozoic plants of North America.

Bull. U. S. Geol. Surv., no. 696, 1919, pp. 1–815.

——— Evolution of geologic climates.

Bull. Geol. Soc. Amer., vol. 30, Dec. 31, 1919, pp. 499–566.

——— A dicotyledonous flora in the type section of the Morrison formation.

Amer. Journ. Sci., vol. 49, Mar., 1920, pp. 189–194.

LARSEN, ESPER S., and EARL V. SHANNON. Boussingaultite from South Mountain, near Santa Paula, Calif.

Amer. Mineralogist, vol. 5, no. 7, July, 1920, pp. 127–129.

LEWTON, FREDERICK L. The history of kidney cotton.

Journ. Washington Acad. Sci., vol. 10, no. 21, Dec. 19, 1920, pp. 591–597, figs. 1, 2.

LINCOLN, FREDERICK C. A peculiarly marked example of Dumetella carolinensis.

Auk, vol. 37, no. 4, Oct., 1920, p. 593.

McATEE, W. L., and F. P. METCALF. Notes on cocklebur (Ambrosiaceae; Xanthium) of the District of Columbia and vicinity.

Proc. Biol. Soc. Washington, vol. 33, Dec. 30, 1920, pp. 177–179.

McATEE, W. L. (See under C. P. Alexander.)

McEWAN, EULA DAVIS. A study of the brachiopod genus Platystrophia.

Proc. U. S. Nat. Mus., vol. 56, no. 2297, Sept. 2, 1919, pp. 383–448, pls. 42–52.

MANN, WILLIAM M. The occurrence of Mallophaga on a dragon-fly.

Ent. News, vol. 31, no. 9, Nov., 1920, p. 252.

——— Additions to the ant fauna of the West Indies and Central Amrerica.

Bull. Amer. Mus. Nat. Hist., vol. 42, art. 8, Dec. 20, 1920, pp. 403–439, figs. 1–9.

——— The ants of the Fiji Islands.

Bull. Mus. Comp. Zool., vol. 64, no. 5, Feb., 1921, pp. 401 – 499, figs. 1–38.

——— A new genus of Termite guest from Fiji.

Psyche, vol. 28, Apr., 1921, pp. 54–56, fig. 1.

MARSHALL, WILLIAM B. New fresh-water shells from Guatamala.

Proc. U. S. Nat. Mus., vol. 58, no. 2336, Nov. 13, 1920, pp. 301, 302, pl. 17.

MAXON, WILLIAM R. New selaginellas from the western United States.
Smithsonian Misc. Colls., vol. 72, no. 5, Dec. 22, 1920, pp. 1–10, pls. 1–6.

——— Notes on American ferns—XVI.
Amer. Fern Journ., vol. 11, no. 1, Mar., 1921, pp. 1–4.

——— A neglected fern paper.
Proc. Biol. Soc. Washington, vol. 34, June 30, 1921, pp. 111–113.

MAY, HENRY G. Observations on the nematode genus Nematodirus, with descriptions of new species.
Proc. U. S. Nat. Mus., vol. 58, no. 2350, Nov. 30, 1920, pp. 577–588, pls. 29–35.

MERRELL, CHARLES G. Medicinal Division of the National Museum.
Amer. Journ. Pharmacy, vol. 92, no. 9, Sept., 1920, pp. 661–665, 1 fig.
Journ. Amer. Pharmaceutical Assoc., vol. 9, no. 9, Sept., 1920, pp. 896–899, 1 fig.
Northwestern Druggist, vol. 28, no. 9, Sept., 1920, pp. 27, 28, 1 fig.

MERRILL, GEORGE PERKINS. Second report on researches on the chemical and mineralogical composition of meteorites.
Memoirs. Nat. Acad. Sci., vol. 14, mem. 4, 1919, pp. i–vii, 1–15, pls. 1–5, text figs. 1–4.

——— The Cumberland Falls, Whitley County, Ky., meteorite.
Proc. U. S. Nat. Mus., vol. 57, no. 2306, June 15, 1920, pp. 97–105, pls. 14–18, text fig. 1.

——— The composition and structure of meteorites compared with that of terrestrial rocks.
Ann. Rep. Smithsonian Inst., for 1917, (1919,) pp. 175–188, pls. 1–9, text figs. 1–3.

MERRILL, GEORGE PERKINS. Contributions to a history of American State geological and natural history surveys.
Bull. U. S. Nat. Mus., no. 109, Aug. 2, 1920, pp. i–xviii, 1–549, pls. 1–37.

——— On chondrules and chondritic structure in meteorites.
Proc. Nat. Acad. Sci., vol. 6, no. 8, Aug., 1920, pp. 449–472, pl. 1, text figs. 1–17.

——— A retrospective view of the origin of Meteor Crater, Ariz.
Pub. Astr. Soc., Pacific, no. 189, Oct., 1920, pp. 1–6, pl. 7, text fig. 1.

——— Notes on the meteorite of Estherville, Iowa, with especial reference to its included "peckhamite" and probable metamorphic nature.
Proc. U. S. Nat. Mus., vol. 58, no. 2341, Nov. 11, 1920, pp. 363–370, pls. 22–24.

METCALF, F. P. (See under W. L. McAtee.)

MILLER, GERRIT S., Jr., and JAMES W. GIDLEY. A new rodent from the Upper Oligocene of France.
Bull. Amer. Mus. Nat. Hist., vol. 41, Dec. 29, 1919, pp. 595–601, pl. 34, text figs. 1–3.

——— Conflicting views on the problem of man's ancestry.
Amer. Journ. Phys. Anthro., vol. 3, no. 2, Aug., 1920, pp. 213–245.

——— [Note on the relationship of the European cave bears to the American grizzly and brown bears.]
Journ. Mam., vol. 1, no. 5, Nov., 1920, pp. 228, 229.

——— and N. HOLLISTER. Descriptions of sixteen new murine rodents from Celebes.
Proc. Biol. Soc. Washington, vol. 34, Mar. 31, 1921, pp. 67–76.

——— ——— Twenty new mammals collected by H. C. Raven in Selebes.
Proc. Biol. Soc. Washington, vol. 34, June 30, 1921, pp. 93–104.

MITMAN, CARL W. Ancestors of the Liberty motor.
Sci. Amer. Monthly, vol. 3, no. 2, Mar., 1921, pp. 247–250, illustrated.

MORGAN, THOMAS H. Variations in the secondary sexual characters of the Fiddler crab.
Amer. Nat., vol. 54, no. 632, May–June, 1920, pp. 220–246, text figs. 1–6.

——— Variation in juvenile Fiddler crabs.
Amer. Nat., vol. 55, no. 636, Jan.–Feb., 1921, pp. 82, 83.

MUESEBECK, C. F. W. A revision of the North American species of Ichneumon-flies belonging to the genus Apanteles.
Proc. U. S. Nat. Mus., vol. 58, no. 2349, Jan. 4, 1921, pp. 483–576.

NICHOLS, J. T. (See under Ludlow Griscom.)

NOBLE, G. K. (See under Thomas Barbour.)

OBERHOLSER, HARRY C. Description of a new Clapper rail from Florida.
Proc. Biol. Soc. Washington, vol. 33, July 24, 1920, pp. 33, 34.

——— Descriptions of five new subspecies of Cyornis.
Proc. Biol. Soc. Washington, vol. 33, Dec. 30, 1920, pp. 85–87.

——— Notes on North American birds. X.
Auk, vol. 38, no. 1, Jan., 1921, pp. 79–82.

——— The geographic races of Cyanocitta cristata.
Auk, vol. 38, no. 1, Jan., 1921, pp. 83–89.

PALACHE, CHARLES, and EARL V. SHANNON. Higginsite, a new mineral of the olivenite group.
Amer. Mineralogist, vol. 5, no. 9, Sept., 1920, pp. 155–157, text figs. 1, 2.

PEARSE, A. S. The fishes of Lake Valencia, Venezuela.
Univ. Wis. Studies in Science, no. 1, Sept., 1920, pp. 1–51.

PENARD, THOMAS E. (See under Outram Bangs.)

PENNELL, FRANCIS W. Scrophulariaceae of Colombia–I.
Proc. Acad. Nat. Sci. Philadelphia, 1920, Oct. 4, 1920, pp. 136–188.

PIERCE, W. D., and C. T. GREENE. What we should know about mosquito biology.
Chapter 18 of *Sanitary Entomology,* pp. 266–274, figs. 48–58.

PILSBRY, HENRY A. Barnacles of the San Juan Islands, Wash.
Proc. U. S. Nat. Mus., vol. 59, no. 2362, June 27, 1921, pp. 111–115, pl. 20, text. figs. 1, 2.

PIPER, C. V. A new genus of Leguminosae.
Journ. Washington Acad. Sci., vol. 10, no. 15, Sept. 19, 1920, pp. 432, 433.

——— Some new plants from the Pacific Northwest.
Proc. Biol. Soc. Washington, vol. 33, Dec. 30, 1920, pp. 103–106.

——— Two new legumes from Mexico and Costa Rica.
Proc. Biol. Soc. Washington, vol. 34, March 31, 1921, pp. 41, 42.

PITTIER, H. Notes on the genus Swartzia in Panama and Guatemala.
Journ. Washington Acad. Sci., vol. 11, no. 7, Apr. 4, 1921, pp. 155–160.

——— Two new species of Bursera.
Journ. Washington Acad. Sci., vol. 11, no. 10, May 19, 1921, pp. 229, 230.

RAFFENSPERGER, H. B. (See under Brayton H. Ransom.)

RANSOM, BRAYTON H. Reactions following injections of parasite material.
Journ. Parasitol., vol. 6, no. 4, Aug. 14, 1920, p. 199.

——— Gapeworm in turkeys and chickens.
Journ. Parasitol., vol. 6, no. 4, Aug. 14, 1920, pp. 200, 201.

RANSOM, BRAYTON H. Zur Frage des Vorkommens lebender Trichinen in gefrorenem amerikanischen Schweinefleisch und der Anwendung der Kälte als Mittel zur Verhütung der Trichinengefahr.

Ztschr. f. Fleisch.- u. Milchhyg., vol. 31, no. 4, Nov. 15, 1920, pp. 46, 47.

——— Intestinal lesions in calves due to Cooperia punctata.

Journ. Parasitol., vol. 7, no. 2, Jan., 1921, p. 96.

——— The occurrence of Oncocerca in cattle in the United States.

Journ. Parasitol., vol. 7, no. 2, Jan., 1921, p. 98.

——— The Metazoan parasites of man.

Nelson Loose-Leaf Med., vol. 2, pp. 381–433, figs. 1–39.

——— Relation of insects to the parasitic worms of vertebrates.

Chapter 5 of *Sanitary Entomology*, by W. Dwight Pierce, pp. 51–96.

——— The turkey an important factor in the spread of gapeworms.

Bull. U. S. Dept. Agric., no. 939, Apr. 23, 1921, pp. 1–13.

——— and ELOISE B. CRAM. The course of migration of Ascaris larvae from the intestine to the lungs. (Authors' abstract.)

Program, Abstr. Papers, Amer. Soc. Zool., p. 39.
Anat. Rec., vol. 20, no. 2, Jan. 20, 1921, p. 207.

——— and MAURICE C. HALL. Parasitic diseases in their relation to the live-stock industry of the southern United States.

Journ. Amer. Vet. Med. Assn., vol. 57 (n. s.), vol. 10, no. 4, July, 1920, pp. 394–413.

———, B. SCHWARTZ, and H. B. RAFFENSPERGER. Effects of pork-curing processes on trichinae.

Bull. U. S. Dept. Agric., no. 880, Sept. 10, 1920, pp. 1–37.

RATHBUN, MARY J. West Indian Tertiary decapod crustaceans.

Carnegie Institution of Washington, Pub. no. 291, 1919, pp. 157–184, pls. 1–9.

——— Stalk-eyed Crustaceans of the West Indies.

Rapport betreffende sen voorloopig onderzoek naar den toestand van de Visscherij en de Industrie van Zeeproducten in de Kolonie Curaçao, ingevolge het Ministerieel Besluit van 22, November, 1904, Uitgebracht Door, Prof. Dr. J. Boeke, Hoogleeraar aan de Rijks-Universiteit te Utrecht, Tweede Gedeelte.

[Report on the fisheries and aquatic resources of the Dutch West Indies, Curaçao, part 2] 1919 [1920] pp. 317–349, text. figs. 1–5.

——— New species of spider crabs from the Straits of Florida and Caribbean Sea.

Proc. Biol. Soc. Washington, vol. 33, July 24, 1920, pp. 23, 24.

——— Additions to West Indian Tertiary decapod crustaceans.

Proc. U. S. Nat. Mus., vol. 58, no. 2343, Nov. 11, 1920, pp. 381–384, pl. 25.

——— On intersexes in Fiddler crabs.

Amer. Nat., vol. 55, no. 636, Jan.–Feb., 1921, pp. 80–82.

——— Report on the Brachyura collected by the Barbados-Antigua expedition from the University of Iowa in 1918.

Univ. Iowa Studies; Studies in Nat. Hist., vol. 9, no. 5, Mar. 15, 1921, pp. 65–90, pls. 1–3.

RAVENEL, W. DEC. Report on the progress and condition of the United States National Museum for the year ending June 30, 1919.

May 25, 1920, pp. 1–211, 7 pls.

RAVENEL, W. DEC. Report on the progress and condition of the United States National Museum for the year ending June 30, 1920.

Dec. 1, 1920, pp. 1–210, 1 pl.

RICHARDSON [SEARLE], HARRIET, Isopod Crustaceans of the Dutch West Indies.

Rapport betreffende een voorloopig onderzoek naar den toestand van de Visscherij en de Industrie van Zeeproducten in de Kolonie Curaçao, ingevolge het Ministerieel Besluit van 22 November, 1904, Uitgebracht Door, Prof. Dr. J. Boeke, Hoogleeraar aan de Rijks-Universiteit te Utrecht, Tweede Gedeelte.

[Report on the fisheries and aquatic resources of the Dutch West Indies (Curaçao), part 2] 1919 [1920] p. 350.

——— (See also under Harriet Richardson Searle.)

RIDGWAY, ROBERT. Diagnoses of some new genera of birds.

Smithsonian Misc. Colls., vol. 72, no. 4, Dec. 6, 1920, pp. 1–4.

RILEY, J. H. Four new birds from the Philippines and Greater Sunda Islands.

Proc. Biol. Soc. Washington, vol. 33, July 24, 1920, pp. 55–57.

——— Five new genera of birds.

Proc. Biol. Soc. Washington, vol. 34, Mar. 31, 1921, pp. 51–53.

——— Four new birds from Celebes.

Proc. Biol. Soc. Washington, vol. 34, Mar. 31, 1921, pp. 55–57.

ROBINSON, B. L. Further diagnoses and notes upon tropical American Eupatorieae.

Contr. Gray Herb. (n. s.), no. 61, Dec. 30, 1920, pp. 1–30.

ROBINSON, B. L. The Eupatoriums of Bolivia.

Contr. Gray Herb. (n. s.), no. 61, Dec. 30, 1920, pp. 30–80.

ROHWER, S. A. Notes on the Harris collection of sawflies, and the species described by Harris.

Journ. Wash. Acad. Sci., vol. 10, no. 18, Nov. 4, 1920, pp. 508–518.

——— Chalybion Dahlbom not a synonym of Sceliphron Klug (Hym.).

Ent. News, vol. 32, 1921, p. 27.

——— Descriptions of new Chalcidoid flies from Coimbatore, South India.

Ann. Mag. Nat. Hist., ser. 9, vol. 7, Jan., 1921, pp. 123–135, figs. 1–9.

——— The nomenclature of supergeneric names.

Journ. Wash. Acad. Sci., vol. 11, no. 5, Mar. 4, 1921, pp. 106–109.

——— Notes and descriptions of neotropical sawflies of the subfamily Perreyiinae.

Proc. U. S. Nat. Mus., vol. 59, no. 2366, June 20, 1921, pp. 161–167.

——— Notes on sawflies, with descriptions of new genera and species.

Proc. U. S. Nat. Mus., vol. 59, no. 2361, June 28, 1921, pp. 83–109.

——— (See also under R. A. Cushman.)

ROSE, J. N. Epiphyllum hookeri.

Addisonia, vol. 5, no. 4, Dec. 30, 1920, pp. 63, 64, pl. 192.

——— Botanical explorations in Ecuador.

Pan American Bulletin, vol. 52, no. 1, Jan., 1921, pp. 24–34, pl. 1–4.

——— (See also under N. L. Britton.)

SAFFORD, WILLIAM E. Synopsis of the genus Datura.

Journ. Washington Acad. Sci., vol. 11, no. 8, Apr. 19, 1921, pp. 173–189, figs. 1–3.

SASAKI, MADOKA. Report of cephalopods collected during 1906 by the United States Bureau of Fisheries steamer *Albatross* in the northwestern Pacific.
Proc. U. S. Nat. Mus., vol. 57, no. 2310, Sept. 3, 1920, pp. 163–203, pls. 23–26.

SCHAUS, WILLIAM. New species of Notodontidae from Central and South America (Lepidoptera).
Insecutor Inscecitiae Menstruus, vol. 8, nos. 7–9, July–Sept., 1920, pp. 147–161.

——— Descriptions of two new species of butterflies from Tropical America.
Journ. Wash. Acad. Sci., vol. 10, no. 15, Sept. 19, 1920, pp. 434, 435.

——— New species of neotropical Pyraustinae (Lepid.).
Proc. Ent. Soc. Washington, vol. 22, no. 7, Oct., 1920, pp. 172–190.

——— New species of neotropical Pyraustinae (Lepid.).
Proc. Ent. Soc. Washington, vol. 22, no. 8, Nov., 1920, pp. 200–222.

——— New species of Heterocera from South America.
Insecutor Inscitiae Menstruus, vol. 9, nos. 4–6, Apr.–June, 1921, pp. 52–58.

SCHMITT, WALDO L. The marine decapod crustacea of California.
Univ. California Pub. Zool., vol. 23, May 21, pp. 1–470, pls. 1–50, text figs., 1–165.

SCHWARTZ, BENJAMIN. Active substances in Macracanthorhynchus.
Journ. Parasitol., vol. 7, no. 2, Jan., 1921, p. 97.

——— Antibody production by ascarids.
Journ. Parasitol., vol. 7, no. 2, Jan., 1921, pp. 98, 99.

——— Effects of X-rays on trichinae.
Journ. Parasitol., vol. 7, no. 2, Jan., 1921, pp. 100, 101.

SCHWARTZ, BENJAMIN. Hemolysins from parasitic worms.
Arch. Int. Med., vol. 26, no. 4, pp. 431–435.

——— Effects of X-rays on trichinae.
Journ. Agric. Research, U. S. Dept. Agric., vol. 20, no. 11, Mar. 1, 1921, pp. 845–854.

——— Effects of secretions of certain parasitic nematodes on coagulation of blood.
Journ. Parasitol., vol. 7, no. 3, Mar., 1921, pp. 144–150.

——— (See also under Brayton H. Ransom.)

SCHWARZ, E. A. A new scolytid beetle from tropical Florida.
Proc. Ent. Soc. Washington, vol. 22, no. 8, Nov., 1920, pp. 222–226, figs. 1, 2.

SEARLE, Mrs. HARRIET RICHARDSON. Description d'un nouveau genre de crustace Isopode de la Nouvelle-Zemble et appartenant a la famille de Munnopsidae.
Bull. Mus. National Hist. Natur., Paris, vol. 25, Annee. 1919, no. 7, et dernier, Dec., 1919, pp. 569–573, text, figs. 1–13. (This is a reprint, except for a slight change of title, of a paper published as no. 227, Bull. Inst. Oceanog., Monaco, Mar. 30, 1912.)

——— (See also under Harriet Richardson.)

SHANNON, EARL V. On coarse gabbroid diabase in Westfield, Massachusetts.
Journ. Geol., vol. 27, no. 7, Oct.–Nov., 1919, pp. 579–581.

——— The occurrence of bindhiemite as an ore mineral.
Econ. Geol., vol. 15, no. 1, Jan., 1920, pp. 88–93.

——— A new description of amesite.
Amer. Journ. Sci., vol. 49, Feb., 1920, pp. 96–98.

——— Bismutoplagionite, a new mineral.
Amer. Journ. Sci., vol. 49, Mar., 1920, pp. 166–168.

SHANNON, EARL V. Diabantite, stilphonomelane, and chalcodite of the trap quarries of Westfield, Massachusetts.

Proc. U. S. Nat. Mus., vol. 57, no. 2316, June 15, 1920, pp. 397–403.

——— Petrography of some lamprophyric dike rocks of the Coeur d'Alene mining district, Idaho.

Proc. U. S. Nat. Mus., vol. 57, no. 2318, Sept. 2, 1920, pp. 475–495, pls. 37–39, text figs. 1–4.

——— An occurrence of naumannite in Idaho.

Amer. Journ. Sci., vol. 50, Nov., 1920, pp. 390, 391.

——— Boulangerite, bismutoplagionite, naumannite and a silver-bearing variety of jamesonite.

Proc. U. S. Nat. Mus., vol. 58, no. 2351, Nov. 3, 1920, pp. 589–607.

——— Some minerals from the old tungsten mine at Long Hill in Trumbull, Conn.

Proc. U. S. Nat. Mus., vol. 58, no. 2348, Nov. 9, 1920, pp. 469–482.

——— Recent accessions in the division of applied geology.

Proc. U. S. Nat. Mus., vol. 58, no. 2339, Nov. 10, 1920, pp. 323–326.

——— Analyses and optical properties of amesite and corundophilite from Chester, Mass., and of chromium-bearing chlorites from California and Wyoming.

Proc. U. S. Nat. Mus., vol. 58, no. 2342, Nov. 10, 1920, pp. 371–379.

——— Notes on anglesite, anthophyllite, calcite, datolite, sillimanite, stilpnomelane, tetrahedrite, and triplite.

Proc. U. S. Nat. Mus., vol. 58, no. 2345, Dec. 18, 1920, pp. 437–453, text figs. 1–13.

SHANNON, EARL V. Massive laumontite from Montana.

Amer. Mineralogist, vol. 6, no. 1, Jan., 1921, pp. 6, 7.

——— Owyheeite.

Amer. Mineralogist, vol. 6, no. 4, Apr., 1921, pp. 82, 83.

——— The identity of "collbranite" with ludwigite.

Amer. Mineralogist, vol. 6, no. 5, May, 1921, pp. 86–88.

——— The old cobalt mine in Chatham, Conn.

Amer. Mineralogist, vol. 6, no. 5, May, 1921, pp. 88–90.

——— Additional notes on the crystallography and composition of boulangerite.

Amer. Journ. Sci., vol. 1, May, 1921, pp. 423–426.

——— (See also under D. F. Hewett.)

——— (See also under Esper S. Larsen.)

——— (See also under Charles Palache.)

SHERFF, EARL E. The amphipods of the Canadian Arctic expedition, 1913–1918.

Rept. Canadian Arctic Expedition, vol. 7, Crustacea, pt. E, amphipods, Sept. 7, 1920, pp. 1–30, text figs. 1–6.

——— North American species of Taraxacum.

Bot. Gaz., vol. 70, no. 5, Nov., 1920, pp. 329–359, pls. 31–33.

SHOEMAKER, CLARENCE R. Amphipods collected by the American Museum. Congo Expedition, 1909–1915.

Bull. Amer. Mus. Nat. Hist., vol. 43, art. 7, Dec. 30, 1920, pp. 371–378, text. figs. 1–6.

——— Report on the amphipods collected by the Barbados-Antigua expedition from the University of Iowa, 1918.

Univ. Iowa Studies; Studies in Nat. Hist., vol. 9, no. 5, Mar. 15, 1921, pp. 99–102.

SHUFELDT, R. W. The American antelope.

Amer. Forestry, vol. 26, Dec., 1920, pp. 747–754, 13 figs.

——— Observations on the cervical region of the spine in Chelonians.

Journ. Morph., vol. 35, no. 1, Mar., 1921, pp. 213–223, pls. 1, 2.

SMITH, CHARLES PIPER. Studies in the genus Lupinus—V. The Sparsiflori.

Bull. Torrey Bot. Club, vol. 47, no. 11, Nov., 1920, pp. 487–509, figs. 53–66.

SNYDER, JOHN OTTERBEIN. Notes on some western fluvial fishes described by Charles Girard in 1856.

Proc. U. S. Nat. Mus., vol. 59, no. 2357, June 16, 1921, pp. 23–28.

SOWERBY, ARTHUR DE CARLE. Notes on Heude's Bears in the Sikawei Museum, and on bears of palaearctic eastern Asia.

Journ. Mam., vol. 1, no. 5, Nov., 1920, pp. 213–233.

——— Notes on the East Asiatic members of the species *Sciurus vulgaris*, Linn., with descriptions of two new subspecies.

Ann. Mag. Nat. Hist., ser. 9, vol. 7, Mar., 1921, pp. 249–254.

SPRINGER, FRANK. The Crinoidea Flexibilia.

Smithsonian Inst., Pub. no. 2501, 1920, pp. i–vi, 1–486, pls. A, B, C,, 1–76, text figs. 1–51.

——— The fossil crinoid genus Dolatocrinus and its allies.

Bull. U. S. Nat. Mus., no. 115, Apr. 6, 1921, pp. i–iii, 1–78, pls. 1–16, text figs. 1–5.

STANDLEY, PAUL C. Stachys lanata in Ontario.

Rhodora, vol. 22, no. 259, July, 1920, p. 128.

——— Six new species of plants from Mexico.

Proc. Biol. Soc. Washington, vol. 33, July 24, 1920, pp. 65–67.

STANDLEY, PAUL C. Trees and shrubs of Mexico (Gleicheniaceae—Betulaceae).

Contr. U. S. Nat. Herb., vol. 23, pt. 1, Oct. 11, 1920, pp. 1–169.

——— The North American species of Agonandra.

Journ. Washington Acad. Sci., vol. 10, no. 18, Nov. 4, 1920, pp. 505–508.

——— A new species of Campnosperma from Panama.

Journ. Arnold Arb., vol. 2, no. 2, Nov., 1920, pp. 111, 112.

——— Some interesting plants in Glacier Park, Mont.

Gard. Chron., ser. 3, vol. 68, no. 1771, Dec. 4, 1920, p. 275, figs. 126–128.

——— Ferns of Glacier National Park, Mont.

Amer. Fern Journ., vol. 10, no. 4, Feb., 1921, pp. 97–110.

——— Flora of Glacier National Park, Mont.

Contr. U. S. Nat. Herb., vol. 22, pt. 5, Mar. 16, 1921, pp. 235–438, pls. 33–52.

——— Rubiaceae (pars).

N. Amer. Fl., vol. 32, pt. 2, May 10, 1921, pp. 87–158.

STANTON, TIMOTHY W. The fauna of the Cannonball marine member of the Lance formation.

Prof. Paper U. S. Geol. Surv., no. 128–A, Aug. 11, 1920, pp. 1–60, pls. 1–9, text figs. 1–3.

STURTEVANT, A. H. The dipterous genus Zygothrica of Wiedemann.

Proc. U. S. Nat. Mus., vol. 58, no. 2330, Sept. 9, 1920, pp. 155–158, fig. 1.

SWALES, B. H. Records of several rare birds from near Washington, D. C.

Proc. Biol. Soc. Washington, vol. 33, Dec. 30, 1920, pp. 181, 182.

SWINGLE, WALTER T. A new species of Pistacia native to southwestern Texas, P. texana.

Journ. Arnold Arb., vol. 2, no. 2, Oct., 1920, pp. 105–110.

TAYLOR, WALTER P. A new ptarmigan from Mount Rainier.

Condor, vol. 22, no. 4, Aug. 10, 1920, p. 146.

——— A new meadow mouse from the Cascade Mountains of Washington.

Journ. Mam., vol. 1, no. 4, Aug. 24, 1920, pp. 180–182.

THOMAS, OLDFIELD. Report on the Mammallia collected by Mr. Edmund Heller during the Peruvian expedition of 1915 under the auspices of Yale University and the National Geographic Society.

Proc. U. S. Nat. Mus., vol. 58, no. 2333, Nov. 10, 1920, pp. 217–249, pls. 14, 15.

TODD, W. E. CLYDE. Descriptions of apparently new South American birds.

Proc. Biol. Soc. Washington, vol. 33, Dec. 30, 1920, pp. 71–75.

TOLMAN, R. P. Description of the graphic-arts collections of the U. S. National Museum.

Convention Bull., First Annual Conv. Int. Printing House Craftsmen, Aug. 21–23, 1920, Washington, D. C.

TREADWELL, AARON L. A new Polychaetous annelid of the genus Nereis from Brazil.

Proc. U. S. Nat. Mus., vol. 58, no. 2347, Nov. 8, 1920, pp. 467, 468, text figs. 1–4.

——— Polychaetous annelids collected by the United States Fisheries steamer *Albatross* in the waters adjacent to the Philippine Islands in 1907–10.

Bull. U. S. Nat. Mus., no. 100, vol. 1, pt. 8, pp. 589–602, text figs. 1–4, Jan. 28, 1921.

TRELEASE, WILLIAM. North American pipers of the section Ottonia.

Amer. Journ. Bot., vol. 8, no. 4, Apr., 1921, pp. 212–217, pls. 5–8.

VAN CLEAVE, H. J. Two new genera and species of acanthocephalus worms from Venezuelan fishes.

Proc. U. S. Nat. Mus., vol. 58, no. 2346, Dec. 21, 1920, pp. 455–466, pls. 27, 28.

——— Acanthocephala parasitic in the dog.

Journ. Parasitol., vol. 7, no. 2, Jan., 1921, pp. 91–94.

VAN DUZEE, M. C., F. R. COLE, and J. M. ALDRICH. The Dipterous genus Dolichopus Latrielle in North America.

Bull. U. S. Nat. Mus., no. 116, Mar. 21, 1921, pp. 1–304, pls. 1–16, 1 text. fig.

VAUGHAN, THOMAS WAYLAND. Fossil corals from Central America, Cuba, and Porto Rico, with an account of the American Tertiary, Pleistocene, and recent coral reefs.

Bull. U. S. Nat. Mus., no. 103, July 11, 1919, pp. i–vi, 189–524, I–XIV, pls. 68–152, text figs. 1–25.

——— Corals from the Cannonball marine member of the Lance formation.

Prof. Paper U. S. Geol. Surv., no. 128–A, Aug. 11, 1920, pp. 61–66, pl. 10.

WADE, BRUCE. The fossil annelid genus Hamulus Morton, an operculate Serpula.

Proc. U. S. Nat. Mus., vol. 59, no. 2359, June 10, 1921, pp. 41–46, pls. 9, 10.

WALCOTT, CHARLES D. Cambrian geology and paleontology, IV, No. 5. Middle Cambrian algae.

Smithsonian Misc. Coll., vol. 67, no. 5, Dec. 26, 1919, pp. 217–260, pls. 43–59.

WALCOTT, CHARLES D. Cambrian geology and paleontology, IV, No. 6. Middle Cambrian Spongiae.
Smithsonian Misc. Coll., vol. 67, no. 6, 1920, pp. 261–364, pls. 60–90, text figs. 1–10.

WALKER, BRYANT. A new freshwater mollusk from Indiana.
Proc. U. S. Nat. Mus., vol. 57, no. 2321, Sept. 9, 1920, p. 525, 1 fig.

WAYNE, ARTHUR T. The russet-backed thrush (Hylocichla ustulata ustulata) taken near Charleston, S. C.
Auk, vol. 37, no. 3, July, 1920, pp. 465, 466.

WEATHERBY, C. A. Varieties of Pityrogramma triangularis.
Rhodora, vol. 22, no. 259, July, 1920, pp. 113–120.

WELD, L. H. American gallflies of the family Cynipidae producing subterranean galls on oak.
Proc. U. S. Nat. Mus., vol. 59, no. 2368, June 27, 1921, pp. 187–246, pls. 28–37.

WETMORE, ALEXANDER. The knot in Montana.
Auk, vol. 37, no. 3, July, 1920, p. 451.

WETMORE, ALEXANDER. The wing claw in swifts.
Condor, vol. 22, no. 6, Dec. 4, 1920, pp. 197–199.

——— Five new species of birds from cave deposits in Porto Rico.
Proc. Biol. Soc. Washington, vol. 33, Dec. 30, 1920, pp. 77–81, pls. 2, 3.

WILSON, CHARLES B. The copepod parasites (in "Lake Maxinkuckee, a physical and biological survey").
Dept. of Conservation, State of Ind., pub. no. 7, vol. 2, 1920, pp. 79–82.

——— New species and a new genus of parasitic copepods.
Proc. U. S. Nat. Mus., vol. 59, no. 2354, June 10, 1921, pp. 1–17, pls. 1–7.

YOKOGAWA, SADAMU. A new nematode from the rat.
Journ. Parasitol., vol. 7, no. 1, Oct., 1920, pp. 29–33, pls. 6, 7, figs. 1–4.

YUNCKER, T. G. Revision of the North American and West Indian species of Cuscuta.
Univ. Ill. Biol. Monogr., vol. 6, nos. 2, 3, Mar. 1, 1921, pp. 1–14, pls. 1–13.

○

New York Botanical Garden Library
3 5185 00259 0253