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PER
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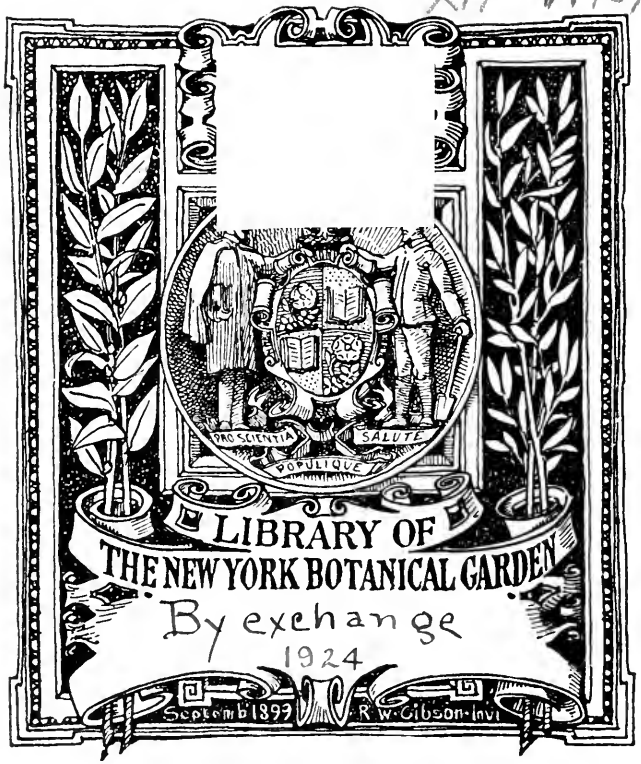
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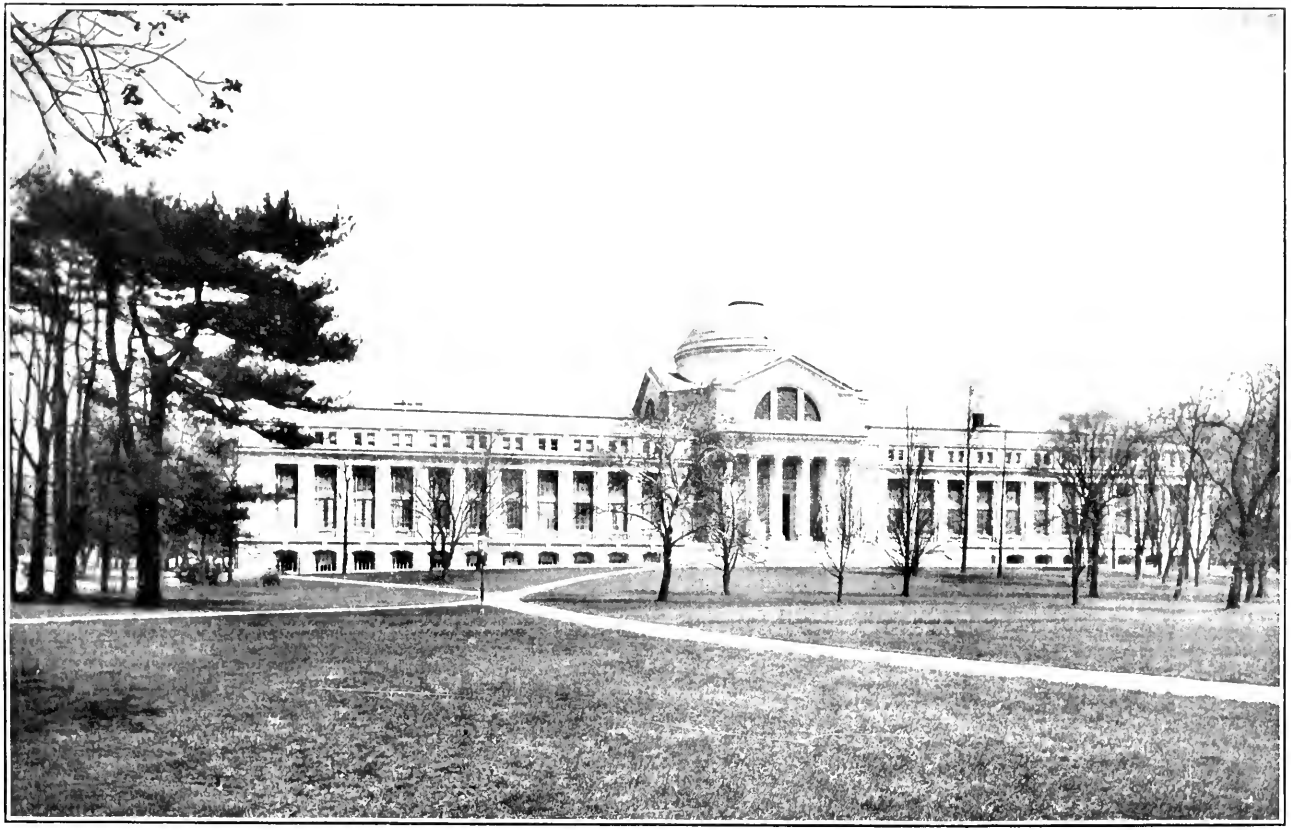

SOUTH FRONT OF NATURAL HISTORY BUILDING, UNITED STATES NATIONAL MUSEUM.

SMITHSONIAN INSTITUTION

UNITED STATES NATIONAL MUSEUM

REPORT ON THE PROGRESS AND CONDITION OF THE UNITED STATES NATIONAL MUSEUM FOR THE YEAR ENDING JUNE 30, 1923

WASHINGTON
GOVERNMENT PRINTING OFFICE
1923

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UNITED STATES NATIONAL MUSEUM,
UNDER DIRECTION OF THE SMITHSONIAN INSTITUTION,
Washington, D. C., September 20, 1923.

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, 1923.

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.

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STAFF OF THE UNITED STATES NATIONAL MUSEUM.

[June 30, 1923.]

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.

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

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

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

Division of Physical Anthropology: Aleš Hrdlička, curator; P. C. Van Natta, aid.

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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.

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

Section of Hemiptera: W. L. McAtee, acting custodian.

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

DEPARTMENT OF BIOLOGY—Continued.

Division of Marine Invertebrates: Waldo L. Schmitt, curator; C. R. Shoemaker, assistant curator; James O. Maloney, aid; 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.

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Division of Echinoderms: Austin H. Clark, curator.

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

Section of Grasses: Albert S. Hitchcock, custodian.

Section of Cryptogamic Collections: O. F. Cook, assistant curator.

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.

Associate Curator in Zoology: Hugh M. Smith.

Associate in Botany: John Donnell Smith.

Collaborator in Zoology: Robert Sterling Clark.

DEPARTMENT OF GEOLOGY:

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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, associate 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, 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:

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

Associate in Mineral Technology: Samuel S. Wyer.

DEPARTMENT OF ARTS AND INDUSTRIES—Continued.

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

Section of Organic Chemistry: Carl C. Anderson, aid.

Division of Medicine: Charles Whitebread, assistant curator.

Division of Graphic Arts: R. P. Tolman, assistant curator; Ralph C. Smith, aid.

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

Loeb Collection of Chemical Types: F. L. Lewton, in charge.

DIVISION OF HISTORY:

T. T. Belote, curator; Charles Carey, aid; Mrs. C. L. Manning, 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.

REPORT ON THE PROGRESS AND CONDITION OF THE UNITED STATES NATIONAL MUSEUM FOR THE YEAR ENDING JUNE 30, 1923.

By WILLIAM DEC. RAVENEL,

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

INTRODUCTION.

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 design of Smithson for the increase and diffusion of knowledge, to provide for the custody of the museum of the Nation. To this new establishment was, therefore, intrusted the care and development of the national collections. At first the cost of maintaining the Museum was paid from the Smithsonian income; then for a time the Government bore a share, but during the past 45 years the Congress has provided for the expenses of the Museum.

The museum idea was fundamental in the organic act establishing the Smithsonian Institution, which was based upon a 10 years' discussion in the 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 the Congress 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 indicating 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.

The maintenance of the Museum was long ago assumed by Congress, the Institution taking upon itself only so much of the necessary responsibility for the administration of this and subsequent additions to its activities as would weld them into a compact whole, which together form a unique 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 with men of science in the United States.

Since that time the only material changes in the scope of the National Museum have been (1) 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 (2) 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 great opportunity for establishing a department of the industrial arts, of which the fullest advantage was 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 and the aircraft series have been greatly augmented within the past few years by large collections illustrative of the World War.

OPERATIONS OF THE YEAR.

APPROPRIATIONS.

The maintenance of the National Museum for the fiscal year ending June 30, 1923, was provided for in the following amounts appropriated in the Executive and Independent Offices Act approved June 12, 1922:

Preservation of collections	$312,620
Furniture and fixtures	20,000
Heating and lighting	73,000
Building repairs	10,000
Books	2,000
Postage	500
Printing and binding	37,500

During the World War Congress recognized the inadequacy of the salary scale in the Government departments and independent offices in the Capital City by granting a small bonus to employees of the lower grades, where salaries were wholly inadequate to provide the necessities of life in Washington. The system has since been continued pending the establishment of a more adequate and uniform salary scale. The bonus has heretofore been provided by an indefinite appropriation, but for the fiscal year 1923 the Executive and Independent Offices Act contained an item of $78,036 to provide bonuses for Museum employees during the year.

The year just closed was the second since the Budget and Accounting Act went into effect and necessarily involved changes in methods of planning and keeping accounts. The Museum has difficulty in making both ends meet, operating as it has had to on practically the same appropriations for the past 10 or 15 years. It is only by rigid economy and by the omission of many things that should be done that the year ends without a deficit.

COLLECTIONS.

The number of specimens acquired by the Museum during the year was approximately 217,611. Received in 1,709 separate accessions, the specimens were classified and assigned as follows: Anthropology, 1,583; zoology, 94,887; botany, 54,837; geology and mineralogy, 1,165; paleontology, 35,533; textiles, wood technology, organic chem-

istry, foods and medicine, 996; mineral and mechanical technology, 1,357; graphic arts, 1,146; and history, 26,107.

Additional material to the extent of 1,155 lots, mainly geological, was received for special examination and report. This free report service on material sent in from all parts of the country has the advantage of furnishing the Museum with an occasional desirable specimen and with records of many new localities. When the Allies during the World War were in urgent need of certain raw material, the Museum, through its department of geology, was thus enabled to quickly supply information concerning localities known to yield the desired product.

The distribution of duplicates, mainly to schools and colleges for educational purposes, aggregated 9,131 specimens properly classified and labeled and 100 pounds of material suitable for blow pipe analysis. These distributions were about equally divided between the regular sets of specimens previously prepared for shipment and those specially selected to meet particular needs. The regular sets consisted of 55 illustrating rock weathering and soil formation aggregating 1,155 specimens; 18 of ores and minerals aggregating 1,530 specimens; 3 of fossil invertebrates aggregating 165 specimens; 10 of mollusks aggregating 1,490 specimens—a total of 4,340. The remaining 4,791 specimens were comprised in 52 sendings especially selected to meet specific requests and included fossils, geological material, anthropological specimens, fishes, marine invertebrates, insects, birds, mammals, and a few examples of different processes in the graphic arts.

Nearly 35,000 duplicate specimens, mainly botanical and geological, were sent out in exchange, in return for which much desirable material was received. Over 12,000 specimens were lent to specialists for study on behalf of the Museum and otherwise.

While the specimens received during the year number but approximately 60 per cent as many as received the preceding year, the value of the yearly increment can not be appraised from numbers only. Many of the acquisitions are exceptionally valuable, either scientifically as types or as representatives of new localities, or because of their intrinsic worth.

In biology mention should be made of the Evezard collection of recent mollusks purchased and presented by the late Mr. John B. Henderson containing many types rich in material from India and the South Sea Islands; the series of Opalinid ciliate infusorians forming the basis of Prof. Maynard M. Metcalf's monograph published by the Museum as Bulletin No. 120; and important specimens in several lines from China, the result of deliberate efforts to systematically improve the biological study material from the

Asiatic region as a means of a better understanding of the North American fauna. Important gaps in the South American series were filled by Dr. Hugh M. Smith, and desirable material resulted from the trips of Dr. Leonard Stejneger to the Commander Islands and of Dr. Paul Bartsch to the West Indies.

The explorations of Dr. C. D. Walcott in the Canadian Rockies were productive of much valuable geological and some biological material. The botanical and herpetological series were augmented by Dr. W. L. Abbott's visit to the Dominican Republic, and one of the largest and most important botanical collections ever obtained from Colombia was the result of a cooperative expedition in which the Philadelphia Academy of Sciences, the New York Botanical Garden, Gray Herbarium of Harvard University, and the National Museum joined.

The paleontological collection of the late Orestes St. John, principally fossil fishes and many of them types, donated by Dr. Frank Springer, adds material of incalculable value for the specialist who may take up the study of this group. The residuary portion of the collection of the late R. D. Lacoe comprising some 10,000 specimens chiefly fossil plants was presented by his heirs, together with Mr. Lacoe's paleontological library. Mrs. L. A. Coonley Ward donated the residuary portion of the meteorite collection of the late Prof. H. A. Ward, furnishing material for study and exchange. The meteorite collection was further built up by 13 accessions of meteorites mostly new to the series here.

The economic geological collections have benefited by the continued activities of Mr. Victor C. Heikes. Of the additions to the mineralogical collections mention should be made of a large boulder of jade received from Col. W. B. Thompson, an unusually fine specimen of crystallized descloizite from Southwest Africa, 60 minerals new to the collection, and several cut gems of unusual quality and size purchased by means of the Frances Lea Chamberlain Fund. Foreign paleontological material was contributed by Dr. E. O. Ulrich, from northern Europe; Mr. Stephen R. Capps, from Palestine; various oil companies and private collectors from Mexico, Central and South America, Mr. Edwin A. Walford of England and by various universities and institutions in Europe. Desirable material also resulted from paleontological field work carried on by Dr. R. S. Bassler in Tennessee, and Dr. C. E. Resser in Virginia, as well as by Doctor Walcott in the Canadian Rockies, mentioned above.

Series of specimens of pyraline, bakelite, condensite, and cellulose acetate show the manufacture of these products of modern chemical

industry and their use as substitutes for such natural raw materials as ivory, bone, horn, tortoise shell, amber, etc. Beautiful specimens of silks, woolen fabrics and mohair upholstery textiles were contributed by American manufacturers to show the progress of textile industries in this country. Specimens illustrating the manufacture and use of sulphite wood, and samples of cypress wood believed to be over 30,000 years old were added to the collections in the section of wood technology. The division of medicine received specimens showing the use of chaulmoogra oil derivatives in the treatment of leprosy; ancient surgical instruments; Italian hospital supplies of the type used in the World War; also medical manuscripts.

In the division of mechanical technology the objects acquired now make possible the visualization of the development of methods of communication from those of smoke and fire to those of wireless telegraphy with all of the essential intermediate steps. A model illustrating the manufacture of coal gas and carburetted water gas was made especially for the Museum, also series of models illustrating mechanical principles and the fundamental elements and devices used in machines.

Almost the beginning and the end of type composition were illustrated in the year's acquisitions by a leaf of the Gutenberg Bible, one of the first books printed from movable type, and by examples of the monotype system of casting and composing justified lines of single type. There were also wood block prints and etchings by Helen Hyde and by other American artists, pictorial photographic prints by American and foreign photographers of note, and an early motion picture projector.

The large historical military collection of the Military Service Institution for many years displayed on Governors Island, N. Y., was transferred to the National Museum, some of its most popular components being the war horse of Gen. Philip H. Sheridan famous for the ride to Winchester; a cannon captured from the British troops commanded by General Burgoyne at Saratoga in 1777; a mortar made by D. King of Philadelphia; and a sword owned by Commodore Stephen Decatur, U. S. Navy. This collection, forming a separate exhibition unit, was installed in a small room on the second floor of the southeast range of the Arts and Industries Building, which was opened as an exhibition hall for the first time this year.

Of unparalleled importance is the large collection of numismatic material formerly exhibited in the U. S. Mint in Philadelphia, which was transferred to the Museum by the U. S. Treasury Department in June, 1923. This contains an exceptionally fine collection of United States coins, medals, and paper currency besides a large number of ancient coins, a fair representation of mediaeval European coins, and

a very complete series of modern European coins and commemorative medals.

Another acquisition, of timely interest in view of the recent Egyptian explorations, consisted of casts of busts of the heretic Pharaoh, Amenophis IV, and his queen and a statuette of the latter, the gift of Mr. Mortimer Clarke, jr. A carved stone figure from the Makah Indians showing the artist's mastery of expression, casts of the LaQuina and Obercassel skulls and skeleton, a gilt bronze harvest bell from China, a superior stone collar from Porto Rico, a series of archeological specimens from Haiti, a remarkable decorative stone pipe from Kentucky and an ethnological collection from Formosa are all noteworthy acquisitions.

The reports of the head curators in the natural history departments and of the curators in the other branches of the Museum, which follow, give in more detail the additions to and the work upon the collections during the year.

COOPERATIVE WORK.

Efforts were mainly concentrated this year along well established lines of cooperation, in the absence of resources to grasp the many opportunities on all sides for widening the Museum's contact with the public. In the broader sense much of the Museum work is cooperative. The function of the Museum in the classification and arrangement of the collections is the promotion of knowledge; the researches necessary for classification and the resultant publications increase knowledge, and the arrangement and the exhibition of the collections as well as the distribution of its publications, diffuse knowledge. For the growth of its collections the Museum is largely dependent upon cooperation, since it is compelled to rely mainly on outside sources for its accessions, having only limited resources for directly procuring objects. The classification of the collections also is accomplished only because of the cooperation of specialists in all parts of the United States, as well as some from other countries.

The Museum supplements the school and college, carrying forward the torch of learning where dropped by their organized corps of instructors. The exhibition hall with its well arranged and carefully labeled cases tells a story most graphic and enduring.

During the year the cooperation with teachers of the local public schools was extended to include a series of talks on Museum collections by members of the staff of the departments of arts and industries and of history before public school teachers, some 30 or 40 groups of teachers being reached in this way. They in turn brought

their classes to the Museum and interpreted what had been explained to them. The schedule of these talks was as follows:

Date.	Time.	Subject.	Staff member.
Feb. 10	10:00 A. M. 2.00 P. M.	The Historical Collections	Mr. Belote.
"	10:45 A. M. 2:45 P. M.	Utilization of some important commercial woods	Mr. Watkins.
"	11:30 A. M. 3:30 P. M.	Fuels of the United States	Mr. Mitman.
Feb. 17	10:00 A. M. 2:00 P. M.	The Numismatic Collections	Mr. Belote.
"	10:45 A. M. 2:45 P. M.	Cotton, the cotton gin and the manufacture of thread and cloth.	Mr. Lewton.
"	11:30 A. M. 3:30 P. M.	Non-metallic mineral industries	Mr. Mitman.
Feb. 24	10:00 A. M. 2:00 P. M.	Silk, artificial silk and wool	Mr. Lewton.
"	10:45 A. M. 2:45 P. M.	The metallic mineral industries	Mr. Mitman.
"	11:30 A. M. 3:30 P. M.	The War Collections	Mr. Belote.

Of great value also was a course of illustrated bird lectures for teachers in the public schools of Washington given in the Museum auditorium by the Audubon Society of the District of Columbia on four successive Tuesday afternoons beginning February 13, as mentioned elsewhere in this report.

In a number of instances members of the scientific staff personally conducted groups of students through the exhibition halls, giving talks on the various exhibits. Thus, Dr. Paul Bartsch, curator of mollusks, who is a professor in the George Washington and Howard Universities, has been regularly taking his classes through the Museum. Dr. R. S. Bassler, curator of paleontology, who is professor of geology and mineralogy at the former university, and Dr. C. E. Resser, associate curator of paleontology, who is his assistant at the University, conducted classes of university students through the Museum building. Dr. Aleš Hrdlička, curator of physical anthropology, who is also lecturer on anthropology at the American University, brought his classes to the Museum for certain demonstrations.

Dr. I M. Casanowicz, curator of old world archeology, explained the archeological and religious collections to the professors and students of the Episcopal Theological Seminary, Alexandria, Va., who came to the Museum for that purpose. Classes from George Washington University inspected the anthropological collections guided by Mr. John L. Baer of the Museum staff. Wilson Normal School students were given talks on the American Indians. Students of the Friends School were conducted through the exhibition halls by Dr. J. E. Benedict, assistant curator of biology, and Miss Doris M. Cochran, aid in the division of reptiles and batrachians. Doctor Bartsch took a group of scoutmasters of the Boy Scouts on a "nature hike" through the Natural History Building.

Social service students led by a welfare worker from the Veterans Bureau studied the textile collections under the direction of Mr. F. L. Lewton, curator of textiles, who spoke on that subject to them. Talks on important fibers and on spinning and weaving were likewise given by Mr. Lewton to the sixth, seventh, and eighth grade pupils of a number of the Washington public schools who came in groups accompanied by their teachers, and by request, a series of three lectures on cotton, wool, silk, linen, and cloth construction and ornamentation was given to several groups of employees handling textiles in one of the large local department stores.

Many high schools, especially those of New England, include a trip to the national capital as a regular part of their course of training, in some instances the journey replaces the commencement. Each spring finds the Museum halls full of these young people from educational establishments of the small towns and cities from a radius of many hundred miles, often from communities having no local museum.

Aside from the general educational advantages to be derived from the exhibition collections at all times, even through casual observations by the ordinary visitor, the Museum advances learning by the distribution of its duplicate natural history specimens to high schools and colleges in all parts of the country. During the year 86 educational establishments were supplied series of carefully labeled specimens for teaching purposes. The Museum also freely identifies natural history specimens collected by schools and sent here for determination and report. It contributes to elemental or "popular" education by answering accurately and carefully numerous letters of inquiry with or without accompaniment of specimens.

Its wider appeal through its publications carries the educational influence of the Museum into communities that have no local museum nor the opportunity for visiting Washington and personally benefiting by contact with the Museum exhibition halls. In a number of instances its publications have been widely used as reference books in schools and colleges.

As intimated in the last report the Museum cooperated with the Pennsylvania State Board of Education in supplying photographs and essential data pertaining to mineral industries. It has assisted the State in establishing this year in its public school system a new line of instruction—a course on the mineral resources of the State incorporated in the seventh grade geography courses. This work was materially furthered by the preparation and publication by Mr. Samuel S. Wyer, Associate in Mineral Technology in the Museum, of a book entitled "The Smithsonian Institution's Study of Natural Resources Applied to Pennsylvania's Resources," which was distributed about the first of the calendar year. The course on

mineral resources was immediately put into effect and is meeting with very great success.

One of the results of this, coupled with the earlier work of Mr. Wyer in connection with the natural gas industry, was the call for help from the city of Erie, Pa., in solving its natural gas problem. As a result of the wasteful methods in using natural gas throughout the gas-using towns of the United States, the supply is rapidly dwindling, that of the city of Erie being no exception to the rule. To cope with the situation the fuel committee of the local Chamber of Commerce decided that an intensive local natural gas educational campaign was the only solution to the problem and, knowing of the work being done by members of the staff of the division of mineral technology of the Museum, it was but natural that it should call upon the division for assistance in directing such a campaign. This was done by Mr. Wyer during the latter part of April and May, 1923.

In substance, the campaign included the reprinting and distributing of 1,000 copies of "The Smithsonian Institution's Study of Natural Resources Applied to Pennsylvania's Resources"; in cooperation with Miss Erna Grassmuck, State Director of Geography, there was prepared an outline of the educational material on the fuel situation for Erie's homes; before 571 public school teachers Mr. Wyer gave a lecture on the fuel situation in the home; posters were prepared and distributed throughout the city dealing with natural gas conservation; and during the course of the campaign Mr. Wyer addressed, in his capacity as associate in mineral technology, groups of people, in the aggregate about 10,000. Among these were the Women's Civic Club, the Rotary Club, Retail Merchants' Board, twelve parent-teachers' associations, various schools, employees of three manufacturing plants and the School Teachers' Institute. Finally, in connection with the regular school work in geography, civics, home economics, and general science in both public and parochial schools, the Erie pupils were given examination questions relating to the gas conservation material that had been furnished. The campaign closed with definite recommendations to the fuel committee by Mr. Wyer as to the steps which should be taken to solve Erie's gas problem.

An innovation this year was the preparation of two traveling exhibits, of about 100 specimens each, illustrating somewhat technically the principal processes of the graphic arts, installed in 12 frames without glass 28 by 44 inches, ready to be hung. These are available for loan for two weeks to a month, the only expense being for expressage. The first of these sets to be prepared was shown at the following places: Richmond Printers Association, Richmond, Va., October 11–13, 1922; Art Association, Newport, R. I., during February, 1923; Wellesley College, Wellesley, Mass., during March, 1923; Free Public Library, New Bedford, Mass., April 1–15, 1923; Art

Museum, Hartford, Conn., April 15–30, 1923; Rhode Island School of Design, Providence, R. I., during May, 1923; Public Library, Bangor, Maine, during June, 1923. The second exhibit prepared later in the year and containing the same information was shown only at the City Library Association, Springfield, Mass., during June, 1923.

The Museum always gladly cooperates with other branches of the federal service and with other scientific establishments as well as with educational agencies. This year was no exception. Upon request, the curator of American archeology has furnished information and advice upon archeological problems to the National Park Service, Department of the Interior, the Carnegie Institution of Washington, and the National Geographic Society. The curator of physical anthropology gave extended testimony on the racial status of the Japanese before the Committee on Territories of the U. S. House of Representatives, acted as consulting anthropologist to the Children's Bureau of the U. S. Department of Labor, and gave advice to other departments on a number of occasions.

Information was supplied the Department of Agriculture for certain historical scenes for a proposed motion picture it was preparing to film for the purpose of introducing yopon (*Ilex cassene*) a native American substitute for tea. The Indian Office of the Department of the Interior was likewise furnished Indian costumes needed in making an education film. The Government Printing Office was aided in its training of workers, its apprentice class being personally conducted through the halls of graphic arts and the various exhibits explained and discussed.

During his visit to Czechoslovakia in October, 1922, and at the invitation of the Minister of Education of that Republic, the curator of physical anthropology gave nine lectures on man's evolution, antiquity, and differentiation, at the Universities of Prague, Pilsen, Brno, and Bratislava, and a lecture on racial influence upon insanity before the Medical Association of Prague.

VISITORS.

The Museum exhibition halls, in the 3 buildings belonging to the Museum and in the Smithsonian Building, were open free to the public as usual from 9 a. m. to 4.30 p. m. on week days, holidays included, and those in the Natural History Building were also open on Sunday afternoons from 1.30 to 4.30. The limited maintenance appropriation only precludes extending Sunday opening to all the buildings of the Museum group. From June 4 to 9, during the Washington convention of the Ancient Arabic Order of the Nobles of the Mystic Shrine, the halls were opened to visitors half an hour earlier in the morning to facilitate the inspection of the collections.

The number of visitors to the Natural History Building during the year aggregated 417,204 for week days and 91,314 for Sundays, being a daily average of 1,332 for the former and of 1,756 for the latter. At the Arts and Industries Building, the Smithsonian Building, and the Aircraft Building, the total attendance was 259,542, 95,168, and 42,904, respectively, with daily averages of 829, 304, and 137.

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 now devoted to the arts and industries was first opened to the public.

Number of visitors during the year ending June 30, 1923.

Year and month.	Museum buildings.			Smithsonian Building.
	Arts and Industries.	Natural History.	Aircraft.	
1922.				
July	23,456	39,085	4,128	8,511
August	30,260	50,471	5,961	11,202
September	23,954	41,632	4,848	8,768
October	18,610	38,060	2,919	6,098
November	14,149	34,873	2,455	4,250
December	12,617	28,571	2,372	4,070
1923.				
January	11,302	26,461	2,398	3,840
February	10,754	23,856	1,868	3,311
March	20,343	42,088	2,929	6,250
April	25,418	62,601	3,523	10,015
May	25,599	45,323	3,900	8,925
June	43,080	75,497	5,603	19,928
Total	259,542	508,518	42,904	95,168

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	1902-3	315,307			181,174
1882	167,455			152,744	1903-4	220,778			143,988
1883	202,188			104,823	1904-5	235,921			149,380
1884 (halfyear)	97,661			45,565	1905-6	210,886			149,661
1884-85 (fiscal year)	205,026			105,993	1906-7	210,107			153,591
1885-86	174,225			88,960	1907-8	299,659			237,182
1886-87	216,562			98,552	1908-9	245,187			198,054
1887-88	249,665			102,863	1909-10	228,804	50,403		179,163
1888-89	374,813			149,618	1910-11	207,010	151,112		167,085
1889-90	274,324			120,894	1911-12	172,182	281,887		143,134
1890-91	286,426			111,669	1912-13	173,858	319,806		142,420
1891-92	269,825			114,817	1913-14	146,533	329,381		102,645
1892-93	319,930			174,188	1914-15	133,202	321,712		40,324
1893-94	195,748			103,910	1915-16	146,956	381,228		48,517
1894-95	201,744			105,658	1916-17	161,700	407,025		86,335
1895-96	180,505			103,650	1917-18	161,298	401,100		67,224
1896-97	229,606			115,709	1918-19	266,532	[1] 132,859		101,504
1897-98	177,254			99,273	1919-20	250,982	422,984		86,013
1898-99	192,471			116,912	1920-21	286,397	467,299	31,235	90,235
1899-1900	225,440			133,147	1921-22	262,151	441,604	46,380	83,384
1900-01	216,556			151,563	1922-23	259,542	508,518	42,904	95,168
1901-2	173,888			144,107	Total	9,376,334	4,616,918	120,519	5,190,796

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

PUBLICATIONS.

The Museum published this year 10 volumes and 42 separate papers. The former consisted of the Annual Report of the Museum for 1922; volumes 60 and 61 of the Proceedings; and the following Bulletins, namely: No. 100, volume 5, "Contributions to the biology of the Philippine Archipelago and adjacent regions—Ophiurans of the Philippine Seas and adjacent waters," by René Koehler; No. 120, "The opalinid ciliate infusorians," by Maynard M. Metcalf; No. 121, "Life histories of North American petrels and pelicans and their allies—Order Tubinares and order Steganopodes", by Arthur Cleveland Bent; No. 122, "A Monograph of the American shipworms", by Paul Bartsch; No. 123, "Revision of the North American moths of the subfamily Eucosminae of the family Olethreutidae", by Carl Heinrich; No. 124, "The type species of the genera of Chalcidoidea or Chalcid-flies", by A. B. Gahan and Margaret M. Fagan; and No. 126, "Life histories of North American wild fowl—Order Anseres (part)", by Arthur Cleveland Bent.

The 42 papers issued separately for prompt distribution to specialists were: Part 8 of Bulletin 102, "The Mineral Industries of the United States—Manufactured Gas in the Home", by Samuel S. Wyer; 5 papers from volume 61, 21 papers from volume 62, and 11 papers from volume 63 of the Proceedings; and four papers in the series, Contributions from the United States National Herbarium, as follows: Volume 23, Part 2, "Trees and Shrubs of Mexico (Fagaceae-Fabaceae)", by Paul C. Standley; Volume 24, Part 2, "Studies of tropical American ferns—No. 7", by William R. Maxon; Part 3, "Key to the genus Diplostephium, with descriptions of new species", by S. F. Blake; Part 4, "Native names and uses of some plants of Eastern Guatemala and Honduras", by S. F. Blake.

Contributions based on material in the collections of the Museum are printed by other bureaus of the Government and by outside sources. All of the publications above referred to are cited in the list of publications at the back of this report.

The regular distribution of Museum volumes and separates to libraries and individuals on the mailing lists aggregated 63,869 copies, besides 8,660 copies supplied in response to special applications.

In addition to supervising the printing of the Museum publications, the editorial office is charged with the printing of labels and the miscellaneous printing and binding. The label work alone is a large item, and one requiring much care. About 280,000 labels were printed this year, representing some 1,400 forms, and, aside from the regular Museum publications, some 300 books were bound.

LIBRARY.

As one of the libraries administered under the direction of the Smithsonian Institution, the Museum library enjoys the close cooperation of its associated libraries, and in turn contributes substantially toward the general library activities.

Much has been accomplished during the year toward better library service. A much-needed subject catalogue has been started, and at the close of the year 4,400 cards had been made and arranged. The arrangement of cards from the Concilium Bibliographicum, distributed since the World War, is well under way, and progress is being made in the reclassification and shelving of the technological collections. Nevertheless, the work has greatly suffered from a vacancy in the staff during eight months of the year, and from a lack of funds for binding and renovating. Only 293 books could be bound.

The widespread interest of members of the staff and friends of the Museum is shown by the material donated during the year, and valuable material has continued to come in exchange from the museums, research organizations, and scientific societies at home and abroad. The receipts for the year numbered 1,489 volumes and 2,796 pamphlets, bringing up the total of books and other material in the library to 160,560. The number of loans was 9,220, of which 5,191 were to the sectional libraries.

PHOTOGRAPHIC LABORATORY.

In illustrating Museum objects for reproduction in publications and for record purposes 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 2,116 negatives, 10,452 black and white prints, 129 cirkut prints, 172 sixteen-inch panoram prints, 339 lantern slides, 13 transparencies, 125 enlargements, besides developing 625 field negatives and mounting 32 prints. The fitting up of a special room for making lantern slides is greatly needed.

BUILDINGS AND EQUIPMENT.

The National Museum, in its own buildings and in the Smithsonian Building, occupies an aggregate floor space of over 670,000 square feet, or over 15½ acres, with roof area of approximately 5¾ acres, and some 2,000 windows. The upkeep is necessarily considerable, especially when it is recalled that the Smithsonian Building has been built for nearly 70 years, the Arts and Industries Building about 43 years, and the so-called South Shed about 25 years. The

other structures are more recent, the Natural History Building being about 14 years old, and the Aircraft Building about 6. Most of the space is used for exhibition purposes requiring at all times to be in good repair and in sightly condition. Constant vigilance is necessary to properly maintain these buildings within the appropriation allotted for the purpose, and it is only by the strictest economy that the present excellent results are accomplished.

Early in the year an emergency arose, by the falling of large pieces of plaster from the ceiling under the dome of the rotunda in the Arts and Industries Building, which necessitated the expenditure of forty per cent of the entire appropriation provided for the maintenance of the buildings. To reach the ceiling a scaffold over 70 feet high was erected from the floor, practically filling the rotunda from side to side. The old plaster was entirely removed and the spaces between the ceiling beams were covered with beaded sheet iron. Advantage was taken of the presence of the scaffold to make other needed repairs to the lantern, including covering the side walls with the beaded sheet iron, rebedding the glass of the circular windows, painting the ceiling and side walls of the rotunda, etc. Other repairs in this building included reputtying on the inside many windows; the completion of a composition floor in the library and painting walls, ceilings and floors there; the painting of stairways, and of the women's comfort rooms; also painting the tin roofs of the building.

The more important repairs in the Natural History Building consisted in the painting of the side walls, steel roof trusses, etc., in the space between sub-skylights and roofs in east and west hall attics; painting of walls and ceilings in various sections of the building; repairing water table and roadways on south, east and west sides of the building and replacing wornout downspouts. In accordance with recommendations of the civil engineer who last year investigated the condition of the arches and supporting walls in the rotunda above the attic floor level, measurements of the keystone in the east arch were made December 19, 1922. The movement of the keystone during the preceding eight months was so slight as to encourage the conclusion that the settlement of the keystones of the four arches has nearly reached an end. Similar measurements will, however, continue to be made at regular intervals.

During the month of April the metal finial on top of the tower at the northwest corner of the main portion of the Smithsonian Building broke loose from its fastening and listed in a manner to give the impression that it was tumbling over. There was a probability that a high wind might blow it over with resulting injury to visitors and employees. Here again the erection of the necessary scaffold was a large item. Upon examination, it was found that the pine post to

which the finial was fastened had decayed and needed to be replaced, which was done. Other repairs to the Smithsonian Building included sheathing the south wall of the office of graphic arts on the first floor and painting it; attaching ropes and pulleys to the large windows in the herbarium hall on the second floor and painting the inside woodwork of these windows; painting the watchmen's room; repairing and replacing and painting all decayed window frames and sills; replacing wornout downspouts, and painting tin roofs.

The power plant in the Natural History Building was closed down during July, August, and almost all of September, 1922, and during the last month of the fiscal year. Electric current was purchased during this period under contract made by the Treasury Department, at a slightly lower rate than the actual cost of current generated. This not only gives an opportunity for making the needed repairs to the machinery, but permits the employees in the plant to take their annual leave, thus avoiding the necessity of hiring temporary assistants to take their places after the plant is in operation.

The winter was very mild but it was ncessary to maintain heat in the various buildings of the Smithsonian group, including the Freer Building, from October 9 until May 19. The total consumption of bituminous coal was 3,052 tons, and in addition about 15 tons of stove coal were used in the summer for domestic hot water purposes. The average price paid for bituminous coal was $9.06 a ton, whereas during the preceding year the cost was $7.00.

A most important change made in the plant was the installation of a new Cochran open feed water heater and meter, provided for by a special item of $3,000 in the heating and lighting appropriation. The old heater which had been in use for twelve years was not economical, as it was impossible to secure feed water at a higher temperature than 160 degrees, while the new heater maintains economically a temperature ranging between 200 and 210 degrees. The work of installing this heater was started at the beginning of the year, but owing to the difficulty in procuring necessary pipe, connections, etc., it was not completed until September 28, thereby necessitating the closing of the plant until that date. While it is impossible to give the exact saving made by the installation of this heater, because of the nature of the load on the plant, there can be no question but that it has affected the consumption of coal. The coal consumed during 1923 was 270 tons less than during the preceding year, although heat was maintained in the buildings for a longer period during 1923.

The total electric current generated was 376,293 kilowatt hours, at a cost of $.0270 a kilowatt hour, a slight reduction over the pre-

ceding year. The electric load was greatly increased by the opening of the Freer Gallery of Art to the public near the close of the year, so that on dark and cloudy days it is greater than can be safely carried on the cables leading into the Natural History Building from the lines of the Potomac Electric Power Company. Additional cables will have to be installed to take care of this increase.

The ventilation plant in the Freer Building was operated in the usual manner during the winter and up to the time the building was opened to the public, since which time the speed of the fans has been materially increased, to provide the additional air necessary for properly ventilating the galleries. The result obtained by the system has been more satisfactory than was anticipated. While the temperature of the galleries was somewhat high on extremely hot days, the circulation of air was sufficient to produce the necessary cooling effect in spite of the fact that no help was gained from the air washers.

The ice plant located in the Natural History Building was operated 5,234 hours during the year, producing a total of 279.6 tons of ice, at a cost of $3.41 a ton exclusive of labor. The cost to the ton is less than last year due to decrease in the cost of electric current to the kilowatt hour. The machine was thoroughly overhauled in the spring. It is gradually growing less efficient from year to year and there is no doubt that a great saving would be effected if a new machine could be installed. An item covering the purchase of one was unsuccessfully included in the estimates for appropriation submitted to the Bureau of the Budget.

The U. S. Bureau of Standards, by direction of the Bureau of the Budget, conducted a survey of government telephone systems during the year. As a result a reduction was made in the rental of the leased telephone cables connected with the Museum switchboard, effecting a saving of between 20 and 25 per cent for this particular charge.

The exterior walls of the Natural History Building were thoroughly washed by the local Fire Department in August, 1922, through the courtesy of the Commissioners of the District of Columbia. The appearance of the building was materially improved as a great amount of dirt had accumulated, including nests of caterpillars and other insects not readily dislodged, on the rough surface and joints of the stones especially under the cornices and other parts protected from the weather. In attempting to get water for this purpose the Fire Department discovered that all of the fire hydrants in the Smithsonian Park were in bad condition and of an antiquated type, leaving the buildings practically unprotected in the case of fire. The

District Commissioners called the attention of the Institution to the necessity of installing new hydrants and of adding to their number. An estimate to cover the installation of four new fire plugs in the Smithsonian Park was included in the estimates submitted by the Institution to the Bureau of the Budget in September, 1922. The estimate failed to receive favorable action, but will be again submitted for consideration. The fire plugs inside the buildings and the fire hose are tested regularly. During the latter part of the spring the valves of the fire plugs in the Natural History Building were overhauled and leather disks were substituted for the rubber washers to obviate annoying small leaks. Pieces of hose found defective near the connection to the valve were put in good condition by cutting away the rotted part and reexpanding to the coupling. This has recently been the practice at the Museum as the hose at this point seems to deteriorate much more rapidly than elsewhere. The expanding outfit procured several years ago has proved a profitable investment as otherwise new hose, costing several hundreds of dollars, would have to have been purchased.

All of the fire extinguishers in the several buildings, including the Freer Building, were discharged and recharged in the usual manner during the month of May. The electric fire alarm system was tested every three months. It is not entirely reliable in the older buildings and can be made so only by changing at considerable cost to a closed circuit such as is installed in the Freer Building. When these buildings were provided with fire alarms the open circuit was the most reliable then known.

During the year 11 exhibition cases and 185 pieces of storage, laboratory and office furniture were acquired. Ten of the exhibition cases were made in the Museum carpenter shop and one was purchased by contract. At the close of the year there were on hand 3,689 exhibition cases, and 11,744 pieces of storage, laboratory, and office furniture; also 48,891 standard wooden unit drawers, 4,712 metal unit drawers, 1,047 wooden unit boxes, 224 wooden double unit boxes, 12,104 standard insect drawers, 752 wing frames, 5,885 special drawers with paper bottoms and 11,876 special drawers with compo bottoms for mammals and birds.

In response to requests from correspondents, blue prints of exhibition and storage cases were furnished the following establishments: California State Mining Bureau, San Francisco, Calif.; the Southwest Museum, Los Angeles, Calif.; Missouri Resources Museum, Jefferson City, Mo.; Washington University, St. Louis, Mo.; University of North Carolina, Chapel Hill, N. C.; State Museum, Raleigh, N. C.; Yale University, New Haven, Conn.; National Society of the Daughters of American Revolution, Continental Hall, Washington, D. C.; and the U. S. Department of Agriculture.

MEETINGS, CONGRESSES, AND RECEPTIONS.

The auditorium and the adjoining committee rooms were as usual frequently utilized during the year for official purposes of the Government and for lectures, meetings and other public gatherings having objects akin to those of the Institution.

The second annual meeting of the Business Organization of the Government held in the auditorium on July 11, 1922, under the auspices of the Bureau of the Budget enabled the President of the United States to meet with the members of his cabinet and the executives of all the government departments and independent establishments in the interest of better business methods for the Government. President Harding reviewed in a general way what had been done during the preceding year in effecting governmental economies through the instrumentalities of the Bureau of the Budget cooperating with the executive offices of the departments and independent establishments, and Gen. H. M. Lord, Director of the Bureau, described in detail just what had been accomplished by the Budget Bureau.

On two additional occasions, February 23, and April 27, the Treasury Department, through the Public Health Service, made use of the auditorium for motion pictures along the line of its work, on the latter date for the benefit of public school officials.

The Secretary of War arranged for a conference of Chaplains of the Army in the Museum hall on June 6 and 7. On calling into active service a group of chaplains of the Officers' Reserve Corps and National Guard he invited a number of religious experts to meet with them, to devise ways for magnifying the place of religion in the Army, to consider plans for a more intensive program of moral training for soldiers, to develop community contacts, and to recommend those activities which would strengthen the religious program for regular army posts and stations and which would safeguard the young men entering the various summer training camps. This was an assemblage of representative citizens of Roman Catholic, Protestant, and Jewish faiths convened to make a non-partizan, non-sectarian study of these matters.

The annual commencement of the Army Medical School was held in the auditorium, as customary, on the afternoon of June 8, and was a brilliant affair.

The Women's Bureau of the Department of Labor in January held a three-day conference of women interested in the problems of wage-earning women in industry, attended by delegates from women's organizations from nearly every State in the Union.

The meeting facilities were used by the Department of Agriculture on October 30 for a conference called by the Federal Horticul-

tural Board, to consider the importation of bulbs into this country; on November 21, for an address on "Farm life" by Mr. David Friday, President of the Michigan Agricultural College, before the employees of the Department; on December 19 for a conference regarding importation of fruits and vegetables, under the auspices of the Federal Horticultural Board; on February 5 for the projection of some of the Department's new pictures, showing the work of the Bureau of Public Roads; cattle ticks, etc.; March 12 for a conference of beekeepers and persons interested in bee culture, called by the Bureau of Entomology; and May 9 for a general meeting of the employees of the Forest Service with an address by Mr. J. C. Dort on conditions in Alaska.

The Smithsonian Institution provided a popular illustrated lecture under its Hamilton Fund on the afternoon of April 18, when an address on "Discoveries in Eastern Turkestan and Southern Tibet" was delivered by the noted Swedish explorer, Dr. Sven Hedin.

The 450th anniversary of the birth of Copernicus on February 19 was the occasion of another meeting under the auspices of the Institution. Dr. C. G. Abbot, Assistant Secretary of the Institution, spoke on the life and achievements of Copernicus, the founder of modern astronomy. The Polish Legation was represented at the meeting.

In connection with the observance of Safety Week (November 26 to December 2) Doctor Abbot spoke before the employees of the Institution and its bureaus in the auditorium on the afternoon of November 27, on various features of safety work and methods of avoiding accidents. Talks on safety by prominent speakers were received by radio and amplified in the east hall, Natural History Building, several times a day during this week by means of specially installed instruments, and the scheme was also carried out in a lesser degree in the Arts and Industrial Building.

On March 24 the employees of the Institution and its bureaus had an opportunity of hearing an exceptionally interesting address by Arthur Coggesshall, of the Carnegie Institute of Pittsburgh, on the Dinosaur National Monument area in Utah, illustrated by motion pictures. The locality is one that has yielded a large amount of valuable material and one which the National Museum has recently entered with a view to procuring one of the larger forms for its exhibition halls.

The film "Adam's Rib" was privately shown in the Museum auditorium on March 8 for the benefit of the scientific staff and other employees of the Smithsonian bureaus, in return for information furnished Cecil De Mille, director general of the Paramount

Company, for the preparation of a hall of dinosaurs similar to the Museum exhibit.

Similarly, earlier in the year, the Submarine Film Corporation gave the employees of the Smithsonian bureaus a chance to see the sub-sea film, "Wonders of the deep", through a private exhibition of the reels in the Museum auditorium on December 13.

The Smithsonian Relief Association and the Smithsonian auxiliary of the District of Columbia Chapter of the American Red Cross Society held annual meetings, the former in the auditorium and the latter in one of the committee rooms. The Smithsonian branch of the Federal Employees Union No. 2 held three meetings in the committee room.

The most prominent scientific gathering of the year was the annual meeting of the National Academy of Sciences, on April 23, 24, and 25, 1923, with public scientific sessions in the auditorium and business sessions in the committee rooms, as customary. The first evening was devoted to a lecture in the hall by Dr. W. W. Campbell, entitled "Resumé of results obtained by Crocker Eclipse Expeditions from Lick Observatory," followed by a reception to Doctor Campbell in the rotunda and the halls devoted to the National Gallery of Art.

Other speakers on the program of the National Academy and their subjects were as follows: H. F. Osborn: "Important mammals and reptiles recently discovered by the Third Asiatic Expedition in the heart of Mongolia, and their significance"; J. C. Merriam: "Asiatic relationships of American Pliocene faunas"; F. M. Chapman: "Preliminary report on life zones of Ecuador"; T. W. Vaughan: "Studies of the larger Tertiary Foraminifera from tropical and subtropical America"; A. H. Clark: "Interrelationships of the higher invertebrates"; Aleš Hrdlička: "Present status of research on early man in the Old World"; C. B. Davenport: "Heredity of body build"; C. A. Kofoid: "Parasitism and evolution"; J. G. Dickson: "The nature of resistance to cereal seedling blight"; F. L. Ransome: "Ancient high-level pot-holes near the Colorado River"; W. H. Hobbs: "The evidence of recent tectonic movement within an area of the western Pacific"; W. M. Davis: "Geological overthrust and underdrag," and "The marginal belts of the Coral Seas"; L. P. Eisenhart: "Symmetric tensors of the second order whose first covariant derivatives are zero"; G. A. Bliss: "Birational transformations simplifying singularities of algebraic curves"; H. F. Blichfeldt: "On the approximate solution in integers of a set of equations of the first degree"; Edward Kasner: "Properties of path curves in the Einstein theory"; M. T. Bogert: "The synthesis of new Cinchophen (Atophan) types," and "Researches in the thiazole field";

E. M. Slocum and M. T. Bogert: "The synthesis of new rose alcohols of geraniol type"; L. J. Henderson: "The exchange of oxygen and carbonic acid between blood and air"; D. L. Rapport: "The relative physiological action of various kinds of protein"; Joseph Erlanger and H. S. Gasser: "The components of amplified nerve action currents demonstrated by means of the cathode ray oscillograph"; W. D. Harkins: "Tracks of alpha particles," and "Isotopes and atomic stability": H. N. Russell: "A Study of motions in double stars"; H. N. Russell and J. Q. Stewart: "Pressures at the sun's surface"; H. D. Curtis: "Irregularities in spectroscopic binary orbital curves"; S. A. Mitchell: "The trigonometric parallaxes of 350 stars determined by photography with the 26-inch McCormick refractor"; C. P. Olivier: "Some results of the Yale photographic meteor campaign"; C. G. Abbot: "The solar prelude of an unusual winter"; E. L. Nichols: "Note on the visible radiation from Germanium oxide and on its melting point"; Edwin Bidwell Wilson: "Electric conduction: Hall's theory and Perkins' phenomenon"; E. H. Hall: "The quasi-equation P=T dV/dT"; P. W. Bridgman: "The thermal conductivity of metals under tension"; William Duane: "The transfer of radiation momentum in quanta to matter"; R. C. Tolman, S. Karrer, and E. W. Guernsey: "Further experiments on the mass of the electric carrier in metals"; H. D. Arnold and G. W. Elmen: "Permalloy—A supermagnetic material"; Ralph Bown: "Some recent measurements of transatlantic radio transmission"; G. O. Squier: "New telegraph alphabet"; and the following read by title only: Ira Remsen: "Biographical memoir of Harmon Northrup Morse": W. H. Howell: "Biographical memoir of Samuel James Meltzer"; W. A. Noyes: "Biographical memoir of Alexander Smith"; R. A. F. Penrose, jr.: "Biographical memoir of J. C. Branner."

The National Associaton of Postmasters of the United States held its 22nd annual convention in the auditorium September 27 to 29. Postmaster Hubert Work and Hon. Cuno H. Rudolph, President of Board of Commissioners of the District of Columbia, were among the speakers at this gathering.

The National Committee on Prisons and Prison Labor used the auditorium, committee rooms, and adjoining lobby from March 22 to 24 for a conference on prison industries. The development of industries in prisons has been gradual and without any satisfactory attempt by the different States at coordination of production and distribution. This conference was the result of the recognition by the State Governments of the need of handling the problem from a national standpoint through cooperation. To make the conference as practical as possible an exhibit of goods manufactured in prisons—including

furniture, clothing, printing, cotton goods, and canned fruits and vegetables—was displayed in the auditorium lobby and the adjoining foyer during the meetings.

The National Conference of Social Work, the largest organization in the United States of persons engaged in this kind of work, had the auditorium from May 17 to 23 (exclusive of Sunday May 20) for many sessions of its 50th anniversary meeting. This was preceded by the second national convention of the National Association of Travelers Aid Societies held in the auditorium from May 14 to 16.

The 23d annual meeting of the National Consumers' League, November 9 and 10, was devoted to the general subject "What Women want now." This was a conference of national organizations of women, including the General Federation of Women's Clubs, Young Women's Christian Association, League of Women Voters, American Association of University Women, Teachers of Household Economics, Parent Teachers Associations, Women's Trade Union League, the National Council of Jewish Women and other kindred bodies. The immediate practical object was to unify and focus the educational and legslative work of these bodies.

A conference on athletics and physical recreation by women and girls, sponsored by Mrs. Herbert Hoover and the National Amateur Athletic Federation of America, convened in the auditorium and one of the committee rooms on April 6 and 7.

The National Medical Association during its convention in Washington, held two sessions in the auditorium on the evenings of August 22 and 23. The speakers included Surgeon General Hugh S. Cumming and other noted medical men.

The centenary of the birth of Prof. Spencer Fullerton Baird, second secretary of the Smithsonian Institution, was duly commemorated on February 3, 1923, under the auspices of the National Baird Memorial Committee composed of delegates appointed by 54 scientific societies and institutions in various parts of the country, and officered as follows: Honorary President, Dr. William H. Dall; President, Dr. Charles D. Walcott; Vice Presidents, Mr. George R. Agassiz, Dr. Alexander Graham Bell (deceased), Prof. Frank W. Clarke, Prof. Stephen A. Forbes, Prof. David Starr Jordan, Prof. Edwin Linton, Prof. Edward S. Morse, Prof. Henry Fairfield Osborn, Prof. Addison E. Verrill, and Dr. Robert S. Woodward; Secretary, Dr. Paul Bartsch. The celebration consisted of a meeting in the auditorium, followed by a conversazione on the main floor of the Museum with music by the United States Marine Band. The many sides of this great naturalist were depicted by the following addresses: "Baird the man," by Dr. William Healey Dall; "Baird and the Smithsonian Institution and its branches," by Dr. Charles Greeley

Abbot; "Baird at Woods Hole," by Prof. Edwin Linton; "Baird and the fisheries," by Prof. David Starr Jordan; and "Baird the naturalist," by Dr. Clinton Hart Merriam. The exercises were concluded by a public announcement of the report of the National Committee as follows:

1. That Congress be memorialized to establish in the city of Washington a museum of fisheries and oceanography, with laboratories and public aquarium, as a memorial to Spencer Fullerton Baird.

2. That there be established a fund for the encouragement of research and exploration in the directions in which Spencer Fullerton Baird was a leader.

3. It was the sense of the meeting that the name of "Baird" be given to the laboratory of the Bureau of Fisheries at Woods Hole, Mass.

The Garden Club of America, during its autumn meeting in Washington, had the auditorium on the evening of October 24, for illustrated lectures by Dr. Charles Moore and Mr. James L. Greenleaf on the subject of the Park System of Washington. The audience adjourned to the adjacent Smithsonian Building where a reception was held by Mrs. Charles D. Walcott and a private view had of her water-color sketches of wild flowers, both western and eastern, including practically all of the wild flowers found in the vicinity of Washington. The collection numbers about 350 paintings and it remained afterwards on exhibition to the public in the main hall of the Smithsonian Building.

The Girl Scouts, holding their convention in Washington, used the auditorium on the evening of April 25 for a convention of Girl Scout leaders with addresses by Mrs. Herbert Hoover, Miss Grace Corning Cotton of the Children's Museum, Brooklyn, Miss Mortimer Lloyd, Dr. Paul Bartsch, and others. By a special arrangement all the exhibition halls of the Museum in the Natural History Building were also thrown open to Girl Scouts, their leaders, parents, etc., that evening from 6.30 to 11.

At a meeting under the auspices of the World's Dairy Congress Association on the afternoon of April 17, plans were discussed for calling a world's dairy congress. Representatives of foreign embassies and legations were invited to the meeting. The U. S. Department of Agriculture projected motion pictures depicting American methods in dairying and Mr. H. E. Van Norman spoke on dairy work.

The council of the American Association of Museums held a business meeting in one of the committee rooms on April 3, 1923, preceding the 18th annual meeting of the Association in Charleston, S. C. The transportation arrangements for the Charleston meeting in-

cluded the assembling of the delegates in Washington and their journeying together to South Carolina, which afforded an opportunity for the leaders to hold this preliminary conference.

An innovation this year was a series of free Sunday afternoon lectures. Heretofore the auditorium has not been used on this day. The Woman's Welfare Association, which is actively interested in the health conservation of the working women and girls of the District of Columbia, arranged a series of health talks by eminent physicians, both in the federal service and in private practice, on 8 Sunday afternoons, two each month, beginning in January. These were as follows:

January 14, "Progress in health conservation during the past 50 years", by Dr. George M. Kober; January 28, "Utility of serums and vaccines in preventive medicine," by Dr. George W. McCoy, U. S. Public Health Service; February 11, "What the Public Health Service has done to further preventive medicine", by Surgeon General Hugh S. Cumming; February 25, "The Social hygiene program", by Dr. Valeria H. Parker of New York City; March 11, "Mental hygiene", by Dr. William A. White, Superintendent of St. Elizabeths Hospital; March 25, "Human relations in industry", by Henry S. Dennison, President of the Dennison Manufacturing Co.; April 8, "How important are our ancestors", by Dr. Vernon Kellogg, of the National Research Council; April 22, "The conservation of health through diet", by Dr. Harvey W. Wiley.

The American Horticultural Society was organized on October 10, 1922, in committee room No. 42–3, at a gathering of a number of local men desirous of a society of horticulture in Washington. Monthly meetings of the society were held thereafter on the second Tuesday of each month, the larger hall being utilized for those of February and March and the committee room serving at other times. The society brought together and placed on display in this room on May 24 and 25 an exhibition of fruits and flowers, which was open to the public from 4 p. m. to 10.30 p. m. the first day and from 10 a. m. to 10 p. m. on the second. The auditorium was again used by this society in conjunction with the American Rose Society for a meeting on the evening of June 1, when many lantern slides were shown.

The Garden Club of Washington as usual held its annual meeting in the auditorium on February 2, with a business session and a motion picture showing potato culture in the West.

The Anthropological Society of Washington continued as heretofore to meet regularly in the Museum, their largest meeting being on the evening of December 19 when in conjunction with the Archaeological Society of Washington the auditorium was used for a lecture

by Dr. Edgar L. Hewett on "The valley of Aztian: a search for the original home of the Aztecs". This was followed by an informal reception on the floor above, in the National Gallery of Art, where the collection of Chihauhua pottery belonging to the Archaeological Society was displayed. The subjects and speakers at the other gatherings of the Anthropological Society were as follows: October 17, 1922, "Summer's field work at Mesa Verde", by Dr. J. Walter Fewkes, Chief of the Bureau of American Ethnology; November 21, "Early Chinese civilization", by Mr. C. W. Bishop, associate curator of the Freer Gallery of Art; January 2, 1923, "Prehistoric man", by Dr. Aleš Hrdlička; January 16, "Progress of the Pueblo Bonito Explorations", by Mr. Neil M. Judd; February 7, "A visit to the Seri Indians", by Mr. Charles Sheldon; February 20, "The isolation of ancient America as indicated by the cultivated plants and languages of the aborigines", by Dr. W. E. Safford; March 20, "A visit to St. Lawrence Island", by Dr. Riley D. Moore; April 3, "Algonquin notes", by Dr. Truenan Michelson, and "Some new light on the history of the Eastern Indians", by Dr. John R. Swanton; and April 17, "Cave hunting in the Pyrenees", by Mr. M. W. Stirling.

The Archaeological Society of Washington and the Art and Archaeological League of Washington arranged a lecture in the auditorium on the evening of January 9, 1923, on "The excavations at Carthage, 1921–22", by Count Byron Khun de Prorak, Director of the expedition conducted under the auspices of the French Government, and the Charles Norton Memorial Lecturer of the Archaeological Institute of America. This was illustrated by motion pictures, the first archeological films ever taken at Carthage. After the lecture there was a reception to Count de Prorak in the National Gallery of Art, with a first view of a rare collection of antique jewelry recently lent to the Society by one of its members, Mr. Kurt Walter Bachstitz of The Hague. The hostesses for the occasion were Mrs. Robert Woods Bliss, Mrs. Wilbur J. Carr, Mrs. William Eric Fowler, Mme. Jusserand, Mrs. C. M. Ffoulke, and Mrs. George Oakley Totten, jr.

A course of illustrated bird lectures for teachers in the public schools of Washington was arranged by the Audubon Society of the District of Columbia for 4 successive Tuesday afternoons as follows: February 13, "Land birds of the District of Columbia", by Dr. Paul Bartsch; February 20, "Water birds of the District of Columbia", by Dr. H. C. Oberholser; February 27, "Value of birds to agriculture", by Mr. W. L. McAtee, read by Mr. W. H. Cheesman; March 6, "Bird songs and voices", by Dr. H. C. Oberholser. The annual meeting of the Audubon Society, held in the auditorium on the evening of January 24, consisted of a short business meet-

ing followed by an illustrated lecture on "Impressions in Arizona", by Mr. Arthur C. Bent. On the afternoon of March 27, the auditorium was again used by the Society when a 5-reel film entitled "As a Bird of Passage in Africa", produced by Mr. Bengt Berg, Swedish traveler and explorer, was presented by the author. The picture showed flocks of thousands of migratory European birds associating with the native birds on the White Nile in Africa.

"John Burroughs" was the subject of an interesting address by Dr. Clara Barrus on the afternoon of April 16, illustrated by colored slides of the naturalist's home, his haunts, etc.

The Washington, D. C., Chapter of the Wild Flower Preservation Society of America held its annual meeting in committee room 42–3 on January 31, when Mrs. C. D. Walcott gave an illustrated address on wild flowers. The Society also arranged a series of 4 public lectures on Wednesday evenings, all in the committee room except the third. These were as follows: March 21, "Palms in Southern Florida", by Dr. W. E. Safford; March 26, "Water Lillies", by Mr. Peter Bisset; April 4, National forests and parks—motion pictures and lantern slides; April 11, "Wild flowers of the Southern Coastal Plain", by Dr. Edgar T. Wherry.

The Entomological Society of Washington as usual met regularly in Room 42–3 on the first Thursday of the month from October to June, the subjects and speakers at these meetings and at a second meeting in November being as follows: October 5, "Life histories and habits of the solitary wasp", by Mr. Edward G. Reinhardt; November 2, "South African Republic", by Prof. C. P. Lounsberry, and "Luminosity of insects", by Prof. Ulrich Dahlgren; November 8, "Respiration of insects", by Dr. August Krogh; December 7, annual meeting with election of officers and addresses by Dr. J. M. Aldrich and Dr. A. G. Böving; January 4, "A manuscript autobiography of S. W. Williston", by Dr. J. M. Aldrich; February 1, "A trip into Mexico for parasites of the bean leaf beetle", by Mr. E. G. Smith; March 1, "The evolution of the fly", by Mr. R. E. Snodgrass, and "Two recent papers on Microlepidoptera", by Mr. August Busck; April 5, "The house fly plague in the American Expeditionary Forces", by Mr. Perry Simmons, and "Biology of tiger beetles", by Mr. C. C. Hamilton; May 3, "Insect diseases", by Dr. G. F. White, and "Unique egg laying apparatus in the tachinid fly", by Dr. J. M. Aldrich.

The Shakespeare Society of Washington gave a dramatic recital on November 21—Antony and Cleopatra—to an appreciative audience. And on November 24 the auditorium was the scene of an illustrated lecture by Col. William K. Naylor, of the Army War College

staff, on the "First battle of the Marne," under the auspices of the Reserve Officers' Association of the District of Columbia.

The Pan American Students' Association of the School of Foreign Service of Georgetown University had the auditorium on April 5 for a special Mexican night, the Mexican Embassy cooperating. A number of prominent speakers on Mexican affairs and five Mexican artists from the Metropolitan Opera Company of New York gave a varied program. Through the courtesy of the Embassy, an exhibit of Mexican popular arts was displayed in the auditorium lobby during the evening.

Students from Howard University and the American University likewise made use of the Museum for meetings, Dr. Paul Bartsch addressing the medical class of the former in the committee room on February 14, and Dr. Aleš Hrdlička, lecturer on anthropology at the latter, bringing his class to the Museum on March 23.

The Southern Society of Washington used the auditorium on the evening of October 28, for a short business session followed by an address by Dr. Newell Dwight Hillis on "The state of the country."

The Association of Appointment Clerks held a meeting in committee room 42–3 on the afternoon of October 4; the Federal Photographic Society met here on October 27 and May 28, and the Washington, D. C., chapter of Sigma Xi honor fraternity on March 7.

International Congress of Americanists.—The 20th International Congress of Americanists convened in Rio de Janeiro, Brazil, from August 21 to September 3, 1922. Dr. Walter Hough and Dr. Aleš Hrdlička of the Museum staff served as delegates both for the United States and the Smithsonian Institution.

International Geological Congress.—The 13th International Geological Congress was held in Brussels, Belgium, from August 10 to 19, 1922. The Smithsonian Institution was represented by Dr. E. O. Ulrich.

The American Association of Museums.—The 18th annual meeting of the American Association of Museums was held at Charleston, S. C., April 4 to 7, 1923, on the occasion of the one hundred and fiftieth anniversary of the founding of the first museum in America, the Charleston Museum founded in 1773. Mr. W. deC. Ravenel and Mr. F. L. Lewton represented the National Museum. The most important business transacted had to do with the establishment of Association headquarters in Washington. In addition to the anniversary celebration and an elaborate three-day program of business and the reading of technical papers, there was offered to the delegates by the citizens of Charleston a most extensive series of entertainments of all kinds. The next meeting of the Association will be held in Washington in April, 1924.

AMERICAN ASSOCIATION OF MUSEUMS.

Toward the close of the fiscal year the American Association of Museums opened headquarters in the northwest pavilion of the Arts and Industries Building, on the third floor immediately over the administrative offices of the Museum. This is the culmination of a movement which has been on foot for several years for the betterment of the Association. Recently the Laura Spelman Rockefeller Foundation made a grant to the Association of $10,000 a year for three years contingent upon the Association raising an additional $15,000 the first year and $20,000 each the second and third years. At the annual meeting of the Association in Charleston in April, 1923, the financial prospects were such that arrangements were made for the establishment of headquarters in the national capital with a salaried director and secretary, Prof. Charles R. Richards and Mr. Laurence Vail Coleman, respectively.

The National Museum has always had a lively interest in the American Association of Museums as the Association had its origin in a meeting of nine directors of American museums at the National Museum in 1905, though it was not formally organized until the following year at a meeting in New York. That the National Museum was able to supply the needed office rooms was therefore particularly gratifying, and it is appropriate that the Association should find a permanent home where the movement started. Professor Richards is spending his first year on leave in order to make a survey of European museums, and in the meantime Mr. Coleman is in charge, as acting director.

CHANGES IN ORGANIZATION AND STAFF.

The organization of the Museum was but slightly changed during the year. A new section of organic chemistry was created in the department of arts and industries in August, 1922, to which were transferred the collections of animal and vegetable products. Mr. Carl C. Anderson was appointed as aid to the section on August 6.

By an interchange of custodianship the division of history on July 1, 1922, took over the custody of the small arms collection in the northeast court of the Arts and Industries Building, which had been built up by the division of mechanical technology, and that division relieved the division of history of the aircraft collection exhibited in the Aircraft Building.

Great difficulty was experienced during the year in maintaining the watch force needed for guarding the buildings. The conditions under which the watchmen work here are more onerous and exacting than in any other bureau of the Government. With the funds at

present available, it has not been possible, especially since the Natural History Building has been opened on Sundays, to grant the watchmen time off in lieu of Sundays and holidays. This is done in some of the Government departments and every effort is being made to secure the additional funds needed to make watch service in the Museum as attractive as elsewhere.

Owing to the inability of securing electricians at the price paid in the Museum, this branch of the service also has been seriously handicapped. Of a force of four, there have been two vacancies almost continuously since the death of the foreman in February. With the addition of the care of the Freer Building and a number of electrically-driven models recently installed in the Arts and Industries Building, the need of maintaining a full force is very great.

The Museum has, however, been fortunate in being able to keep together most of its trained workers on the scientific staff. In a number of instances this has been possible only because of the devotion of the persons and their willingness to accept employment in what should be their leisure hours, in order to meet current expenses. This spirit of loyalty and devotion to the Museum is appreciated. The proposed reclassification of Government employees is, therefore, of the utmost concern to the welfare of the Museum. On March 4, 1923, Congress passed what is known as the "Classification Act of 1923," effective on July 1, 1924. By the act provision is made not only for a more adequate pay schedule for the civilian employees of the Government, but for equal pay for equal service regardless of the department in which the service is rendered. At present much of the discontent among the Government employees generally is caused by the fact that the more recently created bureaus and offices offer salaries much in advance of those prevailing in the older establishments for similar service, and new, inexperienced clerks entering Government employ often receive more than the trained efficient workers in another branch of the service.

Much preliminary work must be done before the classification act can be put into effect. Mr. W. deC. Ravenel was appointed liaison officer for the Government bureaus under the Institution. Tentative allocations of all the positions under the Institution were made during the latter part of the fiscal year and were submitted to the Personnel Classification Board created by the act to care for the matter.

In several instances the titles of members of the scientific staff were changed during the year to better indicate their positions. The designation of Dr. Walter Hough, who for several years has been in charge of the department of anthropology, was changed on March 1 from acting head curator to head curator of that department. On

May 1 Mr. C. W. Gilmore was made curator of vertebrate paleontology instead of associate curator and Mr. Charles E. Resser's title of assistant curator of paleontology was changed to associate curator of paleontology; and on May 15 the title of Mr. Paul C. Standley, assistant curator of plants, was changed to associate curator of plants.

In the division of ethnology Mr. Matthew W. Stirling was promoted on December 7, 1922, from aid to assistant curator. In the division of marine invertebrates, Mr. James O. Maloney was appointed aid on January 2, succeeding Mr. P. S. W. Conger who resigned to accept employment with the Carnegie Institution of Washington. In the division of mineral technology, Mr. Paul M. Frank, assistant curator, resigned on February 19, and up to the close of the fiscal year it was impossible to fill the position with the necessary salary limitations.

Mr. Neil M. Judd, curator of American archeology, who was on furlough at the beginning of the year, resumed his duties on September 16, 1922. On May 1, 1923, he was again granted leave to continue archeological work at Pueblo Bonito, where for several summers he has been in charge of explorations for the National Geographic Society. Mr. P. C. Van Natta, aid in physical anthropology, was granted leave without pay from October 18 to June 1, returning to the Museum after the close of the college year. Mr. John L. Baer acted in Mr. Judd's place during the early part of the fiscal year, severing his connection on September 30, and from December 2, 1922, to the close of the year, he temporarily filled Mr. Van Natta's position as aid in physical anthropology.

Dr. Hugh M. Smith was given an honorary appointment as associate curator in zoology on August 31, 1922. During his long connection with the United States Bureau of Fisheries, the Museum was indebted to Doctor Smith as head of that bureau for many contributions to its collections, and it is gratifying to know that the Museum is to continue to have the benefit of his experience through this closer association. Another honorary appointment was that of Mr. Samuel S. Wyer on January 6, 1923, as associate in mineral technology. Mr. Wyer has for several years assisted the Museum especially by interpreting and making known its fuel collections.

Four members of the Museum force died this year, as follows: Mr. Edward Devlin, electrician, on February 27, 1923; Mr. Owen Glennan, plumber, on December 9, 1922; Mr. W. E. Roche, watchman, on October 12, 1922, and Mr. George H. Oliver, laborer, on February 10, 1923.

The death of Mr. John B. Henderson, a Regent of the Smithsonian Institution, on January 4, 1923, deprived the Museum of a valued

friend, a constant contributor, and an indefatigable worker on its collections. The members of the scientific staff and other employees of the Museum and Institution gathered in the auditorium on January 8, 1923, to pay respect to their colleague, and adopted resolutions expressive of their deep sense of loss. The flags on the Museum buildings were flown at half staff until after the funeral.

Mr. Henderson, from an early age, showed great interest in science. This, even though he was urged to enter the field of diplomacy, led him more strongly toward those subjects which furnish the groundwork of a scientific career. Shortly after leaving Harvard with the degree of A. B., he undertook his first West Indian Expedition to the Island of Jamaica in quest of land mollusks, and this was followed by many other trips to the Greater and Lesser Antilles, the last of which occurred during the past year. All these expeditions had for their object the gathering of material for monographs upon the wonderful fauna of the region.

Simultaneously, with this in view, he began collecting marine mollusks, first with the yacht *Doris*, in the Gulf of Maine. This was soon replaced by the larger yacht *Eolis*, kept in commission until very recently. Thus he collected more material than had been secured by all previous expeditions, and these collections are now in the U. S. National Museum awaiting report.

His first paper on mollusks was published in 1894 and the succeeding years show contributions in various journals and in the publications of the U. S. National Museum. By this sudden death in the 53d year of his age a career of great promise was cut short. The work already accomplished, nevertheless, has secured for him a place among American scientists which will keep his memory green through future generations, when work of less significance will have been forgotten. It can thus justly be said that brief as was his service to science, it was eminently worthwhile.

Succeeding his father, the late Senator Henderson, as Regent of the Smithsonian Institution in the year 1911, Mr. Henderson brought to the office of Regent a keen, sympathetic and broad interest in all the work of the Institution; a willingness to devote time and thought to its affairs, and a wisdom in council that combined to make his services of rare value. During the past year he served upon the Executive Committee of the Board of Regents. His personal charm and unassuming helpfulness endeared Mr. Henderson to every one.

REPORTS ON THE COLLECTIONS.

REPORT ON THE DEPARTMENT OF ANTHROPOLOGY.

By Walter Hough, *Head Curator.*

INTRODUCTION.

The increase of the material received by the Department of Anthropology was much less than that of the preceding year, which was exceptional as to the number and value of additions to the collection. Many desirable anthropological collections, however, were added. In general the average was similar to that of the past decade. This does not imply a lack of material or of interest in anthropology. It is an experience common to all museums, and an experience rendering it necessary to acquire collections by purchase or through exploration.

It is gratifying that there is seen each year an increasing interest on the part of scientific and business organizations, students, and the public generally in the collections of anthropology. This argues well for the stability of the museum as a feature of social life of America. In no country has there been displayed so much energy in establishing and supporting museums of science and art as in America.

ACCESSIONS DESERVING SPECIAL NOTICE.

Charles Sheldon, author and explorer, presented several rare specimens of carved stones and musical instruments of the Seri Indians, Tiburon Island, Mexico. Practically the only collection heretofore made among the little known Seri was that of Dr. W. J. McGee, which is now in the National Museum, and Mr. Sheldon's contribution is a welcome addition.

Dr. W. B. Stephens, Alameda, Calif., presented through Dr. C. Hart Merriam a Chilkat Indian ceremonial bow, 8 feet long and carved from a single piece of wood. It has a mask at either end with inset human hair.

A suit of Korean armor with iron plates fastened between layers of cloth was received as a bequest from the late Arthur S. Walcott. For many years this had been in the Museum as a loan from Mr. Walcott.

Kava bowls and clubs from Samoa, together with a number of spears and other weapons from New Guinea and other parts of Melanesia, were given by Charles Joseph Parks, Lawrence, Calif.

These represent phases of native art which are fast becoming extinct and are worthy additions to the national collections.

A collection of ivory carvings, bronze statuettes, and textiles, the work of native Burmese artists, was received as a loan from Lawrence P. Briggs, former American consul at Saigon, French Indo-China. The specimens, though the work of modern native artists, show that the Burmese racial talent has not deteriorated.

One of the most remarkable stone carvings ever received by the division is a figure 36 cm. high, of sandstone blackened except on face and parts of the body, presented by W. H. Shir-Cliff, Washington, D. C. The specimen is from the Makah Indians of Neah Bay, Wash. It represents a woman, illustrating some myth of these Indians, and reveals an unexpected power to depict expression possessed by the Makah artist.

Specimens from the natives of Formosa and new to the Museum were purchased. They comprise swords, shield, spear, wooden dishes, boat model, hats, and costumes with complicated textile designs.

A noteworthy Chinese harvest bell of the K'ang-hsi period, of gilt bronze, was received as a gift from Mrs. John Van Rensselaer Hoff.

Among the more important collections in American archeology the following are noted: A collection of 51 earthenware vessels and other antiquities from a pit house in Chaco Canyon, northwestern New Mexico, presented by the National Geographic Society, Washington, D. C. Next in importance is a series of 73 archeological specimens from Peru and Chile, South America, presented by D. S. Bullock of the U. S. Department of Agriculture, Washington, D. C.; 2 earthenware incense burners from the territory of Quintana Roo, Yucatan, Mexico, were transferred by the Bureau of American Ethnology; a stone collar of superior workmanship from Porto Rico was also received as a transfer from the Bureau of American Ethnology; a series of 186 archeological specimens from Haiti, including stone celts and axes, together with a number of potsherds, were donated by Celestino Bencomo, Chargé d'Affaires of Cuba; Miss Helen Roberts, New York City, presented 20 specimens from cliff dwellings in the Canyon de Chelly, Ariz.; and Arthur P. Rice presented to the national collections 5 small copper bells found at Nicte Ha, near Chichen Itza, Yucatan. Major Davis Bowles Wills, U. S. Army, presented 5 terra-cotta heads and a pottery whistle from Vera Cruz, Mexico; a stone pipe from Kentucky, with incised decorations, was received through purchase.

Old World archeology reports the receipt as a gift from Mortimer Clarke, jr., of casts of the busts of Amenophis IV, or Akhnaton,

the reform or heretic king of Egypt and his queen, a statuette of the latter, and a finely molded cat, the emblem of the goddess Bast, which are a desirable addition to the Egyptian section of the Museum. Mention is also to be made of a fine terra-cotta statutette of Daruma, the 28th patriarch of the Buddhist hierarchy, a lacquered Buddha statuette on an elaborate triple throne, and a pair of lacquered statuettes of Buddhist saints; also two bronze plaques with representations of Bodhisattvas.

In physical anthropology notable accessions to the collection relating to ancient man were received.

Casts of the skull of La Quina were received as a gift from the curator of the division. This is a remarkable cast of the recently reconstructed adult skull of La Quina, which dates from the Neanderthal period. The cast is a masterly work, resembling the original to the smallest detail, and was possible only through the favor of Dr. Henri Martin, owner of the original. Casts of the Obercassel skulls and skeleton, also received as a gift from the curator, are quite valuable first-hand casts. They were possible through the favor of Profs. Johannes Sobotta and G. Steinmann of the University of Bonn, Germany.

Three boxes of slides relating to West African research on anthropoid apes and on the natives by the late Prof. R. C. Garner, have not only scientific value (they have already been used to good purpose by the Museum taxidermist in preparing his anthropoid groups), but they are also of much interest as being the slides which Professor Garner used in his lectures. Many of the slides are beautifully colored. They were donated to the Museum at the wish of Professor Garner by his son, H. Garner, Washington, D. C.

In addition to the above there were eleven accessions of human skeletal material. The more valuable of these, comprising two skulls and one complete skeleton of a remarkable type from near Mobridge, S. Dak., were donated to the Museum together with a number of archeological specimens by E. S. Petersen, Mobridge, S. Dak.

EXPLORATIONS AND EXPEDITIONS.

A few ethnological specimens were received as a result of the exploration of Dr. W. M. Mann of the Division of Insects of the U. S. National Museum, carried on in southern Mexico for the Department of Agriculture.

From Miss Frances Densmore's investigations among the Yuma Indians of Arizona and some tribes in northern Mexico for the Bureau of American Ethnology a collection of ethnologica was received.

The third year of the exploration of ancient Pueblo Bonito to which the National Geographic Society has devoted $75,000 was under the curator of American archeology, Neil M. Judd, productive of a number of specimens now deposited in the Museum.

The journeys of Doctor Hrdlička to Brazil and Europe resulted in enriching the collections of the division of physical anthropology.

In June Matthew W. Stirling of the division of ethnology carried on an exploration of several ancient villages at Mobridge, S. Dak., and collected a valuable series of material for the Museum, which at the time of writing had not reached Washington.

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

Increasing care and forethought are required in maintaining museum material, and the diversified character of the objects in the Museum renders this a highly specialized branch of scientific work.

In ethnology careful watch was maintained in regard to possible deterioration of specimens through the agencies of rust, direct sunlight, and insects, with the result that preventative methods saved perishable material from damage. Important new accessions were installed during the period insofar as the limited exhibition space would permit. Changes were made in the older exhibits from time to time when such procedure seemed consistent with the scientific arrangement of the collections. New installations have always been made with the purpose of maintaining the scientific coherence of the divisional exhibits. By putting into practice methods of prevention, the collections were kept in a good state of preservation. The lack of proper storage facilities subjects some of the more imperishable material to dust, a condition which cannot be remedied as long as storage space remains crowded. In the few instances where poisoned skins or fabrics have lost their insect-resisting qualities insecticides were applied by Mr. Allen before damage resulted.

Assistance was given in the installation in the National Gallery of Art of the exhibition of American handicraft brought together and circulated under the auspices of the American Federation of Arts. The remainder of the ethnological case labels were written and sent to the printer, completing this great work.

The baskets from the Navaho and Piute Indians, part of the splendid collection given by Miss Ella F. Hubby, were installed in an alcove containing most of the remainder of her collection in the west north range.

Rearranging the exhibition series and reassembling of study collections in American archeology progressed as opportunity offered, in continuation of the plan adopted several years ago. This undertaking was in progress as the last annual report was submitted and

was resumed this summer during the absence of the curator. Painting the storage drawers which house the study series necessitated new drawer labels and revised lists showing the location of the study material, a task to which Mr. Paine has devoted almost his entire time during the past six months. These new lists will make it possible to locate, with a minimum of effort, any individual specimen not on exhibition. No material change was made in the public exhibits.

The collections in American archeology are now in better condition than ever before. A detailed plan prepared some years ago was followed consistently; the exhibition series is being rearranged as a necessary preliminary to the preparation of descriptive labels and the study series is being reassembled with the object of bringing archeological material together according to geographic units, thus making it more readily accessible for examination. The task of completing the official records, which has largely occupied the staff for a number of years past, has progressed satisfactorily.

In the division of Old World archeology the section of ecclesiastical art and the Warner collection of Buddhist art were reinstalled and labeled, and additions were made to the Egyptian antiquities. Labels to the number of 247 were prepared. The collections are found to be in excellent condition.

Commendable progress was made in the division of physical anthropology in cleaning and cataloguing the Huntington collection, this particularly in the last four months. Further installation is blocked by the lack of facilities, and specimens which would be of great interest to the public have to be crowded into drawers and storage. The collections of the division are in first-class state except as they suffer more and more from crowding.

The section of art textiles was kept in good order and minor betterments made. The section of musical instruments was improved by the addition of instruments new to the collection. Some installation was carried on in the section of ceramics. Especially noteworthy is a recently installed case of American glass, consisting of old-fashioned bottles and other glass.

The laboratory was very active during the year, completing a new Apache Indian group, three mannikins for the Chinese costumes given by Mrs. Gertrude Bass Warner, and making numerous life masks of Indians. Numerous other tasks were undertaken and completed.

RESEARCHES FOR THE BENEFIT OF THE MUSEUM.

The Head Curator engaged actively in the Secretary's Committee on ways and means to increase the usefulness of the Smithsonian Institution. He also expects to finish shortly the researches prose-

cuted for a number of years on fire and the history of its development. The work comprises four parts, namely; A monographic general treatment; handbook of illuminating devices in the U. S. National Museum; handbook on the making of fire artificially; and handbook on the development of stoves and cooking.

In ethnology, the assistant curator made a study of the Fijian material collected by Capt. Charles Wilkes, with a view towards publishing an account of this rare old material.

Various manufacturing concerns were supplied with information dealing with the various ethnologic phases of their commodities; this information was supplied from study of material in the national collections.

Information based upon Museum material was given the examiners of the U. S. Patent Office, deciding several patent cases involving large sums. Several cases relating to games, bricks, hat brims, etc., indicate the variety of subject concerned.

T. A. Joyce, Deputy Keeper of the Department of Ethnography of the British Museum, and Louis C. G. Clarke, Curator of the Museum of Archaeology and Ethnology, University of Cambridge, Cambridge, England, on a visit to study the museums of America, were shown the collections and methods of the department. They commended the work of the department highly and gave valued information as to certain of the exhibits.

A representative of Columbia University (Extension), Miss Mary Lois Kissell, from New York City, spent several days in studying the designs on various articles in the collections with a view toward their use in the New York schools.

Dr. G. F. Freeman, College Station, Tex., spent a few days studying the prehistoric beans and cotton in the ethnological collections.

A member of the staff of the Division of Arms and Armor of the Metropolitan Museum of Art, New York City, made a study of the primitive weapons in the division, particularly in regard to arrows.

During the past fiscal year the curator of American archeology continued examination of the cultural material collected by him in Utah and Arizona some years ago for the Bureau of American Ethnology and made further progress on his official report, describing both the material and the region from which it came. The pit house collection presented by the National Geographic Society during the past fiscal year was also studied and a short article concerning it submitted for publication by the Smithsonian Institution.

Dr. A. E. Douglass, of Steward Observatory, University of Arizona, spent several days in the division laboratories in preparation for a special expedition to be undertaken during the spring and summer of 1923 in interest of the National Geographic Society. The

curator is to direct this expedition and Doctor Douglass will examine and report upon its results. The chief purpose of the special research is the collecting of tree-ring data from prehistoric ruins in the southwestern United States. It is hoped that through this data a means may be found of correlating such prehistoric ruins as Pueblo Bonito, for example, with our own system of time measurement.

Dr. A. V. Kidder, of Phillips Academy, Andover, Mass., devoted a week in early March to examination of the division's collections, especially those recently obtained from prehistoric Pueblo Bonito, now being excavated by the National Geographic Society. Doctor Kidder also was much impressed by the collection of antiquities from the Chaco Canyon pit house, having examined similar remains in northern Arizona several years ago.

Mr. Henry B. Collins, jr., member of the staff of the Pueblo Bonito Expedition of the National Geographic Society, worked in the division laboratories from October 1st to May 1st on the cultural material collected by the Expedition. Mr. Collins also studied the Museum collections from various southwestern states in order to note the distribution of type specimens and the better to interpret the numerous finds now being made at Pueblo Bonito.

Mr. Lancaster, Park Engineer, Union Pacific Railroad system, accompanied by the architect, spent some days examining the decorations on the pottery of the southwestern United States with a view toward using such decorations, or parts, in the tourists' hotels which the railroad company contemplates building throughout that section.

In the division of Old World archeology a description of the collections, to be used as a handbook, was completed by Doctor Casanowicz and the study of Shamanism taken up. A diagrammatic chart of the exhibits of Old World archeology, useful as a guide to the hall and to be reproduced in Doctor Casanowicz's handbook of the collection, was prepared by George D. McCoy.

The professors and the class in sociology of the Theological Seminary at Alexandria, Va., made a study of the collections of Old World archeology and of the religious sections.

The past year was marked in the division of physical anthropology by a substantial advance in the formation of a catalogue of measurements of the crania in the collection. The first installment, containing measurements of approximately 700 skulls, is now being printed by the Museum, and another equally large section is being completed.

In addition to the above the curator made further studies on the morphology and dimensions of teeth in the various races. These

studies were completed and two parts already published in the American Journal of Physical Anthropology, while the third is soon going to print.

The material in the division is freely used by members of the division of mammals and others when they have need of consulting human remains.

Besides numerous visitors who spent from one hour to half a day in the division examining specimens or consulting with the curator, the following have carried on longer studies in the division:

Dr. R. J. Terry, of Washington University, St. Louis, studying the humerus; Dr. Leon A. Housmann, studying and obtaining samples of hair; Drs. Ella Oppenheimer, Edith Nicholls, and Mary Putnam (and others), of the Children's Bureau, Department of Labor, twice to three times weekly for lessons in anthropometry for work on children; Dr. Walter W. Swett, consultation and practice of measurements with a view of utilizing them in measurements on cattle; Dr. Paul H. Stevenson, of Peking Union Medical College, China, study of Eskimo crania; Prof. F. V. Simonton, University of California, studies on the lower jaw; Dr. John W. Ross and Joseph L. Appleton, Dental School of the University of Pennsylvania, studying methods and teeth; Prof. Edward Loth, University of Warsaw, Poland, studying vertebrae, the scapula, etc.; and Prof. R. Bennett Bean, University of Virginia, anthropometry.

The Museum is a conserver of forms, of history, of art, and arts. The Museum is the repository of the historic evidences of civilization. It is evident to all who have the interests of the Museum at heart that there is great necessity for the collection of material at first hand.

Examples of enlightened cooperation are the well known contributions of material and the corresponding publications of Dr. W. L. Abbott, who collected anthropological and biological material in Africa, High Asia, and the East Indies. Without his cooperation the ethnology of these areas would be unrepresented in the United States National Museum.

Another cooperation was that financed by Peter Goddard Gates for explorations in Pueblo archeology. Both the collections from these explorations and the publications based on them are essential to the work of students of the subject. These Gates expeditions cost $4,000, and the results are held at many times that sum.

DISTRIBUTION AND EXCHANGE OF SPECIMENS.

There were sent out from the department an increased number of selected duplicate specimens to educational institutions having facilities for caring for the material. This educational work, though

limited by the amount of duplicate specimens in the care of the department which can be utilized, was from all accounts productive of much good.

From ethnology there were sent out ten gift collections totaling 563 specimens; from American archeology one gift of 204; Physical anthropology one gift of 2; and from Old World archeology one gift of 65 specimens. In one instance three of the divisions cooperated in furnishing specimens, the sending being counted as one from ethnology.

As loans from ethnology there were sent four collections totaling 448 specimens and one from physical anthropology of 9 specimens.

Exchanges: ethnology—2 exchanges, 2 specimens; American archeology, 2 exchanges, 11 specimens; Old World archeology, 1 exchange of 13 specimens.

TOTAL NUMBER OF SPECIMENS IN THE DEPARTMENT.

During the year the department received 112 accessions, comprising 1,583 specimens. Of these, 8 accessions, totaling 148 specimens, were loans.

The total number of specimens received were distributed as follows: Ethnology, 417 specimens; American archeology, 900 specimens; Old World archeology, 45 specimens; Physical anthropology, 171 specimens; Art textiles, 13 specimens; Musical instruments, 6 specimens; and Ceramics, 31 specimens.

The total number of specimens in the department of anthropology on June 30, 1923, was 648,222, assigned as follows:

Ethnology	156,103
American archeology	423,975
Old World archeology	29,915
Physical anthropology	28,706
Art textiles	1,345
Musical instruments	2,052
Ceramics	6,126
Total	648,222

REPORT ON THE DEPARTMENT OF BIOLOGY.

By Leonhard Stejneger, *Head Curator.*

After an absence of three months spent in field work in the Bering Sea region in cooperation with the Bureau of Fisheries, I returned to duty on September 20, 1922, and at once resumed charge of the Department. Special reference is made to this in the present connection, because it illustrates and emphasizes an activity of the Museum, which is too often overlooked by the public, namely, the enormous amount of work performed by this institution in cooperation with other agencies of the Government, with museums at home and abroad, with universities and other scientific and educational establishments as well as with private investigators, for which the Museum institution receives but scant credit. And yet, cooperation is the red thread that runs through all our activities, and has been so from the very beginning. As early as 1854 Prof. S. F. Baird, then Assistant Secretary of the Smithsonian Institution, reported how "the applications for assistance with materials for research are constantly being received and always met with all possible promptness, so that scarcely any natural history monograph or memoir of any extent has been published in this country within a year or two, which has not been indebted in this way to the Institution." And as it was then, so it is now, as shown by the entries in the appended bibliography. A survey of the field shows that this Department is or has been recently cooperating with practically all the federal departments; with all the larger museums of natural history in this country and abroad; with most of the universities; with all the botanical gardens in this country and many in Europe and elsewhere; with independent scientific institutions like the Carnegie Institution of Washington; with important exploration expeditions in distant parts of the world; and with a practically endless number of minor institutions and private investigators everywhere. Of larger, more recent, cooperative projects I may call special attention to the cooperation with the Carnegie Institution for the study of the world's Cactaceae, and the breeding experiments with Cerions, a group of West Indian terrestrial mollusks on the Florida Keys; the cooperation with the New York Botanical Garden and the Gray Herbarium of Harvard University for the botanical exploration of northern South America since 1918 and still in progress. Under that agreement eight dif-

ferent expeditions have already been carried on in Ecuador, British and French Guiana, Trinidad, Venezuela, and Colombia. Ever since 1882 the Department of Biology has shared with the Bureau of Fisheries the investigations of the history of the North Pacific fur-seals and fur-seal industry. The study of the Asiatic fur-seal fell particularly to the Museum, and as recent as the present fiscal year it cooperated to the extent of having one of its staff visit and report upon the fur-seals of the Commander Islands and the Japanese seal island in the Sea of Okhotsk. I may also call attention to the recent cooperation with the National Park Service for the purpose of botanical exploration of the national parks and the preparation of guide books to their floras. This is not the place to go into further detail, but the whole matter can be summed up in the brief statement, that the work of this Department is one large, continuous cooperation with practically all public and private agencies concerned in biological investigations in this country and a large number of similar agencies abroad.

COMPARISON OF INCREMENT OF SPECIMENS OF 1922-23 WITH THAT OF 1921-22.

Numerically stated the increment of specimens is less than one-half of what it was during the preceding fiscal year. Nevertheless, the scientific value, according to the reports of the divisions, not only compares favorably with that of the previous year, but on the whole is characterized as of superior interest, except in three of the divisions, in one of which the relative inferiority is due to the preponderating importance of a single accession, namely, the Buchtien Herbarium purchased in 1922. Moreover, the decrease in numbers was universal in all the divisions, except one, that of Marine Invertebrates. The curious fact noted in last year's report that there was a sharp distinction between the decrease in the increment of the vertebrate divisions and the increase in that of the invertebrates, is shown to be a coincidence devoid of further significance. The number of specimens received in any one year, as compared with a previous one, is more or less accidental, and affords only a means of appraising the relative amount of manual and curatorial labor spent. Hence it is evident that the past year has been favorable to the sadly undermanned divisions in allowing more time for catching up with arrears and for systematic study of the collections.

The question of the importance of quality over that of quantity is well illustrated by the figures of accessions in the Division of Insects. It will be remembered that in last year's report the number of insects accessioned was 138,500, which were characterized by the curator as greatly surpassing in scientific value those of any previous year for some time back. During the present year the number is only

43,696, or less than one-third as many, and yet "the scientific value of the material received in the present fiscal year is probably greater than that of last year's accessions." On the other hand, in the Division of Marine Invertebrates, where there was an increase, the year is characterized as particularly bright, not only because of the receipt of many species new to the collection, among them numerous types (in two of the accessions more than 200 types!), but also, because through the generosity of friends of the Museum, material has been obtained from a number of localities hitherto unrepresented in our collection.

ACCESSIONS DESERVING SPECIAL NOTICE, AND WHY.

While for the last few years the Australian collections formed one of the most salient features of our accession list, the study material which we have received during 1922–23 from China may be fairly said to characterize the present year. It is hoped that this signifies the beginning of a more systematic attempt to link up the Asiatic, more particularly the palearctic, fauna with our North American collections looking to the accumulation of material in this Museum, which will lead to a fundamental correlation of the two faunas. The arrival of large collections from China, made by Arthur de C. Sowerby, Rev. D. C. Graham, and others, therefore, deserve special notice. The material received from the former, and generously presented to the Museum by Robert S. Clark, contained among others 264 mammals, 153 birds, 308 reptiles and amphibians, and 259 fishes. Rev. D. C. Graham sent a large number of insects, some mammals, a number of interesting reptiles and batrachians and about 500 birds, though the birds arrived too late to be included in this report. These two collections contain many novelties and additions to our series of Chinese animals. South America is also prominently represented in the accession list, by a large miscellaneous collection brought back by Dr. Hugh M. Smith as a result of his visit to that continent. The large and important Evezard collection, the Metcalf Opalina type collection and other valuable accessions will be mentioned in detail under the heading of the various divisions to which they appertain.

Mammals.—Mention has already been made of the 264 mammals collected by A. de C. Sowerby in the province of Fukien, China. A valuable collection of 81 mammal skins and skulls, from the Philippine Islands, including 6 type specimens, deposited with the Museum several years ago, were turned over as a gift from the Bureau of Science, Manila. Major W. P. Draper of Hopedale, Mass., presented 23 skulls and scalps of African mammals (mostly antelopes) from Kenya Colony, East Africa. Eighty-seven specimens collected by Dr. M. W. Lyon, jr., in Porter Co., Ind.; skin and skull of a deer and

skin and skull of a mountain goat collected by Dr. C. D. Walcott in Alberta, Canada; 48 bats collected by Dr. Paul Bartsch in Porto Rico; and 4 skulls and 1 skin of fur seals from Lobos Island collected by Dr. Hugh M. Smith, also deserve mention, as does a rostrum from a beaked whale from Bogue Bank, N. C., donated by Mr. B. F. Hardison, Grantsboro, N. C. In exchange 11 skins and skulls of North American mammals not previously represented in the Museum were received from the Museum of Comparative Zoology, and the skull of a *Stenoderma*, from Porto Rico, (a bat supposed to be extinct) from the American Museum of Natural History.

Birds.—While the large collection of Chinese birds received from Rev. D. C. Graham, as already mentioned, has not been identified as yet, nevertheless a cursory examination has shown that it contains valuable additions both in species and series. Mr. B. H. Swales has generously continued to add genera and species hitherto unrepresented, in all 64 specimens including 9 genera and 28 species new to the collection. Among the genera thus acquired are *Asarcornis*, an oriental duck, *Erythrobucco*, a barbet, *Cercococcyx*, an African cuckoo, and *Stactocichla*, an Oriental babbler. The donation also contained 13 Antarctic birds and ten from the Azores, including five forms or species new to the collection. Among the Chinese birds collected by Sowerby there were four species new and from the National Zoological Park a further addition of three species and one genus (*Xenorhynchus*, a stork). Still another genus and species new to us, *Phegornis mitchelli*, an Andean sandpiper, is due to the kindness of Rafael Barros V., Los Andes, Chile. Further notable gifts were four mounted birds from the Secretary of State, Charles E. Hughes, a pair of "Huia" birds from the Manawatu Philosophical Society, Palmerston North, New Zealand, and an egg of the Blue Goose, *Chen caerulescens*, laid in captivity, new to the collection.

Reptiles and batrachians.—The two collections from China, namely, 308 specimens from A. de C. Sowerby and 33 from Rev. D. C. Graham, have already been alluded to. Both are highly interesting and contain several novelties which will be described shortly. Of no less importance is the collection of 124 specimens made by Dr. W. L. Abbott in Santo Domingo. One of the specimens representing a new species of *Leptodactylus*, described during the year by Miss Cochran, is very important, as it definitely establishes the occurrence of this genus in the Antilles outside of Porto Rico, and thus disposes of the theory of its having been accidentally introduced into the latter island. Three specimens belonging to the genus *Liopelma*, a gift of the Canterbury Museum, New Zealand, was one of the greatest desiderata of our collection. This toad, the only amphibian inhabiting New Zealand, because of the doubt attached to its sys-

tematic position, its rarity, and its anomalous geographic distribution, is of the greatest importance in herpetology. A considerable number of frogs and lizards were collected by Dr. Hugh M. Smith in Uruguay, from which country we also received additional specimens from Dr. F. Felippone. A small collection of snakes, made by Marcelino Madera, in Ecuador, was obtained through the Biological Survey.

Fishes.—Besides the 259 specimens collected by Mr. Sowerby in China, 29 others from the same country were obtained in exchange from the National Southeastern University, Nanking, China, through Dr. C. Ping. Dr. Hugh M. Smith's collection from South America contained 166 specimens and 10 were received from Dr. F. Felippone, from Uruguay. An interesting set of larval eels, both of the European and American species, was obtained from Dr. Johs. Schmidt, Carlsberg Laboratorium, Copenhagen, Denmark. The Bureau of Fisheries transferred to the collection 130 specimens collected by the schooner *Grampus*, including types of two subspecies.

Insects.—Also in this division the Chinese material received during the year is given place as of the first importance, namely, the insects collected by Rev. D. C. Graham in Sze-chuen, China. Valuable and important collections have been received from a number of generous donors, such as 3,860 rare and beautiful butterflies from William Schaus, Honorary Assistant Curator in the Division of Insects; 1,800 exotic beetles purchased in Europe and presented to the Museum by J. A. Hyslop, Insect Pest Survey, Department of Agriculture, 1,152 butterflies donated by B. Preston Clark, Honorary Collaborator in the Division; Prof. C. F. Baker, Los Banos, P. I., made gifts during the year totaling 1,315 specimens of moths; mosquitoes from the Panama Canal Zone, numbering 1,485 specimens, were presented by J. B. Shropshire, Ancon, C. Z., and 1,688 specimens of Hymenoptera by Robert M. Fouts, Washington, D. C. From the Imperial Bureau of Entomology, British Museum (Natural History), a gift of 179 beetles was received, and from William Beutenmueller, Highwood, N. J., 194 adults and 4 galls, representing 34 species, 26 of which are types. Two interesting gifts of butterflies, 300 by Mrs. E. W. Rorer, Guayaquil, Ecuador, 115 from Colombia by Frank Trauger, Philadelphia, may be mentioned, as well as 240 miscellaneous insects by Pittier, father and son, Venezuela. Dr. J. M. Aldrich, while on a vacation in the Adirondacks, collected 2,100 specimens. A number of important accessions were secured in exchange, thus 527 Orthoptera, from the National Museum of Natural History in Stockholm; 542 Hymenoptera from Dr. Reinhold Meyer, Germany, and 493 gall flies from Dr. A. C. Kinsey, University of Indiana. It was also possible to add some very important desiderata by purchase in Europe.

Marine Invertebrates.—Preeminent among the year's accessions are two collections of prime importance. The first one consists of 226 microscopic slides of Opalinid ciliate infusorians from Prof. Maynard M. Metcalf, of the Orchard Laboratory, Oberlin, Ohio, being the first set, including 144 types of new species, upon which was based his monograph of the family which has recently been published by the Museum as its Bulletin No. 120. The other is a transfer from the U. S. Bureau of Fisheries of a collection of Philippine sponges, including 57 types of new species described by Prof. H. V. Wilson in his report on the sponges taken by the *Albatross* Philippine Expedition in 1907–1910. From Dr. H. L. Shantz, U. S. Department of Agriculture, was received 274 samples of freshwater plankton, material upon which his paper "A biological study of the lakes of the Pike's Peak Region" was based. Similarly there was obtained from Dr. O. W. Hyman, University of Tennessee, 37 specimens and numerous larvæ of Pinnotherid crabs, being the material upon which his paper entitled, "Studies upon larvæ of the family Pinnotheridae" is based. In exchange the Division obtained from Prof. W. M. Tattersall, University College of South Wales, Cardiff, 75 lots of crustacea, comprising 11 species, 46 specimens of isopods; and 64 species, 838 specimens of amphipods, all from the Irish Sea. An important collection of terrestrial isopods from central and southern Europe, including representations of many species not hitherto represented in our collections was obtained by purchase. An unusually large number of smaller accessions resulted in the addition of many species new to our collections, too numerous for listing here. Cooperation by the Consular Service is acknowledged as resulting in the receipt of 125 specimens of invertebrates, mostly crustacea, collected by Jesus G. Ortega and Henry Notton, through the kind offices of W. E. Chapman, American Consul at Mazatlan, Mexico.

Mollusks.—The late John B. Henderson, formerly a Regent of the Smithsonian Institution, purchased for this division the General Evezard Collection of mollusks, containing 11,399 specimens, including a large number of types, for the study series and in the neighborhood of 2,000 specimens for the duplicates. This collection was brought together by General Evezard personally during the twenty-eight years that he lived in western India, at a cost of about £2,000. He was interested particularly in mollusks, and did much of his collecting himself. The collection contains some of the finest material this division has ever received. It is rich in mollusks from localities poorly represented here, particularly India, South America, and the South Sea Islands. While Mr. Henderson was engaged upon a study of the West Indian landshells, he borrowed from Dr. George H. Clapp, Sewickley, Pa., a large series of West Indian land-

shells. After Mr. Henderson's death, Doctor Clapp gave these specimens (about 3,000) to the Museum, thus making our collection of this group the most complete in the world. The marine shells, about 190 species and 1,000 specimens, donated by D. Thaanum, Honolulu, H. I., besides containing a number of types, (28), are from localities from which we have heretofore had no specimens in the collection. Several collections of mollusks from the Philippine Islands have been received from various sources, namely, Dr. C. F. Baker, Los Baños, P. I.; Gilbert S. Perez, Lucena, Luzon, P. I., including the type of one new species; Maxwell Smith, Hartsdale, N. Y., whose gift included 6 types of new forms. The collection of shipworms has also been enriched by numerous gifts. Thus the Committee on Marine Piling Investigations sent in 20 accessions of shipworms and rock-boring mollusks, from the Atlantic and Gulf coasts of the United States, Cuba, and Porto Rico; J. W. Gonggryp, Haag, Holland, presented 18 lots from South America and the West Indies; Science and Agriculture Department, British Guiana, (through L. D. Clear, jr.) 3 shipworms from British Guiana; C. Walton, Peterhead, South Australia, 8 shipworms including the type of a new subgenus, *Nototeredo*, from Australia; James Zetek, Ancon, C. Z., about 12 specimens from Panama; George P. Denison, Honolulu, H. I., a collection of rock-boring mollusks from Pearl Island, Hawaii; Museum of Comparative Zoology, Cambridge, Mass. (through Dr. William E. Clapp), a piece of wood containing shipworms from Port Bolivar, Tex.; while Doctor Bartsch added a collection of shipworms collected by himself at Woods Hole, Mass He also collected about 15,000 land, fresh water and marine mollusks in the West Indies. Prof. T. D. A. Cockerell, University of Colorado, generously donated a number of species collected by himself in the Madeira Islands, including the types of 3 new species and subspecies. Dr. Bryant Walker presented some mollusks from Alabama, including one cotype, and G. Willett, Craig, Alaska, others from Alaska, including the type of a new species. Hon. Gifford Pinchot, Milford, Pa., donated 90 specimens of landshells from Hawaii, and Dr. F. Felippone, Montevideo, miscellaneous mollusks from Uruguay. Through exchange with the Zoological Survey of India, Calcutta, 22 landshells from India were obtained.

The Section of Helminthological Collections received as a gift from Prof. Edwin Linton, University of Georgia, 75 microscopic slides and 2 vials of cestode parasites of sharks and skates, including the types of 9 new species.

Echinoderms.—The gift of 50 recent crinoids from the north Atlantic region, mostly from the *Ingolf* expedition, 1895–96, was received from the Zoological Museum of the University, Copenhagen (through Dr. Th. Mortensen). The type specimen of one of his

species was donated by Prof. Walter K. Fisher, Hopkins Marine Station, Calif. A series of specimens were received from James Chumley, University of Glasgow, Scotland, and Dr. Hugh M. Smith, Washington, D. C. Ten recent crinoids from the Bonin Islands and southern Japan were obtained in exchange with the Zoological Institution of the Upsala University, Sweden (through Dr. Torsten Gislen), while a large series of *Ophiura lacertosa* was similarly acquired from Dr. Victor van Straelen, University of Brussels, Belgium.

Plants.—The most important accessions to the National Herbarium were as follows: 13,165 specimens transferred by the Bureau of Plant Industry, U. S. Department of Agriculture. These include 10,000 mounted grasses from various regions; 1,000 specimens of plants collected in Panama by Dr. C. V. Piper; and about 2,300 plants collected in the western United States by W. W. Eggleston; 5,413 specimens collected for the Museum by Dr. F. W. Pennell and E. P. Killip in Colombia. This material comprises the largest set of the collections made by Doctor Pennell and Mr. Killip during the spring and summer of 1922 on behalf of the National Museum, the Gray Herbarium, the New York Botanical Garden, and The Philadelphia Academy of Natural Sciences; 1,340 specimens, mostly from the West Indies and northern South America, received in exchange from the New York Botanical Garden. Included are 521 specimens collected in British Guiana by Dr. H. A. Gleason, in continuation of the plan of joint cooperative exploration entered into several years ago by the New York Botanical Garden, Gray Herbarium, and National Museum; 1,635 specimens of British Guiana plants, obtained by purchase; 3,095 specimens received in exchange from the Muséum d'Histoire Naturelle, Paris. This collection includes a large number of plants from French Guiana, obtained by early collectors, besides interesting series from southeastern Asia; 1,331 specimens received in exchange from the Field Museum of Natural History, Chicago, Ill. A large part of the sending consists of the collections made in Peru and Panama by J. Francis MacBride of that institution, part of which have been identified by the staff of the National Herbarium; 1,668 specimens of Salvadorean plants, presented by the Dirección General de Agricultura of the Salvadorean government. The collection represents the result of field work by Dr. Salvador Calderón, in continuation of the exploration begun in 1921–22 by Mr. Standley; 1,300 specimens of Bolivian plants, presented by Dr. Otto Buchtien of La Paz, Bolivia; 1,851 specimens received in exchange from Riksmuseet, Stockholm, and consisting largely of European and Siberian mate-

rial of critical groups, besides a large collection of algæ; 2,000 specimens of plants from Yellowstone National Park, presented by Mr. P. H. Hawkins of Absarokee, Montana; 1,875 specimens of mosses from the Baltic region of Europe, purchased; 1,135 specimens of Guatemalan plants, presented by the Guatemalan Department of Agriculture. This material was collected during the progress of a botanical exploration of Guatemala undertaken a few years ago by that department, which has resulted in a substantial increase in our knowledge of the flora of that republic; 869 specimens of Colombian plants, presented by Rev. Brother Ariste-Joseph, of Bogotá; 600 specimens of plants collected in the Dominican Republic by Dr. W. L. Abbott. These represent a continuation of his collections of recent years, all of which have resulted in the addition of a large number of new species to the previously known flora of that island; 604 specimens of Venezuelan plants presented by Mr. H. Pittier, of Caracas. These have mostly been identified by Dr. S. F. Blake of the U. S. Department of Agriculture, and form an important addition to the large collections previously forwarded by Mr. Pittier from the same country; 543 specimens of ferns, received as an exchange from the Herbarium of Prince Roland Bonaparte, Paris; 833 plants collected in the State of Sinaloa, Mexico, and presented by J. G. Ortega of Mazatlán. The collections made in that State in recent years by Mr. Ortega, of which the National Museum possesses a complete series, comprise one of the most comprehensive and valuable collections ever made in Mexico; 500 specimens collected in Panama by E. P. Killip; 475 specimens of Brazilian plants, obtained by the late Prof. E. W. D. Holway during his investigations of the parasitic fungi of that country; 618 specimens, chiefly from the Philippine Islands, forwarded in continuation of previous exchanges by the Bureau of Science of Manila.

EXPLORATIONS AND EXPEDITIONS.

It is hoped that the falling off in biological exploration noted in recent reports has reached its lowest ebb during the present year, and that from now on we may expect a turning of the tide. With this possibility in view, it seems imperative that plans and problems for future biological explorations and expeditions should at least be outlined, so that we may be prepared to take the greatest possible advantage of the hoped for improved conditions. I therefore prepared and submitted a somewhat elaborate memorandum on research in the Department of Biology, in which, under the heading of "Problems" I indicated the lines along which, in my opinion, the activities of the Museum in this field should be guided in the future.

It may not be amiss to introduce here the central idea which proceeded from the fact that the early biological problems and research of the Museum naturally related to the fauna and flora of North America, especially that part opened up by the war with Mexico and the explorations for railroad lines to the Pacific coast. The necessity of working up this material was naturally paramount. With the purchase of Alaska a hitherto unexplored territory on our own continent naturally attracted the attention of the National Museum, especially since the early activities in Alaska were almost exclusively instigated by the federal government with the result that nearly all the material collected there came to Washington. So intensive was this study of our native fauna, especially that of the vertebrates that within a comparatively short time North America, from a taxonomic point of view was better explored and better known than any other part of the world, Europe itself not excepted. At the time these intensive studies began, North America was regarded as one of the primary zoogeographical divisions of the world coequal with South America, the Oriental region, Africa, and the Europe-North Asian region also known as the palearctic region. Later on considerable collections from the Pacific coasts of northern Asia and from Europe found their way into the National Museum. It was then seen that the North American fauna, at least that part which occupies the more temperate portions of the continent northwards, is most closely related to the palearctic fauna of temperate Asia and northwards, and it was realized that the dominant constituency of the North American fauna actually had its origin in the Old World. Here then was a whole series of closely related problems, which sought their solution in Asia and Europe. The circumstance that the U. S. Biological Survey had gradually taken over to a great extent the restricted North American field for still more refined cultivation served to stimulate the interest of certain of the larger divisions of the National Museum in the palearctic region. The Museum has already made a good start in that direction. It has excellent collections in many lines of the palearctic fauna. Its collection of European mammals is one of the most comprehensive ones extant. It has excellent series of birds, reptiles, and batrachians from Japan, Korea, and Kamchatka in eastern Asia, besides a respectable representation in other classes. It has also important material collected by the Lyman-Hollister Expedition to the Altai region some years ago, and the Koren-Avery Expedition to the mouth of the Kolyma.

It is therefore with special gratification that I call attention to the work now in preparation and partly in progress for the biological exploration of China in the interest of our Museum. The field work

by Arthur de C. Sowerby, the expense of which is most generously met by Robert S. Clark, which was started in the autumn of 1921 has continued during the present fiscal year, and although at present greatly interfered with by the unsettled conditions in the region where work was being done, nevertheless very material additions to our vertebrate collections have already been received as mentioned above.

Of equal significance is the fact that Dr. W. L. Abbott, after the return of Charles M. Hoy from Australia, decided to send him to China to collect for the Museum. Mr. Hoy departed for his new field on December 15, 1922. Thus far no collections have been received due to difficulties of transportation and the political situation which has placed obstacles in the way of reaching the final destination, but recent letters indicate that we may soon see tangible results of his efforts.

A third expedition in China, from which the National Museum is expected to derive great benefit is that of the National Geographic Society under the leadership of Mr. Wulsin, who is already in the field.

In this connection should be mentioned the activities of Rev. D. C. Graham, who located at Suifu, in the province of Szechuen, China, undertook an expedition to Mount Omei, from which we received very important collections, especially insects, birds, and reptiles. He is planning to make an expedition to Tatsienlu, and possibly to Mupin, during the summer of 1923, both localities of great zoological interest.

Dr. W. L. Abbott, revisited the Dominican Republic in February and March, 1923, continuing his biological explorations of recent years. Unfortunately, his permit to collect birds was delayed until he was about to leave the country, so he only obtained the skin of one bird and saved its body in alcohol. His collections of reptiles and amphibians were highly important, however, obtaining as he did a new species of frog recently described by Miss Cochran as *Leptodactylus abbotti*, from the specimen collected by him. It is nearly related to the one from Porto Rico and establishes the genus as one definitely belonging to the Antillean fauna. He also collected about 600 plants in the southern part of the Samaná Peninsula, which although not yet determined, will doubtless prove as interesting as the previous collections obtained in the same region by Doctor Abbott, which have yielded a large number of new species.

In connection with the heredity experiments conducted by Doctor Bartsch under the joint auspices of the Smithsonian and Carnegie Institutions, it was found desirable to add several species of Cerions, in order to exhaust the apparent possibilities that this group presents.

For that reason Doctor Bartsch visited Porto Rico, sailing May 1 on the Navy Transport *Henderson*. Short stops were made at Guantanamo, Cuba; Port au Prince and Cape Haitien, Haiti; Puerto Plata, Santo Domingo City, and San Pedro de Macoris in Santo Domingo, before reaching Porto Rico. A little dredging with a hand dredge was made possible in several of these places through the kindness of the captain commanding the ship, who placed a launch at Doctor Bartsch's disposal. Shore collecting was likewise done wherever possible. A week was spent in Porto Rico, where, through the kindness of the Governor, an automobile was placed at Doctor Bartsch's disposal, which enabled him to see much of the Island and to stop in many places long enough to gather a bag of leaf mould, containing minute shells. The Governor was also kind enough to give Doctor Bartsch a letter to French Maxwell, the vice president of the sugar company at Guanica Bay. Through the kindness of Mr. Maxwell, Doctor Bartsch was given not only delightful quarters, but all the help, including a launch, that could have been desired to make his short stay a most profitable one. A large number of specimens of the desired Cerion were obtained, as well as a large series of additional species. All in all about 15,000 specimens were added to the Museum collection as the result of the trip.

Dr. Hugh M. Smith, Associate Curator in Zoology, spent several months in South America primarily for the study of the fur-seal and other fisheries of Uruguay, during which time he made extensive collections for the Museum in all branches, especially fishes, reptiles, and marine invertebrates, as already mentioned. He sailed from New York in the Lamport and Holt Line S. S. *Vestris* on September 23, 1922, returning in January, 1923. The opportunity to collect in Brazil when the steamer stopped was improved, but the main collections were made in the coastal region of Uruguay, especially at the Lobos Islands. The collections form a most welcome addition to our series which are very deficient in material from the region visited.

The head curator, at the request of the Department of Commerce, was detailed from early in June, 1922, to the end of September, to undertake a tour of inspection of the fur-seal islands of the North Pacific. He joined the party of Assistant Secretary of Commerce C. H. Huston whose primary object was a study of the conditions of the fisheries of Alaska as well as the other economic and commercial problems of that territory. The expedition proceeded from Seattle, Wash., in the coast guard cutter *Mojave*, and after visiting several localities in continental Alaska, proceeded to the Pribilof Islands, the Komandorski Islands, Petropaulski, Kamtchatka, and Robben Island in the Sea of Okhotsk. The return was made over Hakodate

and Yokohama. A more detailed account of the trip has already been given in the Smithsonian Exploration Pamphlet for 1922.[1] Unfavorable weather interfered greatly with collecting, but a fair collection of plants and insects was made on Bering Island.

During the spring of 1923 C. R. Aschemeier, one of the taxidermists of the Department, was given permission to accompany A. H. Fisher on an expedition to the lower Amazon River, Brazil, the understanding being that Mr. Aschemeier should devote his time to making collections for the National Museum of the vertebrates with particular reference to river dolphins and sea cows. He left New York on April 21, 1923, in the Lloyd Brasiliero S. S. *Pocone*, for Para, Brazil, arriving on May 4. About two weeks after the arrival he boarded the steamer *Sao Salvador* for Santarem, about 400 miles up the river. He had not returned at the end of the fiscal year, and no collections have been received as yet.

Dr. William M. Mann, Assistant Custodian, Section of Hymenoptera, undertook for the Department of Agriculture a trip to Mexico between January 19 and June 7, 1923, for the purpose of collecting and studying certain fruit flies. As far as possible, general collections of insects were made and some reptiles secured. The material has not as yet been accessioned, but enough is known of it to prove its value, although owing to the extreme dryness of the season collecting was very poor. From Nogales he went down the west coast of Mexico as far as Tepic, making a ten days side trip to Lower California in the district between Loreto and Comondu. Afterwards the states of Jalisco and Colima were visited and then a rather hurried trip was made to the Isthmus of Tehuantepec and in Chiapas as far as Tapachula. He returned by way of Laredo, Texas.

As usual, Dr. C. D. Walcott's expedition to the Canadian Rockies was productive of valuable additions to the mammal collection as already mentioned.

The botanical explorations during the year have added materially to the collections of the National Herbarium. Dr. W. L. Abbott's visit to the Dominican Republic has already been mentioned.

From April to October, 1922, Dr. F. W. Pennell, Curator of the Herbarium of the Philadelphia Academy of Natural Sciences, and Ellsworth P. Killip, Aid in the Divison of Plants, carried on botanical field work in the Republic of Colombia. The expedition was organized by the New York Botanical Garden, the Gray Herbarium of Harvard University, the Philadelphia Academy of Natural Sciences, and the National Museum as part of a general plan, adopted in 1918, for botanical research in northern South America. Finan-

[1] Smithson. Misc. Coll., vol. 74, no. 5, pp. 30–40.

cial assistance was given also by Oakes Ames, who was interested in obtaining specimens of orchids from the regions visited. Mrs. Pennell and Dr. Tracy E. Hazen, of the Biological Department of Columbia University, also accompanied the expedition for part of the time. About 7,200 numbers of plants were secured, represented by over four times that number of dried specimens, which have been distributed equally between the contributing institutions. The collection is one of the largest and most important ever obtained in Colombia.

Mrs. Agnes Chase visited Europe from March until July, 1922, for the purpose of studying the grass collections in several of the larger herbaria. The herbaria at Vienna, Munich, Florence, Pisa, Geneva, Berlin, Leiden, Brussels, Paris, and London were visited, and many type specimens of American grasses were examined. A large number of valuable specimens of grasses also was obtained for deposit in the National Herbarium, including fragments of many types, and duplicates of early South American collections.

William R. Maxon, Associate Curator of the Division of Plants, left Washington in May, 1923, accompanying a party directed by O. F. Cook of the U. S. Department of Agriculture, whose purpose is to investigate the rubber resources of Central America. At the time of preparation of this report, the party was in Panama, and it was expected that two months additional would be spent in Central America.

Dr. A. S. Hitchcock, Custodian of the Grass Herbarium, left Washington in May, 1923, with the expectation of spending six months in Bolivia, Ecuador, and Peru, where he intends to devote particular attention to the study of grasses, but will also make collections of other groups of plants. The expedition is supported jointly by the U. S. Department of Agriculture, New York Botanical Garden, and Gray Herbarium.

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

There being no prospect of any amelioration of the conditions which are preventing a further expansion of the exhibition series or its restoration to its prewar extent for some years to come, the report under this heading must necessarily be one of minor changes and improvements. A highly desired improvement must be recorded, however, inasmuch as three rooms opening into the foyer in the basement have been temporarily given over to this Department for the display of the animals of the District of Columbia. These collections, which for lack of room had been scattered in various halls or stored away are now brought together and made available for the students, amateurs, and school children of Washington. By segregating them on the lower floor, their distinct local character is emphasized and

their study by the visitors from the city greatly facilitated. These collections are as yet quite incomplete, chiefly because heretofore no suitable exhibition space had been available, but from now on no efforts will be spared to bring together a representative series of the District fauna. Doctor Bartsch, Curator of Mollusks, has kindly consented to look after this exhibit.

During the year it has been possible to further complete the Australian mammal exhibit by adding several kangaroos, a "Tasmanian-Devil" and a marsupial cat. To the exhibit of the mammals of the Oriental Region a finely mounted Malay tapir has been added which necessitated the entire reinstallation of the Oriental ungulate case, the bottom being sanded, etc. Of other large mammals added to the exhibition series, I may mention a splendid black wolf, a full grown South American ant-eater and an African red river-hog. But the main achievement of the taxidermists has been the mounting and installation of an old gorilla by Messrs. Brown and Aschemeier collected a few years ago by the latter while attached to the Collins-Garner Expedition to French Congo. It was thus possible to retire the old mounted specimens which has been an eyesore for many years. In the near future it is hoped to similarly replace the chimpanzee now on exhibition.

The work of caring for and recording the study series in the various divisions has been attended to in the usual manner.

In the Division of Mammals 18 quarter and 4 half unit cases have been added to the storage facilities for large skulls and skeletons in the attic. Considerable progress has been made the past year on this part of the collection, the new cases being used in part for storage of material that has for years been exposed in open wooden cases. A few cases have been added to the facilities for storing and spreading of the skin collection, which has been, and is still in quite an overcrowded condition, especially the large skins, although some of the smaller groups have been given proper space, eliminating the crowding. Considerable time has been spent during the year in the further arrangement and storage of the cetacean collection. Ten quarter and two half unit cases have been added to the facilities for storing this collection. The skulls have all been rearranged, the small skeletons arranged and in most part put in cases, the large skulls and skeletons have been partially arranged, numbered, and properly labelled. A card index of all cetacean material is being made, and is about half completed. Practically all the tanning is now being done by our own taxidermists. The rotary drum installed for this purpose has been turning out very good results. Two of the quarter unit cases were applied to the rearrangement of certain groups of the skin collection, work on which considerable progress has been made. Addi-

tional storage cases will be needed as the collection is still in an overcrowded condition. The arrangement of the small and medium skulls in the office is complete and work has been done on the large skulls in the attic until they are in much better condition. Ten of the quarter unit and two half unit cases have been used for rearrangement and spreading of small cetacean skulls; 18 of the quarter unit cases and 4 half unit cases have been added for the facilities for rearrangement of large skeletons in the attic, and during the year considerable headway has been made in the proper arrangement of this material. During the fiscal year no other work than the adding of new material has been done in the alcoholics, which are in good condition. During the year the taxidermists have prepared 61 skins as study specimens, part as made up skins and part as flat skins. All large skins now on hand from the field are either made up, or are in the hands of the taxidermists. Work on cleaning large and medium skulls and skeletons by the Museum force has resulted as follows: Skulls, 156; skeletons, 105. Contract work on small and medium-sized skulls and skeletons has resulted in the cleaning of 1,616 skulls and 75 skeletons. The work is in a satisfactory condition, only a very few uncleaned skulls now being on hand in the office. The preservation of the collection is uniformly good though crowded in certain groups.

In the Division of Birds study skins were shifted and rearranged in 37 quarter-unit cases (covering the families Muscicapidae, Pycnonotidae, Timaliidae, Fringillidae, Turdidae, and Picidae), and in 21 half-unit cases, for the purpose of readjusting portions of the collection and giving room for future expansion. The storage cases were renumbered, and over a hundred cases were provided with revised case labels. Drawer labels were revised for the 58 cases rearranged, and specimen labels were written for about 700 specimens received during the year. Many of the larger birds of the African collections (held apart in special cases for several years past) were distributed, for the purpose of providing more room for temporary receipts, or for material that may not be at once distributed through the general collection. It is necessary to hold in reserve certain cases for the temporary accommodation of collections, during the process of assorting, cataloguing, labeling, and the temporary determination of such material. This case room was becoming very scarce, and it was thought best to distribute the more bulky specimens from the African collections to obtain the needed room. Practically no change was made in the egg and nest collection, other than to catalogue, number, and file away temporarily the accessions of the year. In continuation of work begun last year, considerable old alcoholic material was examined and assorted, the specimens checked up in the catalogues and identified, relabeled, renumbered with tin

tags where necessary, and placed in smaller or more suitable jars, with fresh alcohol. The accessions of the year were all catalogued, tagged, labeled, and placed in suitable jars. In the skeleton collection, 390 cleaned specimens and parts of skeletons were placed in proper containers, labeled and distributed in the collections, while a considerable lot of material still awaiting labels remains to be checked off and distributed. A large part of the skeletons received from the Biological Survey expedition of 1920–21 to South America has now been cleaned, and with the Hoy material from Australia constitutes the most important additions to the series of genera and species now available in the cleaned collection. About half of the individual bones in the skeleton collection have now been numbered, and it is hoped this work will be completed in the near future. It is often necessary, in making studies of fossil bones or cave-material, or in any other osteological comparative work, to lay out for comparison the individual bones, say of the humerus, tibia, or femur, or several species, and if the bones are not already numbered (insuring their proper return to the specimens of which they form a part), great care must be exercised to retain their identity until they are ready for replacement with the specimen to which they belong. Where the bones have been duly numbered, this part of the work of assortment and comparison is made much easier. Progress in bringing the skeleton series into shape is due to the volunteer help of Dr. Alexander Wetmore, with the occasional assistance of a temporary cataloguer. The condition of the study collection of skins is satisfactory, insofar as there has been no deterioration during the year other than the imperceptible continuous oxidation of greasy skins especially of the water birds. A small beginning was made toward correcting minor defects in labeling, cleaning of fat, repairing older and badly prepared material, but it is hoped more progress may be made in the coming year. The collection of eggs and nests is unchanged; little or nothing has been done to improve the collection by adding the accumulations of the past year or two to the arranged series. However, this does not mean deterioration or decay in the collection, but simply that the specimens have not been "distributed" in the series, this being a more involved matter than in bird skins. The alcoholic collection has been inspected and found in satisfactory condition. Material received during the year has been properly cared for and labeled. Some of the old material has been gone over and restored to better condition, as detailed elsewhere. The skeleton collection, thanks to Doctor Wetmore's supervision, has been improved in appearance and usefulness, and is being brought into a very satisfactory order for ready reference.

In the division of reptiles and batrachians about 1,900 specimens were installed in permanent places in the storage room. In addi-

tion, the turtles and large snakes, formerly stored in copper tanks which frequently sprung a leak and flooded the floor, have all been transferred to stone crocks and card-catalogued in the same manner as the other specimens. This will be a very great help in locating these big specimens when they are required for study purposes. As many as possible of the cork-stoppered bottles have been replaced by glass-stoppered jars, but the task is by no means completed owing to the difficulty of securing the glass-stoppered jars in sufficient quantities. The laborer has finished the annual washing and refilling of all the jars in the storage room. The present condition of the collections is very good.

The collections in the division of fishes have been very carefully examined, the containers refilled when necessary and many labels restored, jars and shelves kept clean and new material installed from time to time as study of same was completed. Twenty sets of duplicate fishes have been prepared for distribution to museums, universities and other institutions of importance. These sets contain 132 specimens each and are more comprehensive than our regular educational series. Condition reported to be excellent.

The collection of insects has received during the year most of the time of 15 entomologists and a fluctuating number of preparators, usually about 25 people in all. With so many workers, a large amount of progress has been made as in previous years in studying and arranging the collection. The principal retarding element in this work has been a lack of trays and insect drawers. Most of the staff have been more delayed by lack of trays, but those who use the cork-lined drawers have been delayed on account of a shortage of these. On the whole, however, the work has progressed about as usual. The report of Doctor Ewing for the year shows that in the order of Anoplura (the sucking lice) the collection has been greatly enlarged and improved since he took charge of it in 1920. At the beginning of his work there were only 57 slides representing not over 10 species, and many of these slides were in poor condition and had to be remounted. At the present time there are in the collection 368 slides, representing 107 species, many being paratypes of the recent work of Prof. G. F. Ferris. All but seven of the 32 known genera of the world are represented in the collection. The number of slides returned by Professor Ferris is 109. Doctor Böving reports that the entire collection of beetle larvae from Europe, number 540 species, has been revised and new labels have been made with the data uniformly arranged and the names given in conformity with nomenclature of the latest European catalogue. The first work on this collection was done in 1913. The work of transferring the Hymenoptera, Coleoptera, Diptera, Hemiptera, and Microlepidop-

tera to pasteboard trays began about ten years ago and has been continued as rapidly as time and the supply of trays permitted. There is still however a good deal to do in all these orders, and a larger and more continuous supply of trays is much to be desired, as the tray system of installation is very satisfactory, having many advantages. In the Diptera Mr. Greene has rearranged the extensive collection of larvae and placed them in uniform vials and racks, greatly improving the appearance and accessibility of the collection. Both Mr. Greene and Doctor Aldrich have transferred several families to trays, passing the cork-lined drawers on to Macrolepidoptera, where the supply is always stinted. The present condition of the collection is excellent in regard to safety of installation and freedom from museum pests.

In spite of the handicap due to lack of sufficient assistance in the division of marine invertebrates, the cataloguing of determined material has been almost holding its own. The naming up during the year of a great deal of the earlier Fish Commission material, in addition to the regular yearly and routine increment had nearly swamped the cataloguing facilities. All lots of specimens catalogued to date have been intercalated in the regular study series, and the catalogue cards in the regular reference series. As the result of the careful systematic overhauling to which the alcoholic stack has been subjected, about one-fifth of the collection therein contained is undoubtedly in better condition than it has been in many years. The remaining fourth-fifths are thus one more year behind what should be the regular filling schedule. Although the collections are growing steadily greater as has the volume of other work, routine and otherwise, yet as far as actual hours of labor available to care for these responsibilities, the conditions are considerably less favorable than they were some years ago.

The chief work on the collections of the division of mollusks during the year consisted in labelling and classifying the great Evezard collection of land shells received through the generosity of the late John B. Henderson. Just before his death, Mr. Henderson attended to intercalating the West Indian material in the West Indian collection. Doctor Bartsch distributed the material of Philippine origin and Mr. Marshall attended to the material from South America, Europe, East Indies, Hawaiian Islands, and Oceanica. This work, although not yet entirely finished, is nearing an end. Because of the great number of species and groups not hitherto represented in the collections from the regions mentioned, it has involved a pretty general revision of the entire collection of land shells with the exception of North America and Africa. The North American species were already well represented in the collection so the Evezard ma-

terial from that region has been placed in duplicates. The African material has been labelled and registered and then set aside awaiting the return of the African collection of lands shells now in the hands of Doctor Pilsbry. The handling of the Evezard collection has been difficult because of the antiquated nomenclature used. Species were mostly correctly identified under correct specific names or well recognized synonyms but in only a few cases were the group names correct. In placing the material in the collection, practically all identifications, both specific and generic, had to be confirmed. In addition to the general revision of land shells noted above a more careful revision has been made of certain families of land shells, notably the Ferussacidae, the Achatinidae (except those from Africa), portions of the Helicidae, and a revision of the Cyclophoridae and Cyclostomidae is under way. In the West Coast collection in addition to the almost daily work done by Doctor Dall in intercalating new material and retouching the classification, Doctor Bartsch has entered upon the study of the material from the Gulf of California and has begun to describe and figure all the groups and species from that region. This work involves changes of name and classification in a very large part of the West American collection and as the revision proceeds Mr. Marshall standardizes the Museum arrangement of the collection. An important part of the work of caring for the collection has consisted of little touches here and there, day in and day out, bettering the classification, identifying specimens which has hitherto stood without name and in other small touches which serve to keep a collection up to date. During the year several important changes have been made in the location of various portions of the collection. The Isaac Lea collection of pearly fresh water mussels has been removed from its old location to new quarters in the room of the Assistant Curator, the member of the staff most interested in this group of mollusks. The foreign fossils were removed from this room to the room thus vacated, about half filling it. The part of the room left vacant was devoted to accommodating accumulated material of the East American and West Indian collections, and in addition to this the casing available for this collection was considerably increased by a more economical arrangement of cases already in use. The general rearrangement of these collections thus made necessary was the last work undertaken by Mr. Henderson and was nearing completion at the time of his death. Some small progress has been made in the classification and care of the general collection of recent molluks. Additions have been made to the duplicate collection of recent mollusks. A number of slides of radulae have been made and added to the collection. The services of a laborer allowed this division forty-four days annually have been

utilized to keep in condition the alcoholic collection. The bibliographic card catalogue of Philippine mollusks has received but little attention, owing to the pressure of other work. The collection is in an excellent condition as far as systematic arrangement and cleanliness are concerned.

In the division of echinoderms all of the material received has been determined, catalogued, carded, and incorporated in the collection. Considerable progress has been made in incorporating specimens from past accessions. The amount of unidentified material and of identified material not incorporated in the collection has thus been markedly decreased. A survey of practically the whole collection has shown its condition to be excellent. The installation has here and there been improved by the transfer of specimens to better containers. The decrease in the relative proportion of undetermined material has increased the scientific value of the collection, which in every way is in better condition than last year.

In the division of plants curatorial work in connection with the upkeep and increase of the National Herbarium has progressed satisfactorily during the past year. Doctor Maxon has reidentified many specimens of ferns belonging to particular groups, and Mr. Standley has determined and revised a large quantity of Mexican and Central American material in the course of his work upon the Flora of Central America and the identification of the collections obtained by himself in Salvador and Guatemala. Doctor Rose revised the representation of several genera of American Caesalpiniaceae, and Mr. Killip has determined a large quantity of South American material. Much important work of critical determination has been done by Dr. S. F. Blake in the composites and in various groups of South American plants; by Dr. C. V. Piper in genera of the Fabaceae; and by Dr. A. S. Hitchcock and Mrs. Agnes Chase in the grasses. At the beginning of the fiscal year there was upon hand a considerable accumulation of specimens awaiting mounting, and the number of specimens received during the year has been equal to that normally accessioned. The mounting, which is the most difficult problem in connection with the upkeep of the herbarium, has proceeded satisfactorily, chiefly because of the plan of gluing recently adopted, and of the employment of extra labor for the purpose. The number of specimens completely mounted is about 36,000, a much greater quantity than in any late year. There still remains an accumulation of some 40,000 specimens. There are also about 15,000 specimens which have been glued but not made ready for the herbarium by strapping. During the spring of 1923 all the accumulation of mounted plants, consisting of not less than 60,000 specimens, was distributed into the herbarium. As a result,

all mounted material is now accessible for study. To make possible the mounting of perhaps 40,000 specimens now on hand, special help will be required in gluing. The services of a laboratory helper for part of the next year have already been provided for, and it is desirable that assistance be obtained for strapping the specimens already glued. In preparing material for incorporation into the herbarium, great care has been taken to exclude specimens which will not be genuinely useful. Progress has been made in the segregation of type material from the general herbarium, and a total of 11,011 specimens have now been distinctively labeled, catalogued, and placed in individual covers, forming the so-called type herbarium. The herbarium has been fumigated with carbon bisulphide twice during the year, and some portions more frequently. Only minor depredations by the herbarium beetle have been noted. The present condition of the herbarium is in general satisfactory, aside from its crowded condition, and the fact that necessary routine duties of the staff preclude desirable work of revision which otherwise would be possible. The phanerogamic herbarium is in exceptionally good condition because of the recent distribution into it of all material ready for incorporation. Space available for placing cases has now nearly all been filled, and room for the normal growth of the collections can be obtained only by the erection of a balcony in the west end of the Herbarium Hall, a project which has been under consideration for several years, and for which there is imperative need. As in previous years, because of our small staff, it has been impossible to add to the cryptogamic herbarium more than a small part of the material received during the current year and for several years past. Specimens of the lower cryptogams are made ready for the herbarium as promptly as possible and held ready for incorporation at such time as the services of one or more specialists may be available for the purpose. An assistant curator, or at least an aid, to have sole charge of the cryptogamic herbarium, is greatly needed.

Allusion has already been made to the work completed by the taxidermists and preparators for the exhibition series. A large amount of work on the study series of the various divisions has also been accomplished and much repair work. Owing to the difficulty of getting and keeping a junior preparator, much work which could and should be done by him had to be undertaken by the older men. Mr. Brown with the assistance of Mr. Aschemeier was mostly engaged upon the mounting of large mammals, and also modeled several full size bodies for the proposed dikdik group. He also prepared several sketch models for a proposed rebuilding of the great Rocky Mountain Goat group. Mr. Marshall was mostly employed in repair work, and the mounting of smaller mammals. A number

of large game heads were received from the White House for repair preparatory to storing, upon which work he was still engaged at the end of the year. Altogether there were cleaned 105 mammal skeletons and 156 large mammal skulls, except those of whales, 284 bird skeletons and 154 bird skulls which were all prepared by Mr. Scollick, the osteologist, in addition to one batrachian skeleton. Mr. Mirguet spent considerable time repairing for another department of the Museum the old mounted horse of General Sheridan, a difficult and slow work. Another difficult work undertaken was the cast of the skull of a bottle-nose whale to replace in the exhibition series the skull of the skeleton, which was urgently needed in the study series. Besides cleaning a large amount of skeleton material of whales, he made a number of herpetological preparations, skins, and skulls for the division of reptiles and batrachians. Considerable time was spent on the mounting of an unusually large spiny lobster. Early in the spring of 1923 a finback whale stranded near Walnut Point, Va. Mr. Mirguet and Mr. Poole, of the division of mammals, were sent down to secure the skeleton for the Museum, if possible. This they accomplished during a stay of three days, during which the skeleton was roughed out and buried in the sand, to be transported to the Museum some time during the coming fiscal year, while the smaller bones and the anterior extremities were brought back to the Museum for better safekeeping.

RESEARCHES FOR THE BENEFIT OF THE MUSEUM.

Under this heading is reported in the first line the researches undertaken during the year by members of the staff on material in the museum collections, but obviously researches on museum material by outside investigators belong in the same category. A report on the progress of their studies within the same period is very often impracticable, as it is only with the publication of their labors that the museum benefit is finally realized. Reference to Bulletin 100, vol. 5, Ophiurans of the Philippine Seas and adjacent waters, by René Koehler, professor of zoology in the University of Lyon, France (486 pp. + 103 plates), to Bulletin 120, the Opalinid Ciliate Infusorians, by Maynard M. Metcalf, of the Orchard Laboratory, Oberlin, Ohio (484 pp.), and to Bulletin 123, Revision of the North American Moths of the Subfamily Eucosminae of the Family Olethreutidae by Carl Heinrich, of the Bureau of Entomology (298 pp. + 59 pls.), make the point clear, as it is clear that the production of such extensive works requires years of research.

In the divisions the research work, which is reflected in the bibliography appended only to a limited extent, may be summarized as follows:

The curator of mammals, Gerrit S. Miller, jr., has continued his studies of the whales mentioned in the last annual report as the main subject of his investigations which are now essentially finished. The manuscript of a "List of North American recent mammals, 1922" has been completed and submitted for publication. Dr. Robert Ridgway, curator of birds, continued his work on volumes 9 and 10 of Bulletin No. 50, the Birds of Middle and North America. He reports that volume 9 is practically done and that he is now putting the "finishing touches" on the manuscript, while very much work has also been done on volume 10, the remainder of which it is believed can be done in a few months' time. He also prepared an article for the appendix to the annual report of the Smithsonian Institution. The Associate Curator, Dr. C. W. Richmond, and the aid, Mr. J. H. Riley, prepared a bibliography of Chinese birds at the request of Arthur de C. Sowerby and other students of Chinese birds; this was published during the year, and a supplement was furnished for publication later. They also furnished assistance to Dr. George D. Wilder and N. Gist Gee, both stationed in China, by correcting manuscripts and supplying various data on the birds of that region. Dr. Richmond furnished various data for C. Davies Sherborn's "Index Animalium," now in course of publication, verifying data in rare publications not accessible in England. He also completed a fourth supplement to Waterhouse's "Index Generum Avium", bringing the work down from 1915 to 1922, inclusive. With B. H. Swales, honorary assistant curator of birds, he worked on the list of types of birds in the National Museum, although the work was not brought nearly to the point of publication. Progress was also made on the memoir on the birds of Haiti and Santo Domingo, without advancing it as yet to a final manuscript stage. Mr. Riley investigated and reported upon the status of a certain species of Chinese warbler, and also revised and submitted for publication a report on the Museum collections of birds from Celebes.

In the division of reptiles, the curator was absent on other duty part of the year, and during the remainder was too much occupied with other work, especially his report on the fur seals of the Commander Islands and Robben Island, to give much attention to the monograph in hand on the turtles of Middle and North America. The aid, Miss Doris M. Cochran, prepared a preliminary manuscript list of reptiles and amphibians of China. In addition, she continued her work on a monograph of the herpetology of the island of Santo Domingo. She also described and published a number of new species in the Museum, as shown by the bibliography.

In the division of fishes, B. A. Bean, assistant curator, completed during the year an annotated list of the fishes of Maryland, based

largely on Museum material. The study and determination of the various lots of fishes received from time to time from various parts of the world has been continued, the collections specially noteworthy being those from the coast of South America and the coast and fresh-waters of southern China.

The research of Dr. J. M. Aldrich, associate curator of insects, was mostly concentrated on the muscoid flies, a vast field with very few workers, the results being embodied in papers, now in preparation, on the genera Ocyptera, Arrhinomyia, and Neomusca. Charles T. Greene devoted himself quite largely to the early stages of diptera, on which he has several papers in preparation. Quite a large number of small papers have been published during the year by the various custodians of sections, as shown in the bibliography, while others are awaiting publication or are in various stages of preparation. A large number of papers by experts of the Bureau of Entomology, based almost exclusively on Museum material, and consequently of great benefit to the Museum, have already been submitted, but their publication has been delayed by the exigency of the printing appropriation.

Dr. Mary J. Rathbun has completed another of her noteworthy monographs on American crabs, the second of a contemplated series, dealing with the American spider crabs, representing the families Parthenopidae, Inachidae, and Hymenosomidae. The first volume dealt with the Grapsoid crabs, and covered the families Goneplacidae, Pinnotheridae, Cymopolidae, Grapsidae, Gecarcinidae, and Ocypodidae. It was issued in 1917 as Bulletin 97, U. S. National Museum. The following manuscripts were completed and transmitted for publication: A "List of the Brachyura from the 1921 Expedition of the California Academy of Sciences to the Gulf of California," to the California Academy; "Results of Dr. E. Mjöberg's Swedish Scientific Expedition to Australia, 1910–13. Brachyura, Albuneidae, and Porcellanidae," to the Stockholm Museum; "Brachyuran crabs collected at Curaçao by Dr. C. J. van der Horst in 1920," to the Zoological Society of Amsterdam; "The Brachyuran crabs collected by the U. S. Fisheries Steamer *Albatross* in 1911, chiefly on the west coast of Mexico," to the American Museum of Natural History. Four other papers prepared by Miss Rathbun and published during the year are listed in the accompanying bibliography. In addition she has made a great many routine identifications of miscellaneous lots of crabs received during the year from various sources, and as time has permitted, has continued her studies on fossil crustacea, especially of the west coast of North America. The "Report on the Crustacea Macrura (Families Peneidae, Campylonotidae, and Pandalidae) obtained by the F. I. S. *Endeavour* in Australian Seas" prepared

by the curator, Dr. W. L. Schmitt, for the Australian Museum, is now in press. He has continued work upon the reports on the Macrura and Anomura of the American Museum Congo Expedition, and the *Albatross* 1911 Expedition to the Gulf of California. In the course of routine identifications a very considerable accumulation of the earlier Fish Commission collections of shrimps and hermit crabs have been identified. An annotated "List of the Macrura and Anomura from the 1921 Expedition of the California Academy of Sciences to the Gulf of California" has also been prepared and transmitted to that Institution for publication. A very considerable part of the time of Clarence R. Shoemaker, assistant curator, has been given to looking after office routine, and the separation of collections of invertebrates into their component classes, in order to render them available for specialists in the various groups. Some time has been devoted to the classification of the collection of Amphipods sent to the Museum for identification, in connection with which studies a great many specimens in our unidentified collections have been determined, catalogued, and incorporated in the regular reference collections. Work has been continued upon the Amphipods of the Cheticamp Expedition of the Biological Board of Canada in the Gulf of St. Lawrence, and some headway made with a report upon the Amphipods of the *Albatross* 1911 Expedition to Lower California. H. K. Harring, custodian of the Rotatoria, has continued his intensive studies on those forms. He has completed in collaboration with Frank J. Myers, the second part of their joint report on "The Rotifers of Wisconsin." This completes the revision of the family Notommatidae, and will be published as volume 21 of the Transactions of the Wisconsin Academy. Some time was given to field work in preparation for the monograph of American Rotifers contemplated by Mr. Harring in collaboration with Frank J. Myers, of the American Museum of Natural History. In the course of the year a considerable number of routine identifications have been made of material sent in for determination. Prof. Max M. Ellis, of the University of Missouri, collaborator, has nearly completed his report on the North American Discodrilid collections resulting from a cross-continent automobile trip during the summer of 1921.

Dr. William H. Dall, honorary curator of mollusks, completed his monograph of the Hawaiian shell-bearing mollusks and Brachiopods and the manuscript has been forwarded to the Bishop Museum, Honolulu, for publication. An expedition to Palmyra Island, situated about a thousand miles to the southward of Hawaii, in the summer of 1922, was accompanied by D. Thaanum of Honolulu, the donor of the Hawaiian collection, who presented to the Museum a series of shells collected, with the understanding that a report

should be made on the collection. Doctor Dall has completed the manuscript, with the exception of the illustrations of the new species. Dredgings by the *Albatross* off the east coast of Florida in 1885 and 1886 obtained a certain quantity of bottom material containing numerous minute shells. These were segregated and mounted for study by Doctor Dall and studied in the intervals of other work. During the present fiscal year Doctor Dall undertook the complete examination of the material, which comprised about 400 deep-sea species. The Dentalia had been worked up by Mr. Henderson but the remainder were unexamined. The manuscript has been completed except for certain comparisons. During the first half of the fiscal year, John B. Henderson, a Regent of the Smithsonian Institution, as in former years was an arduous, voluntary worker upon the East Coast collections. The major portion of his time during the year was devoted to the preparation of a monograph on the Turritidae of the Western Atlantic and continued work begun in the past 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 and work on the mollusk fauna of the vicinity of Beaufort, N. C. The last problem was a cooperative study by Mr. Henderson and Dr. Bartsch. Mr. Henderson unselfishly devoted considerable of his time that might otherwise have been used for research to the routine work of identifying East Coast material for outside correspondents. His lamented death has deprived this division of an earnest, loyal, and generous worker. Dr. Paul Bartsch, curator of mollusks, has found the time consumed by answering routine questions and identifying speciments to be increasing steadily. The economic importance of the mollusks is becoming more manifest each year. Apart from their value as one of the most important food supplies, it is only necessary to touch upon the shipworm problem, and their increasing importance in their relationship to public health the world over, as many of these forms serve as intermediate host in the complicated life history of Trematode worms. Calls for identification of material have come in not only from our own health offices and schools of public health, but likewise from many other countries. This means a necessary revision of the intermediate hosts in question and incidentally the preparation of card catalogues of the various species involved, in order to determine their relationship and distribution. The genus *Planorbis*, one of importance in this connection, has required no less than 2,000 cards to permit of an intelligent handling of the systematic problem. The greater part of Doctor Bartsch's time available for research has been given to the monographing of the mollusks of the Mazatlanic faunal area. When

completed, this work will cover several volumes. It is largely based upon the collections obtained by the American Museum Expedition of the U. S. Fisheries Steamer *Albatross* to the Gulf of California, in 1911, on which expedition Doctor Bartsch was present and stressed the gathering of material from this region. The work, however, will not be confined to this alone, but will embrace all the material in the National Museum collection, as well as that previously treated. The fraction of time remaining was given to a continuation of the work begun in previous years on the small East American marine mollusks of the genera *Triphora*, *Bittium*, *Cerithiopsis*, and *Metaxia* and upon mollusks of the family Vitrinellidae, the Philippine Nudibranch mollusks, the West American Caecidae, the land mollusks of the Windward and Leeward Group, the Philippine land mollusks, especially the *Hemiglyptas*, and with Mr. Henderson the mollusks of the Beaufort, N. C., region. William B. Marshall, assistant curator, although most of his time of necessity is taken up largely with labeling, registering, identifying, and distributing specimens, nevertheless was able to make examinations of the microscopic details of several hundred species of pearly fresh water mussels of all genera and from all parts of the world. The results will be embodied in a short paper drawing attention to some interesting discoveries made. Dr. Charles Wardell Stiles, custodian of the helmintheological collections, and Dr. B. H. Ransom, assistant custodian, have continued their study of the parasites of man and other animals. Dr. T. Wayland Vaughan, custodian of madreporarian corals, has worked on the recent corals.

During the past year the efforts of Austin H. Clark, curator of echinoderms, have been directed chiefly toward the completion of part 3 of Bulletin 82 which will include the systematic description of the Comatulid crinoids. The greater part of the work has now been completed, and the manuscript of about half of it, amounting to something over 1,000 pages, is in final form and ready for publication. The report upon the crinoids of the Danish *Ingolf* expedition was completed and is now in press.

The special investigations begun or continued in the division of plants during the year are as follows: Dr. Frederick V. Coville, curator, has continued his studies in breeding and propagation of the blueberries (*Vaccinium*), and has, as usual, made frequent use of the herbarium. Dr. J. N. Rose, associate curator, has continued his studies of the Cactaceae, in cooperation with Dr. N. L. Britton, Director-in-Chief of the New York Botanical Garden, an investigation which has been under way since 1911. The fourth and final volume of their report upon the family is now in press, and will be issued during the summer of 1923 by the Carnegie Institution of

Washington. Doctor Rose has also continued his studies of Ecuadorean plants, and has undertaken the account of the family Caesalpiniaceae for the North American flora. Dr. William R. Maxon, Associate Curator, has been engaged in work upon the pteridophyta, especially those of tropical America, and has given special attention to several important collections from the West Indies and South America, as well as others from the Pacific Islands. He has published several papers containing accounts of special groups and descriptions of new species from various parts of the world. Paul C. Standley, associate curator, has made some progress in the preparation of a synoptical account of the plants of Central America and Panama, and has undertaken the compilation of a separate descriptive flora of the Panama Canal Zone. Most of his work with Central American plants has concerned the identification of the collections which he obtained in 1922 in Salvador and Guatemala. The identification of this collection has now been completed, and there has been prepared a list of the plants of Salvador, which it is expected will be published in that country. The flora of Alaska and the account of the plants of Glacier National Park, mentioned in previous reports as having been completed, have not as yet been published. Emery C. Leonard, aid, has nearly completed his study of the genus *Scutellaria*, and has continued work upon the collections obtained by Dr. W. L. Abbott in the Dominican Republic. Ellsworth P. Killip, aid, has made further studies of the genus *Passiflora*, and has also been engaged with the determination of several extensive collections of South American plants, particularly those obtained by himself and Dr. F. W. Pennell in Colombia.

Dr. C. Hart Merriam, associate in zoology, continued his studies on North American bears and other mammals. N. Hollister completed the last part of his report on the East African mammals in the United States National Museum, Bulletin 99, embracing the artiodactyls. He also started a comprehensive study of the mammals recently received by the museum from southern China. 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. Many of the researches of the members of the Biological Survey are so connected with the Museum material that no line can be drawn as to who is most benefited. Dr. Alexander Wetmore worked more or less constantly upon the collections determining South American material collected by him. He also made extensive use of the skeleton series in studies of fossil birds and in a review of family and generic relationships in certain groups. Dr. H. C. Oberholser made constant use of the facilities of the division of birds both in connection with his North American studies, and espe-

cially in his work on the East Indian collections made by Dr. W. L. Abbott. To James P. Chapin, of the American Museum of Natural History, the division is indebted for the determination of some African weaver-birds sent him, and to W. E. Clyde Todd, of the Carnegie Museum, Pittsburgh, Pa., for the determination of some South American fly-catchers. Dr. E. R. Dunn, of Smith College, has been constantly drawn upon for identification of difficult salamanders. A. I. Ortenburger, of the American Museum of Natural History, New York, has continued his work on the North American snakes of the genus Coluber, and Dr. F. N. Blanchard, of the Museum of the University of Michigan, his studies of the North American water snakes (Natrix). In the division of fishes Henry W. Fowler, of the Academy of Natural Sciences, Philadelphia, Pa., has cooperated as heretofore.

The researches of the Bureau of Entomology, Department of Agriculture, are so intimately interwoven with the collections of the division of insects that as a whole they may be claimed as for the benefit of the Museum, and to single out the work of individuals, not custodians of sections, would be invidious, except perhaps where it has resulted during the year in manuscripts submitted for publication, such as the paper by R. A. Cushman "On the genera of the Ichneumon flies" etc., and R. A. St. George's "Studies on the larvae of North American Beetles." Dr. R. V. Chamberlin, of the Museum of Comparative Zoology, has kindly continued his assistance in determining specimens of spiders and myriopods, as there is no specialist in these groups in Washington. Prof. T. D. A. Cockerell, of the University of Colorado, has been one of our most valued collaborators. Dr. F. F. Laidlaw, of Devon, England, has completed another portion of his work on dragon-flies of the East Indies (Museum material) and the manuscript has been received for publication. Extensive collections of unidentified material in various groups have been sent to outside investigators for the benefit of the Museum, such as bumblebees to Mr. T. H. Frison, University of Illinois, bees of the genus Trigona to Dr. F. E. Lutz, of The American Museum of Natural History, scorpions to Prof. William Patten, of Dartmouth College, stone-flies to Prof. P. W. Claassen, of Cornell University, Alaskan horse-flies to Prof. J. S. Hine, Ann Arbor, Mich.; flies of the genus *Gonia* to Dr. John Tothill, Fredericton, New Brunswick, etc.

The lack in Washington of specialists in numerous groups of invertebrates, outside of mollusks, echinoderms, and insects, has made the division of marine invertebrates dependent on the generous assistance of students all over the country, whom the curator has designated as his "volunteer staff," and to whom the Museum is greatly indebted. It includes the following names together with the

particular groups on which they are working: Dr. Henry B. Bigelow (Medusae, Ctenophora), Dr. K. H. Barnard (Isopods), Dr. L. R. Cary (Alcyonarians), Dr. R. V. Chamberlin (Annelids and Gephyrea), Dr. Henri Coutière (Crangonidae (Crustacea)), Dr. Joseph A. Cushman (Foraminifera), Prof. Arthur Dendy (Sponges), Prof. A. A. Doolittle (Fresh-water Entomostraca), Prof. G. S. Dodds (Fresh-water Entomostraca), Prof. C. O. Esterly (Marine copepods), Dr. A. G. Huntsman (Ascidians), Frits Johansen (Fresh-water Entomostraca), T. Kaburaki (Turbellaria), Dr. C. Dwight Marsh (Fresh-water copepods), Dr. Maynard M. Metcalf (Salpa, Pyrosoma, Protozoa), Dr. J. Percy Moore (Leeches), Dr. Charles C. Nutting (Hydroids), Dr. Raymond C. Osburn (Bryozoa), Dr. Henry A. Pilsbry (Barnacles), Capt. F. A. Potts (Rhizocephalids (Crustacea)), Prof. Frank Smith (Earthworms, Fresh-water sponges), Dr. W. M. Tattersall (Mysidacea (Crustacea)), Dr. Aaron L. Treadwell (Annelids), Dr. Willard G. Van Name (Ascidians), and Dr. C. B. Wilson (Parasitic, and free-swimming marine copepods).

The division of mollusks has not been greatly dependent on the research of outsiders, although indebted to Dr. Frank Baker, University of Illinois, for identification of mollusks of the genus Physa; Prof. T. D. A. Cockerell, University of Colorado, for determination of a collection of slugs; Dr. H. A. Pilsbry, Academy of Natural Sciences, Philadelphia, Pa., of a naiad from Mexico, and to Dr. Victor Sterki, New Philadelphia, Ohio, for identification of some fresh-water mussels. Assistance is gratefully acknowledged to the Navy Department for transportation of Doctor Bartsch during his recent collecting trip to Cuba, Haiti, and Porto Rico.

In the National Herbarium Dr. S. F. Blake, of the Department of Agriculture, has rearranged the material of several critical groups and has determined large quantities of unidentified specimens, chiefly in the composites. Dr. C. V. Piper also has given attention to several groups of the family Fabaceae; and Ivar Tidestrom has completed a flora of Utah and Nevada, which has been in course of preparation for several years, and is now ready for publication. As in previous years, correspondents whose cooperation has increased the value of the material in the herbarium are those to whom specimens have been transmitted for critical study. Special mention may be made of several persons who have rendered assistance in the determination of plants of special groups. Because of the fact that there is in the herbarium no one who is engaged in study of the lower cryptogams, it is necessary to send these to outside specialists for identification. Among those who have cooperated in this connection are Mrs. E. G. Britton, Dr. W. A. Murrill, Dr. M. A. Howe,

and R. S. Williams, of the New York Botanical Garden; Dr. A. W. Evans, of Yale University; G. K. Merrill, of Rockland, Me.; and H. N. Dixon of Northampton, England. Oakes Ames of Boston has determined many specimens of orchids, and Kenneth K. Mackenzie of New York City numerous specimens of the genus *Carex*.

RESEARCHES ELSEWHERE AIDED BY MUSEUM MATERIAL.

The cooperation with outside institutions and scientific investigators alluded to in the introduction to this report is well exemplified in the following lists of students to whom this department has sent out material for research or who have come to Washington to examine the collections of the National Museum, to which they have been given full access, or to consult its officers who have spared no pains in assisting in every possible way. A. B. Howell, of Pasadena, Calif., spent the winter in Washington for the purpose of studying the microtine rodents as well as the gold finches in the national collection; the bird collections were studied by various ornithologists, thus by A. C. Bent, Taunton, Mass., who examined skins and eggs of North American geese and related birds in connection with his "Life Histories"; Dr. Frank M. Chapman, American Museum of Natural History, New York, who during three visits studied South American birds; Romeyn B. Hough, Lowville, N. Y., who examined specimens of the genus *Myaaestes;* Harey Malleis, who before visiting Guatemala for the Biological Survey, spent many days studying the birds of that country; James L. Peters, Museum of Comparative Zoology, who spent about three days examining the series of ruffed grouse; Dr. John C. Phillips, Wenham, Mass., who studied certain ducks and geese in connection with his forthcoming monograph; F. A. Potts, Central Aguirre, Porto Rico, who spent a day examining various North American waders and other birds likely to occur in Porto Rico; Dr. R. W. Shufeldt, who examined certain material in the osteological series. In addition the following were given the privilege of examining the study collections in whole or in part: Dr. T. G. Ahrens, Berlin, Germany; Bengt Berg, Stockholm, Sweden; Dr. Amos W. Butler, Indianapolis, Ind.; Donald R. Dickey, Pasadena, Calif.; Edward von S. Dingle, Summerton, S. C.; Mrs. Mena V. French, Wayland, Mass.; Mrs. Edward C. Wynne, Washington, D. C.; Prof. A. L. Herrera, director of the National Museum of Mexico; Mrs. Nellie C. Knappen and Miss Marian J. Pellew, Washington, D. C.; Mr. and Mrs. H. A. Snow, of California, and Dr. Clara Barrus of New York, Dr. Thomas Barbour, Museum of Comparative Zoology, and Dr. E. R. Dunn, Smith College, paid several visits to the Museum during the year examining reptiles and amphibians. The division of fishes was visited by Dr. David Starr Jordan while in Washington in February.

The collections of the division of insects have been examined by a number of entomologists as follows: Prof. J. Chester Bradley, of Cornell University, made three trips to Washington to study the collections of South American species, and to compare types of various species from North America and the Philippines. He has also spent considerable time consulting with the specialists on a new classification of the order Hymenoptera; C. Howard Curran of the Entomological Branch, Department of Agriculture, Ottawa, Canada, spent a week in the winter studying Diptera of the family Syrphidae; Dr. F. E. Lutz of the American Museum of Natural History, made two visits to the Museum for the study of types and identified material in the collection belonging to the bee genera *Trigona* and *Melipona;* Dr. W. T. M. Forbes of Cornell University spent some days at the Museum in the study of Lepidoptera; Dr. William T. Barnes, Decatur, Illinois, who has one of the largest private collections in the world, visited the Museum in February for a few days, to examine Lepidoptera; Robert M. Fouts, Washington, D. C., has spent some time studying the Serphoid parasites in the collection; C. F. W. Muesebeck of the Bureau of Entomology, spent about four weeks in the study of the Braconid parasites collection belonging to the genus *Microbracon;* H. L. Viereck, during the past fiscal year while connected with the Bureau of Biological Survey, made many trips to the Museum to consult the collection of bees belonging to the genus *Andrena;* J. B. Malloch, who is connected with the Biological Survey, visits the Museum frequently for comparison and study of the Diptera. In the division of marine invertebrates Dr. A. G. Huntsman of the Biological Board of Canada, spent two days in examining a number of Ascidian type specimens in connection with his forthcoming monograph on the Ascidians of the Northwest coast; Prof. R. N. Griggs, of George Washington University, availed himself of the facilities of the division during part of two days looking up information regarding invertebrates relative to a lecture course on evolution; Dr. Julia A. Gardner of the Geological Survey has several times consulted our slides of mounted foraminifera in furtherance of her paleontological researches; as in past years material assistance has been rendered members of the scientific staff of the Biological Survey in the identifications of invertebrate remains, chiefly crustacea, found in bird stomachs; the Bureau of Fisheries, in the determination and furnishing of information relative to marine and aquatic invertebrates; the Zoological Division of the Bureau of Animal Industry in the classification of invertebrate hosts of animal parasites; and the Federal Horticultural Board in identifying invertebrates found associated with various plant importations. As in former years, workers from the U. S. Geological Survey have

been allotted space in the division of mollusks and have consulted the collections of recent mollusks in connection with their work, as follows: Dr. C. Wythe Cooke, in intervals between field details, working on the Eocene and Oligocene faunas; Dr. W. P. Woodring, also incidental to the time spent in the field, studying the West Indian Tertiary fossil mollusks; Dr. Julia A. Gardner, a constant worker, studying the Oligocene faunas; Dr. W. C. Mansfield, likewise a constant worker, preparing reports on fossils from Suva and the Fiji Islands, the Miocene stratigraphy, etc.; Dr. William E. Clapp of Cambridge, Mass., spent two days consulting the shipworm collection. This collection was likewise studied by Prof. Thurlow C. Nelson, Rutgers College, New Brunswick, N. J., and Frank Potts of Cambridge University, England; Dr. W. S. Barbeau of Mauritius spent a day studying the mollusks which serve as intermediate hosts of human and animal parasites; R. Z. Fahs of Los Angeles, Calif., spent a day with the general mollusk collection; Mrs. H. K. Marshall of Carville, La., spent three days studying shells from the Fiji Islands; William C. Metcalfe of New York City spent three days reviewing the Cypraeidae; Mrs. T. S. Oldroyd, curator of mollusks at Stanford University, Calif., spent about a month with the West American mollusk collections, gathering up literature and figures of such material as is not contained in the collection at Stanford; Dr. J. Strohl of the University of Zurich, Zurich, Switzerland, worked one day in connection with his studies on bacteria found in certain land mollusks; Dr. Carlos de la Torre, President of the University of Havana, Havana, Cuba, worked with Mr. Henderson for two days on the West Indian mollusk collection; Mr. and Mrs. Walter F. Webb of Rochester, N. Y., worked with Doctor Bartsch for two days on the Philippine collections; Miss Mary Quick, a student at George Washington University, devoted six hours a week for the entire school year to comparative anatomic studies of the mollusks of the genus *Cerion;* J. Edward Hoffmeister, a graduate student in geology at Johns Hopkins University, completed a detailed study of about 85 species of living corals from Pago Pago Harbor, Samoa. This work will be published by the Carnegie Institution of Washington; L. A. Faustino, Assistant Director of the Bureau of Mines of the Philippine Islands, spent nearly a year with the collections of Philippine corals. Among professional botanists from outside of Washington who have visited the National Herbarium are: Dr. B. L. Robinson, curator of the Gray Herbarium, who was engaged in examination of the National Museum representation of the group Eupatorieae, of which he is preparing a monographic treatment; Dr. J. H. Barnhart, of the New York Botanical Garden, in connection with his studies of the Bladderwort Family (Lentibu-

lariaceae); Prof. W. A. Setchell, of the University of California, who is interested in the floras of certain islands of the Pacific Ocean; and Alfred Rehder, of the Arnold Arboretum.

The extent to which loans of specimens have been made to institutions and investigators at their request for aid in the study of their own material will be seen from the following list: Mammals were loaned to the American Museum of Natural History, New York, for the benefit of Dr. William K. Gregory, Childs Frick, and others; Dr. Oldfield Thomas, British Museum; Brooklyn Museum, New York; A. B. Howell, Pasadena, Calif.; Dr. Glover M. Allen, Museum of Comparative Zoology; E. R. Hall, University of Kansas; R. J Terry, Washington University, St. Louis, Ill.; Dr. R. I. Pocock, Zoological Society of London. Birds were sent to the American Museum of Natural History; the Academy of Natural Sciences, Philadelphia; W. E. Clyde Todd, Carnegie Museum, Pittsburgh, Pa.; Dr. C. E. Hellmayr, Field Museum of Natural History, Chicago; Museum of Comparative Zoology for the benefit of D. Bangs and James L. Peters; Harry S. Swarth, Museum of Vertebrate Zoology, Berkeley, Calif.; Walther H. Rich, Falmouth, Me.; P. A. Taverner, Victoria Memorial Museum, Ottawa, Canada; Dr. Jonathan Dwight, New York; H. H. Bailey, Miami Beach Zoological Park and Museum. Specimens of birds or eggs were also lent locally for various purposes to D. C. Chapter of Boy Scouts; Frank Bond; Dr. N. A. Cobb; Mrs. E. K. Peeples; Dr. R. W. Shufeldt. Reptiles and amphibians were sent to Dr. E. R. Dunn, Smith College; Museum of Comparative Zoology for the benefit of Dr. T. Barbour; Mrs. H. T. Gaige, and Dr. Frank N. Blanchard, University of Michigan; Iowa State College, Ames, Iowa; Percy Viosca, jr., New Orleans, La., and A. I. Ortenburger, American Museum of Natural History. Specimens of fishes were borrowed by the U. S. Bureau of Fisheries, and by Dr. R. W. Shufeldt, of Washington, D. C. The division of insects has transmitted to outside entomologists for their benefit as follows: Dr. A. C. Kinsey, Indiana University; C. Howard Curran, Entomological Branch of the Department of Agriculture, Ottawa, Canada; Maj. W. S. Patton, Edinburgh University, Scotland; J. R. Watson, University of Florida; Prof. C. R. Corkins, State Agricultural College, Fort Collins, Colo.; National Geographic Society, Washington, D. C.; Prof. P. W. Claassen, Cornell University; Dr. John Tothill, Fredericton, New Brunswick; Bernice P. Bishop Museum, Honolulu, H. I.; Dr. Roger C. Smith, Kansas State College; Academy of Natural Sciences, Philadelphia; Dr. A. B. Wolcott, Field Museum of Natural History; Prof. W. S. Blatchley, Indianapolis, Ind.; Dr. C. H. Kennedy, Ohio State University. Material from the division

of marine invertebrates was sent to Daniel Cook, University of Cincinnati; Prof. G. S. Dodds, West Virginia University; Dr. Charles J. Fish, U. S. Bureau of Fisheries Laboratory, Woods Hole, Mass.; George M. Gray, curator, Marine Biological Laboratory, Woods Hole, Mass.; Dr. A. G. Huntsman, Biological Board of Canada, Toronto; Dr. Stanley Kemp, Dublin, Ireland; Dr. T. Odhner, Riksmuseet, Stockholm; Dr. A. L. Treadwell, Vassar College. Two abnormal echinoids were sent to Prof. René Koehler for study in connection with his work on variation in these animals.

The number of plants lent to institutions or to individuals outside of Washington during the past fiscal year is 1,660, comprised in 59 lots, considerably less than for some years past. Of these the following deserve special notice: 456 specimens of Orchidaceae from tropical America lent to Oakes Ames of Boston, Mass., for study in connection with his critical work upon American orchids, especially those of Central America; 119 sheets of *Carex*, sent to Kenneth K. Mackenzie of Maplewood, N. J., who is monographing this difficult group for the North American Flora; 125 specimens of *Senecio* from South America, sent to the Missouri Botanical Garden for study by Dr. J. M. Greenman, who is engaged in monographic work upon this genus; 66 specimens of Scitaminales, lent to Prof. W. W. Rowles, of Cornell University, who is preparing the account of the order for the proposed flora of Central America and Panama.

DISTRIBUTION AND EXCHANGE OF SPECIMENS.

Duplicates distributed to high schools, colleges, institutions, etc., aggregated 3,545 specimens, of which 1,490 consisted of mollusks in 10 prepared sets and 608 fishes in 8 sets.

Exchanges to the number of 28,693 were sent out, of which 2,491 were zoological specimens supplied by all the divisions. Of the 25,656 plants thus distributed, exchanges of 1,000 specimens and over went sent to the Arnold Arboretum, Harvard University; Brooklyn Botanic Garden; Field Museum of Natural History; George Washington University; Gray Herbarium, Harvard University; University of Illinois; Missouri Botanical Garden, St. Louis, Mo.; New York Botanical Garden; Academy of Natural Sciences, Philadelphia; and Museo Nacional, Rio de Janeiro, Brazil.

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

From the list given below, it will be seen that the number of specimens of animals and plants in the national collection is now estimated to exceed 7 millions, not including the mammals and birds in the custody of the Biological Survey.

These figures do not represent an actual count, which in some divisions at least it would be a physical impossibility to accomplish at the present time. They are mostly based on an earlier estimate by adding the yearly increment and deducting the specimens which have been disposed of by gift or exchange, or which have dropped out of the collection for other causes. In the division of mammals an actual count was undertaken in 1922 which showed that the actual number was slightly in excess of the estimates, so that there is good reason for believing that the census is a conservative one. In confirmation of this it should be noted that the estimated number of plants is only that of the mounted specimens, and does not include the unmounted material, nor the lower cryptogams.

Division:	
Mammals	80,269
Birds: skins, skeletons, and alcoholics	235,897
Birds: eggs	80,274
Reptiles and amphibians	75,972
Fishes	685,536
Insects	2,338,500
Marine Invertebrates	722,712
Mollusks	1,528,581
Echinoderms	158,000
Plants	1,150,000
Total	7,055,741

REPORT ON THE DEPARTMENT OF GEOLOGY.

By George P. Merrill, *Head Curator.*

The fiscal year just closed has been marked by some very notable additions to the collections; by the successful completion of much of the work that was planned; and by the realization of a hope of some years' standing, namely, the beginning of field operations to secure one of the large sauropodous dinosaurs for the hall of vertebrate paleontology.

Accessions.—A decrease in number of accessions is shown, 196 being recorded for the year, but an increase in number of individual specimens received overbalances the discrepancy. The estimated total is 36,698 specimens, chiefly paleontological, against 23,504 for the year previous. As usual, these are principally through donations. The scientific value may be said to be greater than usual owing to several important acquisitions, among which may be mentioned the paleontological collection of the late Orestes St. John, and the residual portions of the paleontological collection of the late R. D. Lacoe and meteorite collection of H. A. Ward. The continued acquisition of foreign paleontological material is to be noted. The value of this for comparative studies is evident, and while much that has been received during the present year comes from localities already represented in the accessions of the last two years, the new influx rounds out the previous collections and thus presents a wider field to the student. The scientific value of the collections has been greatly enhanced by the acquisition of type specimens, of which a considerable number have been added through gift, transfer, and the published research work of members of the staff.

Through the generosity of Mrs. L. A. Coonley Ward, the department received a valuable gift in the form of the residuary meteorite collection of her late husband, Prof. Henry A. Ward. The collection is valuable not so much in adding new, as in furnishing ample material for study and exchange. Of particular value in this connection are 10 complete individuals of the Ness County, Kansas, fall; 24 complete individuals and 11 fragments of the Forest City fall; 25 complete and cut individuals of the Toluca fall; and fine exhibition

pieces of the Smithfield, Seelasgen, Thunda, Coahuila, Canon Diablo, Trenton, Nejed, Santa Rosa, Descubridora, Roeburne, Youndegin, Mukerop, Arispe, and Costilla Peak irons, and Estacado stone, as well as a quantity of fragments of the Bjurbole and Ochansk stones.

Thirteen additional accessions of meteorites, mostly new to the collections, are recorded, received chiefly through exchanges, although two purchases, three gifts, and one transfer are included. Among the iron meteorites especial mention may be made of the peculiar dumb-bell shaped mass from Savannah, Tennessee, an etched surface of which shows evidence of fracturing and recementing, received from the State Geological Survey of Tennessee as an exchange; a smaller mass from Somerset County, Pennsylvania, showing faulting, received as a gift through R. W. Stone, Assistant State Geologist of Pennsylvania; and a small, complete, but very much oxidized and irregular form found by Dr. J. W. Fewkes of the Bureau of Ethnology in the ruin of the Pipe Shrine House, in the Mesa Verde National Park. A 320-gram piece of an iron from McDowell County, North Carolina, was donated by the North Carolina State Museum, and examples of two stones, one Garraf and the other Molina, Spain, were acquired by exchanges, the former from the Museum National d'Histoire Naturelle, Paris, France, and the latter from Prof. C. Wendler, Chene-Bourg, near Geneva, Switzerland. By purchase were obtained a mass weighing 15¼ pounds (6.93 kilogr.) of meteoric iron from Glasgow, Barren Co., Ky., and a fragment weighing 810 grams of an iron from Dungannon, Scott Co., Va. Other accessions, while of value for study purposes, need no special mention.

A remarkably fine septarian nodule from Milam, West Virginia, was purchased, and five slabs of marble, 24 by 59 inches, including York Fossil, Westfield Green, Sonora, Napoleon Gray, and Wellington Cream, were donated by the Tompkins-Kiel Marble Company, New York City, for exhibition purposes.

Through the continued activities of Victor C. Heikes of the U. S. Geological Survey, located at Salt Lake City, have been acquired some of the most interesting of the recent additions to the economic collections. Groups of large, etched cubic crystals of fluorite, of delicate purple color, from the Wildcat Mountains, Tooele County, Utah, are the first representatives of this material from that state. The material is not of optical quality, but closely resembles that from well known localities in the upper Mississippi Valley. From the Tintic Standard Mining Company, Dividend, Utah, he secured examples of a remarkably pure massive ash-gray anglesite, showing a peculiar diffusion banded structure and containing ramifying cavities filled with an unusual new silver mineral to which the name *argento-*

jarosite has been given. C. H. Rowley, of Salt Lake City, through Mr. Heikes, presented a specimen of arsenopyrite with its oxidation product scorodite, from the mine of the Western Utah Copper Company, Gold Hill, Utah. This shows cellular, porous, pale green scorodite surrounding residual cores of arsenopyrite and is very interesting in view of the demand for available sources of arsenic for use in the manufacture of insecticides. Finally, Mr. Heikes has furnished interesting examples of native gold in shale, from the Flying Dutchman mine, near Bouse, Arizona.

A noteworthy contribution to both economic geology and mineralogy is from H. G. Clinton, of Manhattan, Nev., who generously donated a fine series of arsenic and antimony minerals and ores, specimens of gold in calcite, etc., chiefly from the White Caps Mine, in the vicinity of Manhattan. P. M. Frank, formerly assistant curator of mineral technology, while on a visit to northern Michigan, obtained an unusually large and fine specimen of intergrown native silver and native copper which forms a valued addition to the collections.

Transfers from the United States Geological Survey include type series illustrating Professional Paper No. 111, on the ore deposits of Utah; 14 specimens of described rocks from the Castle Rock quadrangle, Colorado; a described collection of tungsten ores; and a type set of manganese ores from western Virginia, illustrating a bulletin published by the Survey of that State.

The division of mineralogy has benefited largely through exchanges, upward of 60 species new to the collections, as well as unusually fine exhibition specimens having been acquired in this way. Of the latter, a part of a larger boulder of jade, variety nephrite, was received from Col. W. B. Thompson, New York City, and from Ward's Natural Science Establishment, Rochester, N. Y., was obtained a large specimen of crystallized descloizite from Southwest Africa, being one of several of the finest examples of this mineral ever found. From Ward's Establishment were also acquired through various exchanges, several species new to the collections, as well as other valuable and rare minerals. Other organizations cooperating in this manner are the Philadelphia Academy of Natural Sciences, from which were received 24 species including vauxite, paravauxite, keeleyite, and kasolite; the Royal Ontario Museum of Mineralogy, Toronto, Canada, which furnished a type set of zeolites from Nova Scotia, described by Walker and Parsons, as well as a number of rare minerals hitherto not represented in the collections, and an interesting specimen of tubular amygdaloid; the Geological Survey of Canada supplied camsellite and colerainite, also new to the collections; the Museum National d'Histoire Naturelle, Paris, France, nine new or rare minerals; and the University of California, Berke-

ley, Calif., 22 specimens including a part of the type material of the species jurupaite, wilkeite, and terrestrial troilite. An exchange was also arranged with M. Vonsen, Petaluma, Calif., by which were acquired large masses of the terrestrial troilite and other minerals. Assistant Curator Foshag has been commendably active in negotiating these exchanges and is largely responsible for their successful execution.

Materials of interest and value have been received through donations. C. B. Ferguson, of Atlantic City, N. J., presented a number of Alaskan minerals which he collected from Copper Mountain, Prince of Wales Island. These include fine specimens of crystallized epidote, garnet, and other minerals. Unusually fine crystals of thenardite from Deep Spring Valley, Inyo County, were donated by the Industrial Research Company, San Francisco, Calif.; Dr. N. H. Darton, Washington, D. C., furnished examples of cumengite, percylite, and other minerals from Boleo, Lower California; Dr. H. E. Merwin, Geophysical Laboratory, Carnegie Institution of Washington, type specimens of lepidocrocite and an example of prismatine; Col. W. A. Roebling, Trenton, N. J., specimens of beckelite and paligorskite, both new to the collections.

Through the Frances Lea Chamberlain endowment fund a number of attractive gem stones have been purchased for the collection. These are: A cut citrine quartz, of unusual quality and size, weighing 1180 carats; large aquamarines from Brazil and Madagascar; a golden green beryl from Madagascar and a fine pink one from California; an unusual colored garnet of the variety essonite, also from California; a 9.5 carat blue zircon from Queensland; a Chinese carved pendant of pink tourmaline of large size and exquisite coloring; a mandarin buckle of nephrite; and two carved Chinese jadeites.

The most important accession received in the division of paleontology in several years is the collection of the late Orestes St. John, presented to the Museum by Dr. Frank Springer, to whom it was left upon the death of Mr. St. John. The collection consists of: (1) A general collection of Devonian fossils made during Mr. St. John's younger days in Iowa; (2) his large and extremely valuable collection of Selachian fish remains, accumulated in connection with his special studies, chiefly from the western Carboniferous. This contains numerous types of species described by him in the Illinois reports, and also a large amount of original material forming the subject of further extensive researches never published. In addition to the results of his personal collecting during forty years of diversified field work, there is included a large quantity of very choice Cestraciont fish material obtained by Doctor Springer himself, largely from a fortunate discovery in the Burlington limestone; and

also two exceptionally fine collections from the Keokuk limestone made respectively by Dr. G. A. Williams of Boonville, Mo., and Lisbon A. Cox of Keokuk, Iowa, which were purchased by Doctor Springer and turned over to Mr. St. John together with his own, for use in his researches. Among other notable specimens contained in this important collection is a very exceptional one from the Coal Measures of Kansas, containing the complete dentition of a large shark of Paleozoic time in a state of preservation such as has not been found elsewhere. This formed the type of the genus and species *Agassizodus variabilis*, described and figured in volume 6 of the Illinois reports, and is regarded among ichthyologists as without a parallel among its kind. The material here assembled will be of incalculable value to the specialist who may take up the study of this group, and Doctor Springer has earned the thanks of future workers in thus placing the collection where it will always be available. Reference might also be made here to a second gift from Doctor Springer, consisting of upward of 800 specimens of Upper Carboniferous fossils from Jemez Springs, N. Mex.

Another most notable accession is the residuary portion of the collection of the late R. D. Lacoe, of Pittston, Pa., presented to the Museum by his heirs. The main portion of Mr. Lacoe's collection, estimated to contain upward of 100,000 specimens, of which 800 were types, was acquired by the Museum many years ago, and, with this addition, forms one of the most valuable collections of fossil plants in the world. The present accession is estimated to contain not less than 10,000 specimens and includes fossil plants from recent travertines in this country, from the Tertiary of Switzerland, England, California, and the Green River and presumably Denver formations of Wyoming and Colorado; from the Cretaceous of Colorado and Germany; from the Jurassic of England, Germany, Austria, and South America; from the Trias of Austria and Virginia; from the Permian of New South Wales, Thuringia, France, England, the United States; from the Pennsylvanian of Great Britain, France, the United States; and from the Devonian of Ireland, Belgium, and America.

In addition to the plants, there are fossil invertebrates of Tertiary, Cretaceous, Jurassic, Triassic, and Upper Paleozoic ages of several countries in Europe as well as from the United States; important collections of fossil insects from the celebrated quarries of Solenhofen, Bavaria, and Oeningen, Switzerland, as well as insects and crustaceans from the Green River and Upper Paleozoic of the United States. Some of these specimens are in great perfection. Reptilian remains in small amount are from the coal fields of England and the United States and from the Trias of the Connecticut Valley. Several hundred specimens of fossil fishes, some of them in a rare

state of preservation, are present from the Green River of Wyoming, the Tertiary of Switzerland, the Triassic of the Appalachian region, and the coal fields of Great Britain, France, Ohio, and Pennsylvania. The collection is especially notable for its wealth of Upper Paleozoic insects and crustaceans, the latter being represented in some cases by many duplicates in excellent state of preservation.

Supplementary to the collection is the very valuable paleontological library, estimated to contain not less than 2,000 volumes and an equal number of pamphlets.

Other noteworthy accessions of paleontological material are noted briefly below.

During the summer of 1922, Dr. E. O. Ulrich, while traveling in Europe, visited the Island of Gotland, Sweden, where he secured upward of 1,500 specimens of Silurian invertebrates. At other localities of northern Europe collections were made from the Cambrian and associated formations, aggregating approximately 1,000 specimens. These he presented to the Museum for incorporation in the study series where they are of value for comparison with American faunas of the same ages.

The Mesozoic and Cenozoic collections have also been enriched through donations of valuable material from foreign sources. Stephen R. Capps, of the United States Geological Survey, while engaged in private work in Palestine, made extensive collections of Mesozoic fossils which he presented to the Museum. Studies upon this very interesting material by Dr. T. W. Stanton are now under way. Chiefly through Dr. T. W. Vaughan, a number of accessions of material from the West Indies, Mexico, Central America, and various localities in South America have been added. Foraminifera, corals, echinoids, and mollusks from Jamaica constituted a large collection contributed by Dr. C. A. Matley, Government geologist, Kingston, Jamaica; representatives of more than 600 species from the Tertiary and Cretaceous of northeastern Mexico were donated by the Compania del Petroleo "El Aguila" S. A., Tampico, Mexico; the Standard Oil Company (New Jersey), through C. F. Bowen, and Hoyt F. Gale of the South American Gulf Oil Company, New York City, supplied collections from Venezuela and Colombia, respectively; and the Richmond Petroleum Company of Mexico, S. A., contributed materials from the Isthmus of Tehuantepec, Central America. Mention should also be made of the various lots, chiefly echini and corals, supplied from time to time by W. R. Forrest, St. John, Antigua. These are of great value in filling gaps in the collections from this island. Brother Artiste Joseph, Instituto de la Salle, Bogota, Colombia, has also furnished a quantity of material.

Collections of fossils from England and Italy were presented by Edwin A. Walford, Banbury, England. Those from England are

of particular value in enlarging our series of the classic Wenlock faunas, hitherto but slightly represented, while the Italian material from the Miocene at Bordighera, will be useful in comparative studies.

Dr. A. F. Foerste of Dayton, Ohio, has shown his continued interest by gifts comprising 500 Silurian fossils from southwestern Ohio, Tertiary Bryozoa from Georgia, and 60 casts of Paleozoic cephalopods made from type specimens borrowed from other muesums in the course of his studies.

The following were acquired by way of exchanges: Ordovician trilobites and other fossils from Esthonia, from Institutium Geologicum Universitatis, Tartu; representatives of Upper Paleozoic and Early Mesozoic faunas from the Island of Timor, Dutch East Indies, from Technische Hoogeschool, Instituut voor Mijnbouwkunde, Delft, Holland; casts of type specimens of trilobites studied by Professor Meneghini, from the Geological Institute, Regia University, Pisa, Italy; trilobites from the Upper Cambrian of Sweden, from the Geological Survey, Stockholm; and Cretaceous bryozoans from Germany, from Dr. F. Franke, Dortmund, Germany.

By purchase were obtained two collections of Cretaceous fossils, one from Alberta, Canada, and one from Germany; also a small collection of fossil shells from the Tertiary of Hungary.

Exhibition slabs illustrating geological phenomena, and miscellaneous carefully selected fossils, were obtained by Curator Bassler from central Tennessee, and Norman H. Boss, during several short trips to Chesapeake Bay, secured cetacean remains, those of *Ixacanthus spinosus* being especially worthy of mention.

By transfer from the United States Geological Survey, Cretaceous invertebrates described by Dr. J. B. Reeside, jr., and fossil plants from the Laramie formation of the Denver Basin and Animas formation of Colorado, described by Dr. F. H. Knowlton, were added to the collections.

Fossil plants from Mexico, described and presented by Prof. E. W. Berry, and important collections of Peruvian Carboniferous and Tertiary plants, made by Dr. Harvey Bassler during two years of field work in these remote regions, added material of particular value to the paleobotanical collections.

Explorations and Expeditions.—Secretary Charles D. Walcott has continued explorations in the Canadian Rockies for evidence bearing on the pre-Devonian formations in western Alberta and southeastern British Columbia. A fine section of pre-Devonian strata was studied and measured in the upper part of Douglas Lake Canyon Valley, extending from the base of the Devonian above Lake Gwendolyn across the canyon to the deep cirque below Halstead Pass where the great

Lyell limestone forms the crest of the ridge. The section includes the Ozarkian Mons formation down to the Lyell formation of the Upper Cambrian. Collections of graptolites were made from the Silurian limestones in the upper portion of Sinclair Canyon, above Radium Hot Springs, British Columbia, and lower down the canyon, thin bedded gray limestones yielded fossils of the Mons formation not unlike those so abundant at the head of Clearwater Canyon and Glacier Lake to the north.

Dr. R. S. Bassler spent two weeks of July, 1922, and the month of June, 1923, in continuation of geologic work in the Central Basin of Tennessee, begun two years ago under the auspices of the geological survey of that State. The mapping of the Franklin quadrangle in the western part of the Basin was completed, and work on the Woodbury and Hollow Spring quadrangles, on the opposite eastern side, well advanced. Collections of carefully selected fossils and other necessary data for the reports on the geology of these regions were secured.

During May, 1923, Dr. Charles E. Resser accompanied Dr. E. O. Ulrich in an investigation of the Cambrian and Ordovician rocks of the Valley of Virginia, and secured important stratigraphic collections. Doctor Ulrich, with his assistant R. D. Mesler, continued field researches during the month of June, studying various sections of the Appalachian Valley in eastern Tennessee. This work was under the auspices of the United States Geological Survey.

Doctor Ulrich represented the Smithsonian Institution at the International Geological Congress held at Brussels in August, 1922, and during the trip visited important Paleozoic localities in various European countries. All of the material collected was presented to the Museum.

While traveling in Europe in the summer of 1922, Miss Jessie G. Beach was detailed to study collections in various museums, and to consult with European scientists regarding matters of interest to the Museum. Miss Beach reports visiting museums in France, Italy, Germany, Belgium, England, and Scotland, where she listed and sketched various type specimens of unusual interest, and studied methods of installation and labeling. Her observations have proved of assistance in the work of arranging and labeling the National collections. Conferences were held with Ferdinand Canu, at Versailles, regarding his studies in collaboration with Curator Bassler, and with E. A. Walford, at Banbury, England, to perfect arrangements for the gift by him to the United States National Museum of his large collections of foreign fossils, as noted elsewhere.

C. W. Gilmore, under the auspices of the Museum, made a trip to Roy, N. Mex., to investigate a reported discovery of *Elephas* re-

mains. The specimen proved to be valueless for museum purposes, and from that standpoint the trip was a failure. In December, 1922, Dr. J. W. Gidley was detailed to go to Melbourne, Fla., to investigate a reported fossil deposit, but was compelled by illness to abandon the trip before reaching his destination, and it has not been possible to take further action in the matter. N. H. Boss made several short collecting trips to the Miocene deposits along Chesapeake Bay in search of fossil remains. As in previous years these trips were productive in the recovery of well preserved cetacean remains.

Late in the fiscal year, C. W. Gilmore and Norman H. Boss were detailed to excavate remains of dinosaurs in the Dinosaur National Monument, Utah. As the results of this work will not be known in time to incorporate in this report, details will have to go over until another year. It may here be stated, however, that for some time the great desirability of this work has been uppermost in the mind of the Head Curator, and he has been awaiting only a favorable opportunity for its consummation.

No major expeditions were undertaken in other divisions of the department for want of funds. Assistant Curators Foshag and Shannon, on their own initiative, made a brief trip to old copper mines in Carroll County, Md., a district which, despite its proximity to Washington, was practically unrepresented in the collections. A large suite of copper and iron ores and associations was secured. A day was likewise spent at the diabase quarry near Belmont Park, Va. So much material of interest was found that Mr. Shannon conducted the Washington Mineralogical Society over the ground on their annual field trip. The specimens collected have been turned over to the Museum. The limestone quarry at Leesburg, Va., was also visited and interesting mineralogical material secured.

Work of preserving and installing the collections.—A determined effort was made to complete the work of unpacking and disposing of the large amount of material transferred by the United States Geological Survey a few years ago. With the exception of a large lot of well borings, the unpacking is now practically completed, but some of the material is still awaiting the decision of Survey experts as to its final disposition. The work has resulted in the locating of a number of type sets, including those illustrating an early Professional Paper on the Bingham District, Utah; illustrated specimens from the Park City District, Utah, and from zinc and lead deposits of western Kentucky; and large collections upon which were based studies by H. Foster Bain on various lead and zinc mining districts. Other type sets, including series from the Alleghany and Weaverville gold districts, in California, and the Tyrone District, New Mexico, have been selected and arranged for preservation with the assistance of the geologists from the Survey.

No changes worthy of note have been made in the economic collections. In the hall devoted to Physical and Chemical Geology, a case of "Imitative forms" has been introduced, that is, of specimens the form of which has led to mistaken identifications. As at present arranged, this includes (1) a fossil coral supposed to be a petrified honey comb; (2) a piece of vesicular slag, supposed to be a fossil hornets nest; (3) a chert nodule, mistaken for a fossil egg; (4) a concretion of clay-ironstone thought to be a fossil turtle; (5) an agate, a supposed fossil eye; (6) a rill mark, imitative of a snake; (7) chert nodules and weathered limestones thought to have been fossil human feet; (8) dendritic markings of manganese oxide, supposed to be fossil mosses, etc. The imitation is at times quite striking, at other times not, but as an illustration of things which are not what to the casual observer they seem, the exhibit is quite a success. The acquisition of the Coonley-Ward collection, previously mentioned, made necessary an expansion of the meteorite collection, one case being added. The department is endeavoring to add to the attractiveness and educational value of its exhibits by means of graphic illustrations. The method that has been employed of placing photographs in the cases showing field occurrences of the objects exhibited has not fully accomplished all that could be desired. A series of enlarged photographs, measuring 40 by 60 inches, has been prepared to hang on the walls above the cases, where they will serve to illustrate the material exhibited below. The subjects include views of glaciers, glaciated areas, rockweathering, volcanic action and products, erosion, etc.

Upon Assistant Curator Foshag's return after a year's absence, the examination, classification, and distribution of the accumulated mineralogical materials was given first attention. The bulk of this was relegated to the study series, but a few of the more notable specimens were reserved for exhibition. A critical review of the exhibition hall was then made and a number of changes decided upon. The placing of large specimens released through a rearrangement of the "recent accession" case, resulted in changes in the exhibits of large and miscellaneous specimens. One new case of this type of material was assembled and installed, and the collection of New Jersey zeolites, the gift of the late Dr. W. S. Disbrow, was modified and rearranged, resulting in a more effective display. Two wall cases at the west end of the hall have been utilized to present an exhibit showing crystal forms. One hundred well developed natural crystals are here mounted on the shelves, while the table part of the cases contains an equal number of larger crystals showing physical characteristics. Another entirely new exhibit is made up of jade and its substitutes. Two large individual exhibits, nephrite cut from a large boulder, and descloizite from southwestern Africa, mentioned previously in this report, have been installed upon pedestals.

Work on the petrological collections has been confined almost wholly to the duplicates, little of interest in this line having been received during the year. Several hundred specimens were trimmed and added to the lots now being accumulated for preparation of school sets, and quite a number were also added to the general collection of duplicates. These were acquired chiefly through elimination from the Survey sets.

Few changes are noted in the paleontological exhibits. Here, also, enlarged photographs are being introduced, nine showing the various physiographic provinces of the United States having been hung during the year. Five large mounts illustrating geological phenomena were added to the series assembled by Doctor Bassler within the past few years, and a biologic series of fossil shells was installed in a flat-top or "gem" case. Ranking first in importance and interest in additions to the vertebrate exhibit is the skeleton of the small lizard *Saniwa ensidens* Leidy, the mounting of which was completed by Norman H. Boss with commendable artistic skill. This constitutes the only articulated skeleton of a fossil lizard to be found in an American museum. It was hoped that the composite skeleton of an extinct buffalo assembled from the bones sent from Minnesota by the John A. Savage Company, of Crosby, would also have been finally placed before the end of the year, but, while the restoration and mounting have been completed by Mr. Boss, the detail of Curator Gilmore to field work prevented its installation.

It has been found necessary to again expand the study series of invertebrates. Space for this was gained by the elimination of duplicate material, the shifting of the contents of two rooms in the basement, and the removal of office equipment and material under study from one room on the third floor to the space thus realized in the basement. In this way, one entire room adjacent to the study series as now installed has been gained, and space made available, it is hoped, to accommodate the accessions of several years to come.

Practically all of the time of Associate Curator Resser has been spent in the preparation and study of large collections of Upper Cambrian fossils from west of the Mississippi River, turned over early in the year by Secretary Walcott. The work, however, is well advanced, and many of the specimens have been photographed by Dr. Resser for illustration. Similar photographic work has occasionally been done for Drs. Springer and Ulrich.

An unusually large number of exchanges have been sent out from the division of paleontology within the past year, in one instance over 4,500 specimens being assembled for shipment. Both Dr. Resser and Miss Beach were called on to assist in this work, but as this is the only way of securing valuable and needed material, the time is considered as well spent. Miss Beach has also assisted in the

separation of the large collections received during the year; in the translation from the French and preparation of the English manuscript of a work on the Philippine Bryozoa; and in proof reading and indexing papers in course of publication.

In the Secretary's laboratory the new collections resulting from his field season of 1922 were worked up, and preliminary identifications made. Additions to the Mesozoic and Cenozoic collections have been cared for as usual by Drs. T. W. Stanton, W. H. Dall, T. W. Vaughan, and their assistants.

Work on the post-Paleozoic fossil plants, under the direction of Dr. F. H. Knowlton, has been concentrated on the Early Tertiary forms, the study of the numerous collections from these formations resulting in their condensation and the elimination of waste material. From the very nature of their occurrence, fossil plants require much storage space and it is no inconsiderable task to keep it within reasonable limits. The Mesozoic plants under study by Dr. Arthur Hollick have likewise been placed in better form for final preservation by his work of the year. The condensation and arrangement of the large collections of Proterozoic algae transferred to the Museum by Secretary Walcott constituted the chief work on the Paleozoic plants accomplished by Drs. Bassler and Resser.

In addition to work on the exhibition specimens mentioned above, the force in the laboratory of vertebrate paleontology has been engaged as follows: Mr. Boss mounted two long-beaked cetacean skulls, representing undescribed species; has made good progress in the preparation of the large slab of rhinoceros bones collected by Doctor Gidley in Nebraska; has prepared several smaller specimens; made moulds and casts of fossil bird types; and assisted in the renovation, rearrangement, and installation of specimens. Thomas Horne has been fully occupied throughout the entire year in the restoration and mounting of a mastodon skeleton from Arizona, considerable progress having been made on the mount, which should be completed early in the coming year; and John Barrett has been engaged in various pieces of preparatory work, also assisting the preparators when needed.

Preparator Warner has, as heretofore, been occupied in the work of cutting and polishing specimens for exhibition and cutting thin sections for study.

Present condition of the collections.—Although changes in the exhibits have been few, the scope of the collections is broadened by each addition, hence they may be said to have been improved. The same is true of the study series. The exhibits are kept clean and well labeled, although many of the labels are but temporary. The study collections have been cleaned so far as help was available to do this work. Dust will accumulate despite all precautions, and during the year fully 10,000 drawers were gone over with the

vacuum cleaner and bellows. A few of the type series transferred from the Geological Survey remain unarranged, principally because the authors of the reports have left the Government service, and the selection and labeling of the specimens to be retained requires painstaking and difficult examination of field note books.

The gem collection remains in charge of Miss Margaret Moodey who gives careful attention to its artistic and orderly arrangement.

It might be stated that, through deaths and inaction, the department is gradually losing its formerly most dependable sources of new materials, and some campaign should be inaugurated for gaining new and influential friends whose generosity and public spirit will, in part at least, make good their loss and compensate for the lack of interest in those to whom we have an even greater right to look for support. Correspondence alone has been found insufficient to accomplish this purpose. The most prolific sources for materials in the past have been the Tenth Census and the various expositions; these need now to be replaced by some source which will keep the collections up to date as regards newly exploited deposits.

Researches.—The Head Curator has continued his investigations on meteorites as time permitted. Research investigation has, as in several years past, been the dominant occupation of Assistant Curator Shannon. It is characteristic of investigations on ore materials that, as they progress, they necessarily become mineralogical. There can, consequently, be no sharp line drawn between the research of the divisions of applied geology and mineralogy. The wealth of problems growing out of the classifying of the material have demanded more attention than there was time to undertake. The laboratory has been constantly in use for intensive chemical work, while both assistant curators have spent a large portion of their time out of office hours in evaluating the results and in preparing calculations, drawings, and manuscripts. The results attained are in part indicated by the papers published. One of the principal chemical investigations of the year was based on the alteration products of gem variscite from near Lewiston, Utah, which have passed under the name of *wardite*. Work in collaboration with Dr. E. S. Larsen of the U. S. Geological Survey has shown that this material contains at least six undescribed minerals, mainly basic phosphates of lime, alumina, and alkalies, belonging to the alunite-bedaunite group. Incidental to this investigation, variscite from Arkansas was analyzed for the first time on purified material. Also, a mineral sent to the Museum by H. G. Clinton, from Manhattan, Nev., as yellow turquoise, was analyzed and found to be compact barrandite, the iron analogue of variscite, heretofore known only as a rarity from Bohemia. At intervals the interesting assemblage of rocks from Belmont Park, Va., are being studied chemically, optically, and

crystallographically, and the minerals from the limestone quarry at Leesburg have been described for publication. A gahnite collected at the copper mines of Carroll County, Md., has been analyzed and described as being of especial interest in owing its intense blue color to cobalt.

Assistant Curator Foshag has completed his study of borates and their genesis. The minerals serpentine (false jade), centrallasite, priceite, lavendulum, glaucophane, and anthophyllite have been investigated, and the following are under investigation: Hydrous calcium silicate, probably new, anapaite, and chlorastrolite. A study of the minerals in cavities in lavas and their genesis is in progress, and data on the study of solution at high temperature and its relation to ore deposition are now being collected.

These laboratory investigations are of advantage to the Museum in that many rare or new minerals, hitherto unrecognized, are found in the collections, and many errors in labeling are eliminated. Unfortunately, however, it has been necessary to conserve space by eliminating duplicates, and in working over this old material it is often found, after the investigation is completed, that only a single small specimen remains of an ore proven to have a unique scientific value. Consequently, where investigations are based upon new material, every effort is made to secure an adequate supply in order that specimens may be used to build up the collections by exchanges.

Paleontological researches have been actively carried on by all members of the staff of the division, as well as by others working on the Museum's collections. Secretary Walcott prepared a paper descriptive of the brachiopods of his last summer's collections, the graptolites having been sent to Dr. Rudolph Ruedemann, of the New York State Museum, who made a preliminary identification of the species. Dr. R. S. Bassler has continued his work on the stratigraphy and paleontology of a portion of the Central Basin of Tennessee, which he expects to complete and submit to the geological survey of that State for publication during the coming year. In collaboration with Ferdinand Canu, he has completed the manuscript, but not the illustrations, on the Bryozoa of the Philippines dredged by the *Albatross*, and has continued work on the Recent Bryozoa of the Gulf of Mexico for comparison with American Tertiary forms.

Dr. E. O. Ulrich has completed a report dealing with the Early Paleozoic formations of Wisconsin, which will be published by the State, although based on Museum collections. Doctor Ulrich, with Dr. C. E. Resser collaborating, has continued researches on the Upper Cambrian stratigraphy and fossils of Wisconsin, and has devoted some time to researches on the faunas of the Ozarkian and Canadian systems.

Special investigations by Dr. Frank Springer comprise a monograph upon the Silurian crinoids of the Ohio Valley, based chiefly

upon material obtained by his field collectors in Tennessee and Indiana—a work begun several years ago; the progress made during this year was largely in the preparation of drawings for the numerous plates; two papers are now in press, one upon the crinoid family Catillocrinidae, the other entitled "A New Tertiary Crinoid from the West Indies," this being the first stalked crinoid of Tertiary age to be described from the western hemisphere; other researches upon unusual forms of fossil crinoids are now about completed.

A report upon a collection of Pleistocene fossils, by T. S. Oldroyd of Stanford University has, with the author's permission, been revised by Dr. W. H. Dall and submitted for publication. Dr. Mary J. Rathbun has worked up the fossil crustaceans from the Republic of Haiti, collected by W. P. Woodring and party in 1921. The results have been published in the Proceedings.

Dr. T. W. Stanton has continued his researches on the Comanche series of the Cretaceous in Texas, and Dr. F. H. Knowlton has begun an investigation of the fossil plants associated with the lavas at Spokane, Wash., and in the Coeur d'Alene district, Idaho, in an endeavor to ascertain the age of the great Columbia lava flows. Doctor Knowlton has also continued his studies on the plants of the Early Tertiary (Fort Union) formation of the west.

Owing to Mr. Gilmore's absence in Canada for four months of the past year, no papers based on Museum material were prepared for publication. His monographic study of the fossil lizards of North America was continued as time was available. His studies of the collections at the University of Alberta and at the Geological Survey of Canada brought to light much that was new to science, and resulted in the preparation of several papers.

Dr. J. W. Gidley's time has been devoted chiefly to the study of material representing two important groups of mammals, glyptodonts and mastodons collected in the San Pedro Valley, Ariz., two years ago. The completion of this work is expected early in the next fiscal year. In addition Doctor Gidley has completed a study of a new genus based on *Ursus primaevus* Gaillard. He has also continued work on the fossil mammals of the Cumberland Cave deposits, and reports progress on studies necessary for the systematic arrangement of the study and storage collections of mammals and fishes.

As heretofore students and investigators from other institutions have had free access to the collections, and been supplied with such materials as were available to aid them in their studies. Several of the petrologists of the Geological Survey have taken advantage of the opportunities offered in using both the collections and the laboratories, and several days were spent by Dr. Harry von Eckermann, of Ljusne, Sweden, and Jack Hyland, of Poopoo, Bolivia, in examining both mineral and ore collections.

Dr. August F. Foerste spent the summer of 1922 in further study of the Museum's collections of Early Paleozoic cephalopods, giving valuable service in arranging and identifying these. Other students of the invertebrates were Dr. J. B. Reeside, jr., who wrote two papers based on material in the Mesozoic collections; Dr. Julia Gardner, Dr. C. W. Cooke, and W. C. Mansfield, who have been steady workers on the Tertiary mollusca; Dr. R. T. Jackson, who is supplementing his former studies on the Antillean echini; Dr. C. A. Matley, Government Geologist of Jamaica; and Professors H. Yabe and N. Yamasaki, of the Imperial Universities of Sendai and Tokyo, Japan.

Students of the paleobotanical collections include Dr. Arthur Hollick, who continued his studies of Alaskan plants; Prof. E. W. Berry, collections from Mexico and elsewhere; Dr. G. R. Wieland, the cycads; Dr. Ralph W. Chaney, the far western Cenozoic plants; Prof. T. D. A. Cockerell, Eocene plants of Colorado; Miss Winifred Goldring, the Devonian plants with a view to monographing them in cooperation with the New York State Museum; and Mr. Frost, of Chicago University, who has studied the Carboniferous collections.

Dr. O. P. Hay, under the auspices of the Carnegie Institution, has continued studies of the Pleistocene vertebrates, and Messrs. Remington Kellogg and Alexander Wetmore, of the Biological Survey, the fossil cetacean and bird material.

In addition to research work upon Museum material, considerable time has been spent by all members of the staff in furnishing information to inquirers, and examining materials sent for report. Upward of 500 letters, exclusive of those addressed directly to the Head Curator and Curators, have passed through the office, and reports have been furnished upon 361 lots of material.

Distributions.—For purposes of scientific research there were sent out during the year 29 lots of material aggregating 2,387 specimens. As exchanges, 45 shipments, with a total of 5,765 specimens; and as gifts, 2,069 individual specimens and 100 pounds of blowpipe material, specially prepared to meet particular needs, and comprised in 12 shipments, while of the prepared school sets, 55 of those illustrating rockweathering and soil formation, aggregating 1,155 specimens, 18 sets of minerals and ores, with an aggregate of 1,530 specimens, and 3 sets of fossil invertebrates, containing 165 specimens, were distributed to schools and colleges. One shipment of 7 specimens, sent to another department of the Government, is recorded as a transfer.

Total number of specimens in the department.—With the estimated total of last year as a basis, and adding the approximate number of specimens received this year, the total number now in the collection is 1,560,202. As stated repeatedly, however, these figures are merely estimates, and do not include duplicates.

ARTS AND INDUSTRIES.

REPORT ON THE DIVISIONS OF MINERAL AND MECHANICAL TECHNOLOGY.

By Carl W. Mitman, *Curator.*

COMPARISON OF INCREMENT OF SPECIMENS OF 1922–23 WITH THAT OF 1921–22.

A total of 32 accessions was recorded during the year which is six less than that of the preceding year. Over against this slight decrease in the number of accessions there stands a total of 1,357 specimens received, as compared with 386 last year. Of the 32 accessions, 31 were assigned to the division of mechanical technology and one to the division of mineral technology, the latter being a model made in the division workshop. The sources of these accessions were as follows: 10 gifts; 7 transfers; 4 loans; 3 exchanges; 1 purchase; and 7 made in the Museum. Of the 1,357 objects received, comprising original material, models, photographs and documents, 1 was assigned to the coal industry section of the division of mineral technology; 969 to the section of mechanical communication; 262 to the section of land transportation; 82 to the aircraft section; 1 to the watercraft section; 6 to the section of metrology; and 36 to the general section of mechanical engineering.

In addition to the above 82 objects assigned to the section of aircraft, 458 objects pertaining to aircraft were received as a transfer from the division of history. These objects were recorded in 130 catalogue entries so that at this writing the divisions are responsible for 458 more objects than listed in the preceding paragraph. These objects, however, were not referred to as constituting an increment to the collections inasmuch as they were originally recorded by the division of history several years ago as part of the whole Museum's collections. The reason for the above-mentioned transfer of objects was to eliminate, as far as possible, duplication of work within the several divisions of the Museum. In the furtherance of this policy there was transferred to the division of history the whole collection of firearms, comprising 2,899 specimens.

ACCESSIONS DESERVING SPECIAL NOTICE.

Since the active organization of the division of mineral technology, one phase of its work has been connected with the energy resources of the country, particularly the fuels. Mention was made

in the last annual report of work having been started on a model visualizing the manufacture and use of manufactured gas. This model was completed during the present year and placed on exhibition in the coal industries section where it has received very favorable comment from visitors, newspapers, and the technical press.

The enormous strides which have been made in the last ten years in the improvement of the mechanical transmission of intelligence which includes the telephone, telegraph and wireless methods, have inspired the divisions to rearrange and enlarge the collections relating to this subject. Toward this end there was received as a transfer from the Signal Corps of the Army telephone, telegraph, and radio apparatus comprising about 1,000 objects, and including types of apparatus developed by the armies of the United States, the Allies, and Germany before and during the World War.

A valuable addition was made to the collections relating to the railway industry of a model of the "Atlantic" type locomotive, made and loaned by E. Howard Askew, Baltimore, Md.; and through the interest of Joseph R. Darling, Kew Gardens, Long Island, the collection of road vehicles was enhanced by the gift of the original three-wheeled gasoline automobile made in 1898 by Karl W. Kelsey. There was added to the aircraft collections a model of the aircraft designed by Sir George Cayley in 1843, the model being made in the division workshop; one of the four Liberty engines which propelled the now famous NC–4 hydroplane across the Atlantic Ocean in 1919; and a series of six models illustrating the foremost types of aircraft used by the Navy.

The Ford Motor Company, Detroit, Mich., presented a motor driven magneto testing machine. Its particular value to the collections and the purpose for which it was presented are that it clearly demonstrates one of the fundamental principles of dynamo electric current generation.

For addition to the section of machine tools there was received as a gift of the E. Ingraham Company, Bristol, Conn., a wood-working machine, called a shaper, patented in 1868, and in constant use in the company's factory since early in the 70's. The machine represents a type of wood-working machinery now obsolete, although its essential features are still in use.

William Austin Burt, of Michigan, received a patent for a mechanical writing machine in 1829. A replica of this machine is in the divisions' collection of typewriters to which was added this year an original letter written by Burt on the second machine which he made in 1830. The letter was received as a gift from Mr. Burt's great-granddaughter, Mrs. Howard Corning, Bangor, Maine.

Mention is made here also of 35 models, made in the divisions' workshop, illustrating mechanical methods, devices and appliances.

These models are proving of extreme educational value, particularly to students of mechanics, so much so that work in this direction will be continued in the future as far as exhibition space will permit. In this latter connection, it has been found necessary to use extreme caution in the acquisition of specimens, so much so that the divisions are finding it necessary in many instances to be content with the acquisition of photographs as over against models or original specimens. During the year just closed there were received 270 photographs, particularly of locomotives and aircraft.

There was added to the collection of watercraft but one specimen, namely a model of a Brazilian catamaran, called "chingada." It is a valuable addition to the collection in that it possesses quite distinctive features. The model was received as the gift of Robert B. Johnston, Collingswood, N. J.

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

No expeditions of any great importance were made during the year. In connection with the construction of a model visualizing the land pebble phosphate mining industry, Paul M. Frank, assistant curator, spent a week at Bartow, Fla., studying the mining and other technological operations, as conducted by the Morris Fertilizer Company. With this first-hand information it is expected that a more realistic reproduction of this important industry can be effected.

Taken as a whole, the collections are in fairly good condition, considering the fact that during the year the divisions lost through resignations the services of the assistant curator and those of a skilled preparator. At best the divisions are undermanned for the work of preserving and maintaining the collections when it is understood that they include many working models of intricate design; delicate models of mechanical apparatus, the majority of which are made of wood and of such an age that they require constant care to prevent them from falling to pieces; and a large collection of watercraft models, the majority of which are thirty years old or more and in which such things as sails and riggings must constantly be replaced because of deterioration of the original materials. On account of the aforementioned resignations the only experienced preparator left in the divisions was assigned exclusively to the care of the working models and a new inexperienced preparator had to be secured to assist in the maintenance of the balance of the collections. While it may be said that even with these handicaps the collections are in fairly good condition, there does not seem to be much hope that the collections can be put or kept in the best of condition until the Museum can offer salaries large enough to hold employees of the preparator grade. The work of the divisions is closely connected with the industrial world and the staff quite naturally is made up of individuals whose qualifications are similar to those required in

the industrial world. As a result, the divisions are constantly in competition with industrial concerns in securing and maintaining their staff, but on account of the fact that the remuneration which the divisions can offer is less than that offered by industrial concerns, it is extremely difficult, in fact, impossible to hold experienced men. The net result is that the personnel is constantly changing, a condition which does not tend to produce the best results.

In addition to maintaining the collections a considerable amount of new work was produced by the preparators and aid. This included the completion of the model showing the production of manufactured gas, a model 30 inches wide and 8 feet long. The processes shown include the manufacture of coal gas and the manufacture of carburetted water gas. As shown in the model the product of these two processes is collected in a large gas holder from which it is withdrawn through pipe lines and transmitted to the home.

In the workshop of the division of mechanical technology a model of the aircraft designed by Sir George Cayley, of England, in 1843, was constructed and placed on exhibition. This model is made to scale and is one-fourth the size of the original machine designed by Cayley. Its particular feature is that of having four vertically revolving propellers mounted in pairs one above the other on each side of a four-wheeled chassis. The propellers are made up of nine blades each and are so constructed that when the aircraft reaches a desired elevation the blades automatically flatten out and act as planing surfaces or wings. In principle, Cayley's design of aircraft is to-day referred to as a heliocopter.

There was also made in the division workshop and placed on exhibition a series of 35 models illustrating some mechanical element or device. These models illustrate, for instance, the various types of lever actions; methods of power transmission; methods of producing various types of motion by mechanical action; pulley blocks and combinations of pulleys, etc. Considerable use is made of these models by Museum visitors, visiting schools, inventors, and others having mechanical problems to solve.

RESEARCH.

Considered broadly, all of the model construction work of the divisions requires a considerable amount of preliminary investigation and study, so that it may be said that research investigations for the benefit of the Museum were continuously under way. As an example, the definite data as to Cayley's aircraft are extremely meagre and widely scattered. Furthermore, the data which were brought to light were found to be rather incomplete and considerable research work was required to secure the necessary information for the construction of a model. Again, prior to starting the construction of the model visualizing the land pebble phosphate industry, it

was necessary to conduct extensive investigations in order to determine the best way to accurately portray all phases of this industry in model form.

Over against this type of investigation conducted during the year was that of the research work conducted by the writer on the problem of the economic utilization of coal. The work resolved itself into an interpretation of the theory of combustion which would be understood and could be applied by the smaller industrialist and the householder; in other words, those unable to afford the services of a combustion expert. The results of this work were published during the year under the title, "Some Practical Aspects of Fuel Economy."

Mr. Samuel S. Wyer, associate in mineral technology, devoted a considerable portion of his time during the year in applying the division's method of study of mineral industries to the natural resource industries of a single state. The division's work is national in scope, and Mr. Wyer made a particular study of the mineral industries of the State of Pennsylvania for the specific use of the graded schools of that state. All data which the division possessed were used as far as possible. The results of the study were published privately and distributed amongst the grade school teachers, school superintendents and other educators, but particularly the teachers in the seventh grade. The title given to this publication is, "The Smithsonian Institution's Study of Natural Resources Applied to Pennsylvania's Resources."

Mention was made in the last annual report of work being started with the assistance of Mr. Wyer in the preparation of a model visualizing the manufactured gas industry. With this as a basis, Mr. Wyer continued his investigations of the manufactured gas industry, the results of which were published under the title, "Manufactured Gas in the Home."

For upwards of thirty years the division of mechanical technology has had on deposit a steam engine cylinder said to be a part of the locomotive "Stourbridge Lion," the first locomotive put into actual service on the Western Hemisphere, at Honesdale, Pa., in 1829. During a visit to the division, W. J. Coughtry, of the Delaware & Hudson Railroad Company, Albany, N. Y., was shown this cylinder and advanced the idea that the cylinder might be part of a locomotive purchased by the Delaware & Hudson Company in England at the same time that the company purchased the "Stourbridge Lion," and which was received in this country prior to the receipt of the "Stourbridge Lion" but was never tested. The locomotive referred to, called "America," was made by the locomotive builders, Robert Stephenson & Company, Ltd., Darlington, England, so that correspondence was immediately taken up with this firm with the result that from the data still available as to the "America," it is now

believed that the cylinder which the Museum has is an original part of that locomotive or if not, it is at least a copy.

H. W. Dickinson, deputy keeper of engineering, The Science Museum, South Kensington, London, made a general study of the collections of the divisions but particularly the mechanical engineering collections, and was of valuable assistance in clearing up doubtful points pertaining to the early steam engine and locomotive developments in England.

Rev. F. A. Jefferd, of the Amazon Mission, Brazil, made a close study of the boat collections, particularly of schooners. His purpose is to construct a schooner having several distinctive features such as control of all rigging from the boat deck, in which craft and with a crew of Amazon Indians who are members of his mission, he plans to make a round-the-world missionary cruise.

DISTRIBUTION AND EXCHANGE OF SPECIMENS.

Except in the particular case of a few objects of extreme importance in the history of the United States, the collections of the divisions do not include duplicates, so that the divisions do not have the opportunity of distributing materials to schools and other educational institutions. Such duplicate objects as are in the possession of the divisions are loaned occasionally for special purposes. In this connection several of the historical boat models, copies of the original Bell telephone apparatus, primitive carts and other objects pertaining to transportation were loaned for the Pageant of Progress Exposition held at Chicago during July and August, 1922.

To commemorate the work of Elwood Haynes, a pioneer automobile manufacturer, the original Haynes automobile was loaned to the Chamber of Commerce of Kokomo, Ind., during the month of July, 1922; and copies of the original Morse telegraph instruments were loaned to the All America Cables Company for use in their exhibition at the Centennial Exposition, Rio de Janeiro, Brazil. Furthermore, quite a number of exchanges of photographs of locomotives were made during the year with collectors in many parts of the country.

NUMBER OF SPECIMENS IN THE COLLECTIONS.

		Mineral Technology.	Mechanical Technology.
Number of specimens on hand June 30, 1922		3,808	7,798
Number of specimens received during the year		1	1,356
Number of specimens received during the year through transfer from other divisions		0	458
Total		3,809	9,612
Number of specimens transferred to other divisions or returned to owners:			
(1) Firearms	2,899		
(2) Watercraft	35		
Total	2,934	.....	2,934
Net total number of specimens in collections June 30, 1923		3,809	6,678

REPORT ON THE DIVISIONS OF TEXTILES AND MEDICINE AND THE SECTIONS OF WOOD TECHNOLOGY, ORGANIC CHEMISTRY, AND FOOD.

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

COMPARISON OF INCREMENT OF SPECIMENS OF 1922–23 WITH THAT OF 1921–22.

The accessions received during the year number 55 (including 2 joint accessions with other departments), and in addition part of an accession covering 1,145 specimens which was recorded three years ago in the war collections.

The entries covered by the above accessions number 2,141, 651 less than were received in the fiscal year 1922. The greater part of these entries was due to a transfer of specimens from the division of history to the division of medicine. The total number of entries may be divided into five groups as follows: Textiles 137, medicine 1,292, wood technology 192, organic chemistry 501, and foods 19. Each group with the exception of medicine and chemical products showing less entries than last year.

The additions to the collections assigned to these divisions and sections consist of specimens not heretofore represented in the Museum and taken as a whole are believed to be as valuable as those received last year.

ACCESSIONS OF IMPORTANCE.

The most important accession of the year was a series of specimens prepared and contributed by the E. I. du Pont de Nemours & Co. (Inc.), of Wilmington, Del., illustrating the chemical and fabrication processes involved in making Pyralin, a pyroxylin plastic which is very similar to celluloid. The word celluloid brings to mind many statements of explosions and fires caused by this material. But by scientific research, this important class of plastics has been rendered non-explosive, while still retaining the disadvantage of being inflammable when exposed to a flame or excessive heat.

This series of specimens consists of three parts: the first illustrating the chemical processes involved in changing white rags into tissue paper, nitrating it to make pyroxylin, then mixing this with camphor, dyes, and denatured alcohol to produce the pyroxylin plastic material known as Pyralin, which is then rolled into thick sheets from which sheets are sliced as thin as desired. The second section illustrates the important steps in fabricating from sheets of

Pyralin, toilet table articles, such as comb, brush, hand mirror, and powder box. The third section includes a great number of finished articles, such as toilet sets, combs, buttons, handles of various styles, toys, games, etc., selected to illustrate the wide field of usefulness of this material. A particularly interesting specimen in this collection is a model of an automobile constructed entirely of Pyralin, showing the wide range of adaptability of this plastic material. The same company contributed from its plant at Newburgh, N. Y., twelve specimens illustrating the manufacture of "Fabrikoid," a leather substitute made by coating specially woven and finished cotton fabrics with a nitrated cellulose compound, and finishing to represent regular types of fancy leathers known to the trade. This material is used in upholstery, bookbinding, etc.

About a decade and a half ago, Dr. L. H. Bakeland conducted a series of researches on the action of carbolic acid and formaldehyde, and by using certain special conditions he obtained a resin-like substance which when further heated under pressure turned to a hard mass which was no longer affected by heat or chemicals. Thus another class of plastics, known as phenolic condensation products, was discovered, and this particular one named Bakelite. During the past year the General Bakelite Company, of Perth Amboy, N. J., has prepared and contributed a series of specimens showing the manufacturing process involved in making Bakelite, and illustrations of its various uses, such as enamel varnishes, amber pipes, cigarette holders, and miscellaneous radio parts. Later the Condensite Company of America, Bloomfield, N. J., contributed a series of specimens of Condensite, another phenolic condensation product, to supplement the Bakelite collection.

It has not been so many years ago that explosions and fires in motion picture theaters caused by faulty films were not uncommon. Since then cellulose acetate which is not explosive has been developed on a commercial scale and is now used in manufacturing motion picture films, thus eliminating this former hazard. A series of specimens prepared and contributed by the Eastman Kodak Company, of Rochester, N. Y., illustrates the method of treating tissue paper with acetic acid and acetic anhydride to obtain cellulose acetate, and the use of this substance in making film support for the motion picture industry.

The overweighting of silk fabrics with solutions of certain metallic salts or organic materials is a form of adulteration which has brought certain goods into disfavor. The American Home Economics Association has endeavored to acquaint buyers of silk fabrics with the importance of purchasing unweighted fabrics, and its Committee on the Standardization of Textile Fabrics arranged through the coopera-

tion of a broad-minded manufacturer for the weaving of six three-hundred-yard pieces of silk in three grades each of taffeta and messaline. One of the grades was slightly weighted, the other two grades were not weighted, being what are generally known as pure dye silks. Believing that to be a good investment for the consumer, a fabric must be constructed to fill the requirements of the purpose for which it is to be used, the Committee arranged a large-scale wearing test to see what reasonable wear these fabrics would give when made up as petticoats. Through the cooperation of this Committee of the Association, the Museum was enabled to obtain specimens of the silk fabrics which were used as the basis of this wearing test. The specimens sent the Museum included samples of these standard fabrics in the several grades, and five worn petticoats made therefrom which had been subjected to the test.

A specimen of Montagnac overcoating, a soft, fleecy, twill-woven, carded woolen fabric finished by means of special machinery, was contributed by the Worumbo Company, of New York City, for inclusion with the series of carded woolen fabrics already presented by this firm.

In continuation of the cooperation given in former years by L. C. Chase & Company, Boston, Mass., this firm contributed six new specimens of beautiful mohair upholstery fabrics manufactured in the Sanford Mills, Sanford, Me.

The Museum's collection of raw silks was increased by three large composite cocoons of the African wild silk moth, *Anaphe infracta*, the gift of Hector D. R. Hunt, Nakyasanja Estate, Kampala, Uganda, East Africa, through his sister Dr. Matilda Hunt. Anaphe silk has been used for the production of schappe and spun silk yarns and considerable trade was being developed in it at the beginning of the World War.

H. R. Mallinson and Company (Inc.), New York City, continued the custom of former years of sending the Museum specimens of their new productions, and contributed two specimens of novelty silk dress fabrics: One of silk and wool printed in Egyptian designs the other a Mandarin Crepe printed especially for the Second Annual Silk Exposition, with a design "The Development of the Loom," showing the hand loom, early power loom, and the Jacquard loom.

The Linoleum Division of the Armstrong Cork Co., Lancaster, Pa., has continued their cooperation of former years by replacing the specimens in the exhibit illustrating the manufacture of linoleum with a new and larger series of specimens showing each step in the manufacture of printed and both molded and straight line inlaid linoleum.

In keeping with the policy adopted some years ago of obtaining where possible, series of specimens illustrating official grades and standards of commercial products, there was transferred to the Museum from the Office of Fiber Investigations of the Department of Agriculture, a set of specimens of abacá or Manila hemp, representing the standard Philippine Islands Government official grades, from Grade A, "Extra Prime," to Grade M, "Coarse Brown," and the three S Grades, denoting "Streaked" fiber.

An addition to the Museum's collection of bedspreads was made by Dr. Charles D. Walcott, Smithsonian Institution, who contributed a patchwork quilt, made about 1850 by his mother, Mrs. Mary L. Walcott, and two elaborate, double-woven, blue and white coverlets made on a hand loom at an earlier period.

Specimens of guarana paste used by native Brazilians for making a stimulating beverage because of its high caffeine content, and also in the treatment of bowel disorders, were added to the section of food by the gift of Dr. Walter Hough, of the Museum staff. These specimens included the paste in the usual form of a cylindrical roll and also pieces molded in the form of animals, such as an alligator, armadillo, and bird. For reducing the hard mass to a powder in the preparation of the beverage, a file made of the bony palate of the Pirarucu fish is used and such a file is included in Doctor Hough's gift.

Through the interest of Miss Barbara Van Heulen, Assistant State Club Leader, of Michigan, in the Museum's exhibit of food products canned by members of Boys' and Girls' Clubs, there were received from the Michigan Agricultural College, Office of Cooperative Extension Work in Agriculture and Home Economics, East Lansing, Mich., ten prize jars of canned fruits, vegetables, and meat put up by Michigan children.

Dr. F. V. Coville, Botanist, U. S. Department of Agriculture, Washington, D. C., when studying the food plants of the Klamath Indians at Klamath Marsh, Oregon, some years ago, collected specimens of "Wokas," a food prepared from the seeds of a pondlily, *Nymphaea polysepala*, and much prized by the Indians of that locality. Four specimens prepared by different methods were presented by Doctor Coville.

The collection of milk products was increased by a series of specimens illustrating various milk products and in particular the steps in the process of making milk sugar. These were prepared and contributed by the California Central Creameries, of San Francisco, Calif.

From a historical viewpoint, one of the most important accessions of the year was a set of Bidwell Thomas bicycle tires contributed by Albert S. Noonan, of Philadelphia, Pa. These tires were pur-

chased by the contributor in 1891, and were mounted on hollow crescent rims and fastened with flaps of cotton canvas around the rims, the rims being inside the tires. The inner tubes were continuous and laced all around. It took twenty-four hours to repair a puncture or to replace a broken spoke.

Among accessions concerned in the utilization of wood which were added to the collections during the year, there should be mentioned a gift from the Ohio Match Company, Wadsworth, Ohio, of a comprehensive series of specimens representing the manufacture of two-dip or double-tipped matches; specimens of a new insulating and sound deadening material sold as "Balsam-Wool," made from waste sulphite screenings from paper mills and rendered waterproof and fire-resistant, contributed by the Wood Conversion Company, Cloquet, Minn.; and specimens and photographs of ancient cypress wood presented by the National Lumber Manufacturers Association, of Washington, D. C. The last mentioned specimens were brought to the surface during the excavation for the foundation and basement of the new Walker Hotel at Connecticut Avenue and De Sales Street, Washington, D. C. From the accompanying fossils found, geologists at first believed that the cypress swamp deposit could not be less than 20,000 or 30,000 years old. Later deductions place the age much greater. Due to continuous immersion in water away from the air, the wood is in a marvelous state of preservation, admirably bearing out the claim of the Southern Cypress Manufacturers' Association, which uses as a slogan for this timber, "the wood eternal."

From other Government departments, two lots of exhibit material were transferred: From the Office of Blister Rust Control, Department of Agriculture, an excellent series of specimens and illustrations, showing the destruction of white pine by the blister rust and methods suggested for controlling this organism menacing one of our finest forest trees. From the Office of the Quartermaster General, War Department, twenty different articles of German cavalry equipment made from paper yarns. These articles are an indication of the necessity of the Fatherland to devise substitutes for leather, canvas, etc., during the World War, and show some of the many uses to which paper can be put in an emergency.

The most important addition of the year to the division of medicine, was a collection of Italian hospital supplies of the type used in the World War, which was obtained by transfer from the division of history. This material comprises chests of medical supplies carried by mounted batteries, Alpine troops, and motor ambulances at aviation camps; pack-horse pouches; medical officers first-aid packs; kits carried by soldiers of the sanitary corps for giving first aid in the field, etc. The chests, pouches, packs, and kits are complete in every

particular just as used, and are of interest for comparison with the medical field equipment of our own forces.

Dr. Samuel L. Hilton, Washington, D. C., former president of the American Pharmaceutical Association, contributed a series of historical books. Included in the collection are the revision circulars of the United States Pharmacopoeia IX and National Formulary IV, the standards for medicines used in this country; Bulletins of the American Pharmaceutical Association, an early official publication of this association; Twentieth Anniversary Volume of the Chicago Veteran Druggists' Association, containing pictures of men who have had a great deal to do with the advancement of pharmacy and medicine in the United States; memorial volumes concerning such well-known instructors and writers as Joseph P. Remington, Oscar Oldberg, and Albert E. Ebert.

Dr. George A. Faber, 45 Center Street, Waterbury, Conn., donated through Dr. John Uri Lloyd, of Cincinnati, Ohio, as a memorial to Dr. S. B. Munn, a complete set of the National Eclectic Medical Association Transactions from 1870 to 1916. These books are of unusual historic interest because they record the activities of an earnest group of scientific men who influenced the development of medicine and pharmacy in this country.

The Museum is indebted to Dr. F. B. Power of the Phytochemical Laboratory, Bureau of Chemistry, U. S. Department of Agriculture, for a series of specimens transferred from that department, which illustrates the use of chaulmoogra oil derivatives in the treatment of leprosy in the leper settlement of Molokai, Hawaii. Although crude chaulmoogra oil expressed from the seeds had been in use hundreds of years by the natives of India in the treatment of leprosy as a local application and internal medicine, the results obtained were uncertain and the treatment in many cases caused the formation of terrible abscesses. Through the studies of French and English scientists it was proved that one cause of the uncertain results was the use of the seeds of several closely related species of plants, some of which were of no medicinal value. When the identity of the true chaulmoogra oil was determined, an American chemist, Dr. Frederick B. Power, who was then in charge of the Wellcome Chemical Research Laboratories, London, England, isolated and described its active chemical constituents and prepared the ethyl esters of chaulmoogric acid. Dr. A. L. Dean, president of the University of Hawaii, and doctors of the Kalihi Receiving Station in Honolulu, worked out a standard treatment for leprosy cases based on the researches of Dr. Power, which is giving most astonishing results. By this treatment the ethyl esters of chaulmoogric acid are administered intramuscularly.

Doctor Power also donated thirteen specimens of quinine sulphate obtained over forty years ago from leading manufacturers all over the world. These specimens have a particular historical significance since they are portions of the original samples which were turned over to an international committee of analysts to which was assigned the task of formulating standard tests for the purity of this most valuable medicine.

Dr. C. H. Michel & Company, Cleveland, Ohio, contributed a set of seven anatomical charts and a rack for hanging the same on the wall.

Due to the efforts of Dr. Marcus Benjamin of the U. S. National Museum, this division received by donation from Mrs. John Van Rensselaer Hoff, of Washington, D. C., a silver salver and an illuminated testimonial letter presented to her husband, the late Colonel John Van Rensselaer Hoff, by military surgeons of the United States. During the American occupation of Porto Rico, the island population was vaccinated and freed from smallpox under the supervision of Colonel Hoff. The salver and testimonials show in what esteem Colonel Hoff was held by his fellow surgeons in the United States Army, not only because of his successful work in Porto Rico, but also for the interest which he took in medicine and surgery in general.

Dr. W. D. Bayley, 1712 Walnut Street, Philadelphia, Pa., presented two of the early type sphygmographs and a curiously made trocar. The sphygmograph is a surgical instrument for registering the movements, form, and force of the arterial pulse, and the trocar is an instrument used for tapping or piercing a cavity wall.

The estate of Dr. E. A. Mearns, through Dr. C. W. Richmond, Washington, D. C., contributed a medicine case supplied by E. R. Squibb & Sons, New York, N. Y., for use of the Smithsonian African Expedition under the direction of Colonel Roosevelt in 1909–1910. Dr. E. A. Mearns, U. S. A., was physician of the expedition and used the medicine case in question at that time.

Dr. John Uri Lloyd, Cincinnati, Ohio, continued his helpful cooperation and contributed a copy of the History of Medicine by Alexander Wilder, M. D.

Miss Emma M. Long, of Athens, Ga., daughter of Dr. Crawford W. Long, the first surgeon to use ether as an anaesthetic in a sugical operation, contributed an oil painting of this famous American doctor. The portrait is the work of Miss Long and is said to be an excellent likeness of her father.

Mrs. George A. Still, Kirksville, Mo., presented through Dr. Norman C. Glover, of Washington, D. C., a photograph of her deceased husband, Dr. George A. Still, who was killed as a result of an accident on November 23, 1922. Doctor Still was president of the American School of Osteopathy, Kirksville, Mo., and chief surgeon of the hospital at that place. Up to the time of his death Doctor

Still worked hard to provide an adequate osteopathic exhibit in the history of medicine section of this division, contributing material and enlisting the interest of others in the work.

Mr. John R. Swanton, of the Bureau of American Ethnology, donated two medical manuscripts written by James Parker, Hartford, Conn., in the year 1790.

The United States Pharmacopoeial Convention (Inc.), through Dr. Murray Galt Motter, Washington, D. C., added to its deposit of historical papers and documents relating to revisions of the pharmacopoeia of this country, the Record of the Proceedings of the Convention of 1910.

No explorations nor field trips of any importance were made by members of this division during the year. As a part of the cooperation of the American Rubber Association in arranging for an exhibit illustrating all the important lines of the rubber industry, the curator was invited to visit nine large plants manufacturing rubber products and was given opportunity to study the various processes therein used. These plants were located in Akron, Ohio, Cambridge, Watertown, and East Hampton, Mass., and Naugatuck, Conn. As a result of the unusual privileges accorded him, the curator was enabled to study in detail the manufacture of automobile tires, hose, belting, and mechanical rubber goods, molded rubber articles, rubber footwear and clothing, rubber thread cutting for elastic goods, and the reclamation of used rubber. From the data thus obtained, a detailed outline of an extensive exhibit was prepared and sent to the American Rubber Association as a guide in assembling such exhibit material as could best be used in the Museum.

C. C. Anderson, aid in organic chemistry, visited New York City during the International Fur Exposition, a trade exposition held by the Associated Fur Manufacturers (Inc.), during May, 1923, and was given the opportunity to study the dressing, dyeing, and finishing of different kinds of pelts. He arranged with several prominent fur manufacturers for exhibit material for the National Musuem, and was promised their cooperation in developing a comprehensive exhibit of this important industry.

WORK OF PRESERVING AND INSTALLING COLLECTIONS.

The collections under the care of the curator have been carefully inspected for insects, and all perishable material like wools and foodstuffs has been fumigated several times. This has meant, however, constant vigilance.

The cataloging 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 and for the wood and medical collections.

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, have occupied the time of the preparators when not engaged in other duties.

In the division of medicine new labels were made to take the place of those soiled by exposure, particularly those describing the specimens in the war collection in the Natural History Building. The preserving fluid on the fresh anatomical specimens was changed during the year.

Ten permanent installations were set up in the division of textiles during the year. These included an industrial exhibit illustrating processes in the manufacture of plain, printed, and inlaid linoleum, which replaced a similar exhibit of an earlier date; a series of standardized, pure dye silk fabrics and garments made therefrom which had been subjected to wearing tests; specimens of printed and figured mohair pile fabrics; African wild silk; additions to the cotton thread case, carded woolen goods series, and novelty silk fabrics display; and rearrangement of three cases devoted to worsted knitting and crocheting yarns and handmade garments; and the handicraft work of the blind. In the section of food, additions were made to the collection of canned foods put up by members of Boys' and Girls' Canning Clubs of the different states.

The space which at present can be devoted to the medical exhibits is all occupied so that the work of the year consisted in filling in the gaps, rearranging and improving the exhibits. Fourteen new or rearranged installations were made this year. These additions included the five cases showing the medical field equipment of the Italian forces; one case illustrating the use of chaulmoogra oil in the treatment of leprosy; two cases of historical homeopathic specimens; two cases concerning the spread and prevention of diseases; an exhibit showing some of the well-known alkaloids which are used as medicine; a case of medical synthetic carbon compounds; a new display of the historical objects and specimens bearing on the first use of ether as an anaesthetic in a surgical operation by Dr. Crawford W. Long, Athens, Ga., and an exhibit of old surgical instruments.

The old collections of organic products located in the Southwest court gallery of the Arts and Industries Building were carefully overhauled upon the appointment of an aid in organic chemistry, and the creation of a section of organic chemistry, under the supervision of the curator of textiles. New exhibits to illustrate modern chemical industries deriving their raw products from organic sources were solicited and are rapidly being installed. Several of the old collections, such as those of ivory and tortoise shell are very valuable since they represent industries which have ceased to operate or will

be compelled to stop manufacturing in a few years because of increasing scarcity of the animals producing these raw products. A considerable portion of the past year has been spent in rearranging and relabeling these collections in order to give them a modern and attractive appearance and bring out to better advantage their educational value. Four entirely new exhibits in this section were installed. These illustrate the manufacturing processes and uses of Pyralin, Bakelite, cellulose acetate, and fabrikoid, which are products developed to take the place of such materials as ivory, tortoise shell, amber, horn, leather, etc. The older collections have been regrouped and arranged in such a way as to have the real articles as near the newer substitution products of the chemical industries as possible, and thus give the visitor an opportunity to compare and study the real and long-used organic raw materials with their modern industrial substitutes. All of these interesting collections were placed in cases on the east side of the Southwest court gallery. After installing the new exhibit of Pyralin, it was found that the afternoon sun shining on this material would in a short time affect the color of the specimens, making it necessary to move this collection to the north side of the gallery. This change required rearranging nearly half of the exhibits in the gallery. Care was taken in the rearrangement so that only such materials as were least affected by sunlight were installed on the east side of the gallery.

Five new permanent installations were set up in the section of wood technology during the year, a special temporary exhibit, and, in addition there was an entire reinstallation of five other exhibits. A wagon and automobile wheel exhibit was placed on opposite sides of a diaphragm case to bring out the fact that the wheels of these two types of vehicles are constructed in a directly opposite manner. The wagon wheel is made from hub to felloe, the spokes being driven into the hub, and the wood felloe assembled after the wheel has been cut to height and the spokes round tenoned. In the automobile wheel the felloe is dressed and finished, spokes are driven into the felloe and the two halves assembled into a perfect wheel ready to be turned off to receive the permanent felloe band and the hub. The other new installations included an exhibit of "Woodisk" wheels, showing how a laminated wood wheel is built up and shaped for use on both heavy duty and pleasure automobiles; a case demonstrating the ravages of the white pine blister rust and methods for its control; an exhibit showing the manufacture of double-tipped matches; specimens of the insulating material sold as "Balsam-Wool"; and photographs representing typical lumbering operations in Southern yellow pine. April 22–28, having been designated by the President as Forest Protection Week, this section made a special effort to bring the need for forest protection before the public by arranging a temporary exhibit picturing this branch of forest work

in as many phases as space would allow. During the year the bulletin boards at the entrance to the wood court were changed to show wood growth and structure, age of trees, statistics giving amount of lumber produced by kinds, and by states, the lumber used in the manufacture of veneers, and other wood-using industries.

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 present condition of the medical collection is good. Only expected deteriorations are noticeable.

Most of the collections illustrating chemical industries and the use of organic raw materials are very old, having been on exhibition over 30 years, and naturally suffer by comparison with modern specimens. Many of the contributors of these have been invited to renew the exhibits, and a most hearty response has been made to this invitation.

RESEARCH AND STUDIES CARRIED ON AT THE MUSEUM.

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. A little progress has been made toward the completion of a fabrics glossary based on actual specimens, as the Museum's collection of named textiles has been steadily increased.

The assistant curator, section of wood technology, prepared, upon request, a table of densities of twenty-nine foreign woods on the American market for inclusion in the revision of the Smithsonian Physical Tables.

The Use of the Museum's Collections and Facilities by Visitors and Correspondents.—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 on textiles, woods, and drugs in the sectional libraries. The curator and assistant curators 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. The identification of specimens of fibres and fabrics, gums, resins, seeds, and woods for numerous individuals, both in and out of the Government service, has been a regular part

of the work of this division. The curator furnished the identification of cottons and cotton seeds introduced by the Office of Foreign Seed and Plant Introduction and Distribution, United States Department of Agriculture, and to him has been referred letters requesting information on silk and artificial silk received by the Department of Agriculture, and other federal departments. The collection illustrating the economic products of India and Uganda, and the books and periodicals on these subjects in the sectional library were studied during a considerable period by Dr. Matilda Hunt, of New York City, who is arranging for the establishment of industrial schools in India.

Names of Special Cooperators.—A number of persons deserve special mention 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. In this connection it is desired to name Frank G. Ashbrook, assistant biologist, Bureau of Biological Survey, Department of Agriculture; Dr. Murray Galt Motter, librarian of the Hygienic Laboratory, Public Health Service; Dr. John Uri Lloyd, Cincinnati, O.; Dr. F. B. Power, Bureau of Chemistry, Department of Agriculture; Dr. Samuel L. Hilton, Washington, D. C.; and James A. Tobey, secretary of the National Health Council, New York City.

RESEARCHES ELSEWHERE AIDED BY MUSEUM MATERIAL.

A large specimen of a Penang coir coconut in the husk was loaned to the Office of Fiber Investigations, Department of Agriculture, for use in its study of coir production. The specimen was returned together with two excellent photographs of a transverse section of the coconut.

DISTRIBUTION AND EXCHANGE OF SPECIMENS.

Three charts on which were mounted specimens illustrating steps in the dressing, spinning, and weaving of flax were loaned to Miss E. B. Mason, a teacher of home economics in the Fairmount Heights School, for aid in her work. These were returned in excellent condition.

Twenty-three volumes of the Transactions of the National Eclectic Medical Association, a partial set, were sent to Dr. John Uri Lloyd, in exchange for a complete set of the same publication.

STATISTICAL DATA.

	Textiles.	Woods.	Foods.	Organic chem.	Medicines.
Number of specimens received during the year 1923..	137	192	19	501	1,292
Number of specimens in the collections June 30, 1923 (estimated).....	10,679	3,688	1,055	6,952	11,512

REPORT ON THE DIVISION OF GRAPHIC ARTS.

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

The annual report of this division of the U. S. National Museum this year must consist largely of an offering of thanks to the many individuals, organizations and firms, who have shown an increasing interest in the work the Museum is doing for the graphic arts. In this brief report it will be possible to mention only a few of the 169 accessions, but whether mentioned or not the cooperation of all is greatly appreciated and to them is due the credit for the progress that has been made during the year. Specimens covering a wide range have been received. A leaf of the Gutenberg Bible, which is a sample of the first use of movable type, and the Monotype system of casting justified lines of single type are almost the beginnings and the end of type composition. Other accessions include letter press printing, making of a newspaper, printing bases, quoins, shooting sticks, printing for the blind, book binding, marbled paper, Baxter color prints, etching, aquatint, drypoint, soft-ground, wood-block prints and lithographs, as well as photo-mechanical prints in relief, intaglio and planographic.

The section of photography received pictorial and color-photographs, a color camera, photographs sent by wireless, but one of the most important accessions was the Latham motion picture machine of 1895.

Seven loan exhibits of pictorial photography, etching, lithography, and wood-block printing were held during the year. Two traveling exhibits of graphic arts have been arranged this year and have been shown in various cities throughout the country. They are both very similar, covering technically the important processes of this subject.

The total number of specimens received was 1,815; 669 loans were returned, leaving an addition to the collections of 1,146 specimens, being 132 more than last year. These specimens were received through 169 accessions, an increase over last year of 81. Nine hundred and ninety-six specimens were gifts, 44 were transferred from other government departments, 24 were made in the Museum, 16 were purchased and 735 were received as loans. The division loaned for study 431 specimens, and gave 21 specimens to the Art Museum at Harriman, Tenn., leaving a total of 22,936 specimens on June 30, 1923.

Probably the specimen which attracted the greatest attention during the year was The Book of Joshua, a fragment of the Gutenberg Bible loaned by Gabriel Wells of New York City, for several months. This bible is considered the earliest and most precious piece of printing from movable type in the world. It is estimated that this bible was printed between 1450–1455. It was among the very first works done by Johannes Gutenberg, who by general consent is given the credit for the invention of printing from movable type. The artistic quality of the work is exceptional and even today ranks among the best pieces of printing ever produced, and this fact has made some doubt that Gutenberg was more than the perfecter of the process. In the case of Senefelder, the inventor of lithography, the whole art was discovered and perfected and it may have been the same with Gutenberg and movable type. One leaf of the Gutenberg Bible is in the permanent exhibits of letter press printing. Historically it is the most important specimen received this year.

The making of a newspaper is an exhibit which has been recently completed. The Washington Evening Star gave the bulk of the specimens, and Barnhart Bros. and Spindler, the galley and chase. Some of the photographs and the other specimens were furnished by the Goss Printing Press Company, The Challenge Machinery Company, The Mergenthaler Linotype Company, The Speedaumatic Company, and the Wood Newspaper Machinery Corporation. A brief outline of this exhibit is as follows: The rough newsgatherer's copy, linotype composition, corrected proof, a galley with type, assembling the page, the assembled page in a chase, the making of the matrix, casting the curved plate, finishing it and placing it on a printing press, printing presses, the finished newspaper ready for local distribution, the final step being wrapping and addressing for out of town circulation.

The technical part of the bookbinding exhibit is also new. Several firms by their cooperation have made it possible. The principal credit is due to George A. Simonds and Company of Washington and the Plimpton Press of Norwood, Mass., the one for hand binding and the other for machine binding, both of which were arranged especially for this exhibit. The hand binding part consists of unsewed signatures, signatures sewed to strings, the book laced in boards, inside of the cover finished and the outside of the cover finished. The last two are handsomely bound in full French green levant, inlaid with red morocco and finely tooled. Tools and photographs aid in the understanding of the methods used. Machine binding furnished by the Pimpton Press shows first a single printed signature, next a set forming a whole book, then a set of end papers, the sewed signatures, the trimmed book and the book rounded and backed. Following this comes the making of the case into which the

printed signatures are to be bound. A pair of boards, paper back strip, and a piece of cover cloth, are carried through the several steps to the finished volume, ready for delivery. Many samples of binding materials are also included. Two cases of finished bindings are nearby.

In machine composition of type two important gifts were received, a Unitype type setting machine from the American Type Founders Company of Jersey City, and the Monotype system of composing and casting justified lines of single type from the Lanston Monotype Machine Company of Philadelphia. In machine composition there have been four classes of machines that have been tried, three successfully and one unsuccessfully. The Unitype represents the class in which the actual type was set; the old Mergenthaler, that which casts new type in slugs, the length of the line desired; the Monotype, which casts single type properly justified; the fourth and unsuccessful class is represented by a matrix making machine, made and invented by Ottmar Mergenthaler in 1884. It is doubtful if this last class will ever be successful.

The Unitype type-setting and distributing machine which was received this year from the American Type Founders Company is the last model to be made. In 1880, Joseph Thorne invented a type setting machine; this was later improved and called the Simplex and still later the Unitype. It was made for only one size of type, which could be set at about three or four thousand ems an hour and more than double that amount when line justification was applied to it. It was a highly successful commercial machine, being used extensively in this country and England. Some were said to have been in use in this country as late as 1916. It has been discarded in favor of the slug and single type composing and casting machines.

The last accession of the year was received from the Lanston Monotype Machine Company of Philadelphia; it is an exhibit of the Monotype system of composing justified lines of single type. Their composing and casting machines, series of 1900, and a photograph of the 1922 machines give an idea of the system. The products shown consist of four to forty-eight point type, type for various nations including Chinese, leads, slugs, rules, borders and ornaments, obsolete matrices and those in use at present. A novelty product is shown under a microscope, in the form of a twelve point type body, on the end of which is the Lord's Prayer and the name and address of the company.

The pressing of a key on the composing machine punches one or two holes in the paper ribbon at the top. The location across the ribbon of the hole or holes indicates the letter or character which will be cast. The ribbon, when the job is completed, is transferred

to the caster and governs the justification and the characters cast, but in the reverse order, the justification of the last line composed being the first thing to take effect in the caster, then the type and proper spaces are cast automatically at a speed of one hundred and fifty to one hundred and seventy a minute for small type. The speed for larger type depends on the time needed to chill the metal. This system of composing and casting justified lines of single type is thoroughly successful. The original patent was granted to Tolbert Lanston in 1887.

In 1835, George Baxter, the English artist, engraver, and printer, developed and patented a process of printing pictures in colors. Up to this time only aquatints, mezzotints, and stipple engravings had been printed in full color; decorative prints in several flat tints from relief blocks had been made for a long time. George Baxter combined the two; the key block would be in intaglio, aquatint, or mezzotint, and contained all the details and modelling. Over an impression from this plate the various tints would be printed from the proper number of engraved wood blocks. The division has been fortunate in obtaining this year a set of blocks engraved by Baxter with a print in full color of "The Reconciliation". This includes the aquatinted steel plate and nine of the eleven wood blocks used by George Baxter in producing this color print. These give some idea of the work and the steps of the process, and the perfection reached. Little is known either of the inks used or the methods of printing. Few, if any prints, have been issued commercially since the death of Baxter in 1868. Several firms had been granted permission to use the process and his blocks but probably the lack of the inventor's enthusiasm, the rise of the chromolithograph and the fickleness of fashion caused the death knell of the Baxter print. In England since about 1890 collectors, in increasing numbers, have been hunting for these beautiful prints, which of course has made them rapidly increase in value. Little interest has been shown outside of England in the Baxter oil print. America will wait till it is a millionaire's game.

A series of loan exhibits were held as follows:

January. "The Rotary" of the Brooklyn Society of Etchers.
February. The traveling exhibit of the Print Makers Society of California.
March. Etchings by Bertha E. Jaques, Secretary of the Chicago Society of Etchers.
April. Work of Resident and non-resident Washingtonians.
May. A part of the "Second International Exhibition of Etchings" held under the auspices of the Brooklyn Society of Etchers.

These averaged about ninety prints: Etchings, drypoints, aquatints, soft grounds, mezzotints, wood-block prints, and lithographs, both in black and white and in color. American work predominated

in all but the last one, in which eleven foreign countries were represented and over fifty artists. The exhibits were of high quality and of much interest and educational value.

To Mrs. Bertha E. Jaques, Secretary of the Chicago Society of Etchers, to Will Simmons, Corresponding Secretary of the Brooklyn Society of Etchers, and to Howell C. Brown, Secretary of the Print Makers Society of California, the Museum owes much, not only for the success of the above exhibitions but also for giving of their own work and for collecting seventy-one prints in various mediums, the work of twenty-five artists—one to five prints to the artist, except in the wood-block prints and color etchings of Miss Helen Hyde (1868–1919) which number twenty-five. These were the gift of her sister Mrs. E. F. Gillette of Chicago and were collected by Mrs. Jaques. Miss Hyde was one of the first Americans to adopt the Japanese method of printing wood blocks. For many years, she lived in Japan and while she learned their methods, for economy of time, she preferred to leave the cutting and printing to the Japanese experts. She would make the design in India ink on thin Japanese paper; this would be pasted face down on the wood block. The cutter would engrave away the wood between the lines and make a print from it in black, which Miss Hyde would color and return to the cutter who would prepare six to eight blocks for the colors. Then Miss Hyde would superintend the printing of say a limited edition of one hundred color prints. This would mean in the case there were eight blocks, eight hundred separate impressions, all carefully registered and properly printed, no little job. The results obtained by her in this way were very fine. She was a very talented artist.

Among the fifty or so remaining prints will be found much of interest, not only the subjects but also the variety of treatment and the technical excellence. They cover a wide field of artistic endeavor. Prints were received from the following artists: John Taylor Arms (2), Loren R. Barton (5), Howell C. Brown (5). John W. Cotton, William H. Drury, Anne Goldthwaite, Frances H. Gearhart (4), May Gearhart (3), George O. Hart, Charles E. Heil, Eugene Higgins, Bertha E. Jaques (5), Margaret Manuel, Carl J. Nordell, Ernest D. Roth (2), Margery Ryerson, Louis C. Rosenberg, George Resler, Henry B. Shope (2), Will Simmons, George C. Wales, Frederick Weber (2), and four from Frederick K. Detwiller. The weakest spot in the division has been greatly strengthened by these additions and it is to be hoped that more will continue to come until every artist of note will be suitably represented. If funds were available, it would be an easy matter to round out a collection that would be of great value.

A temporary exhibit was opened in the chapel on February 5, in commemoration of the two hundredth anniversary of the issue of the first piece of printing under Benjamin Franklin's name. This consisted of 84 prints relating to his life arranged by The American Printer, with ten from Rene Bache, one of Franklin's descendents, and others from the collections of the division,—altogether a decidedly interesting graphic assembly of facts about America's most noted early printer.

In many of the technical exhibits one or more specimens are needed to bring the series to completion. Stephen H. Horgan, of New York, an authoritative writer on the graphic arts, supplied untrimmed woodburytypes, which were incorporated in our exhibit. W. H. Pountney Company of Boston, added a building iron and samples of wax to the wax engraving exhibit. Excellent examples of lithography in colors by the present photomechanical methods were the gift of the United States Printing and Lithograph Company of New York and The Stubbs Company of Detroit. From the Chicago Tribune came specimens of rotary intaglio prints in color, which are said to be the first ever used in a newspaper, April 1922. The Government Printing Office and several firms made possible the new exhibit of marbled paper.

Exhibits which were in progress at the end of this fiscal year are letter press printing, to which a valuable contribution was made by the Marchbanks Press of New York; printing for the blind; overlay and underlay; these all should be completed shortly. Modern methods of casting type is an exhibit that is much needed and while promises have been made nothing as yet has been received. The finishing of these and improving the ones already installed will be the work for next year.

Mr. A. J. Olmsted, custodian of the section of photography, makes the following report as to the collections under his charge.

SECTION OF PHOTOGRAPHY.

This year has added to the section of photography a notable assortment of material, very evenly distributed among the various departments. Twenty nine accessions were received, one less than last year, totaling 222 specimens, of which 136 were loans returned, leaving a gain of 86 for the year. One old specimen, the Jenkins motion picture projector, was returned to the inventor. The total number therefore in the section on June 30, 1923, was 5,056.

Floyd Vail of New York, Fellow of the Royal Photographic Society, as noted in last years report gave most generous assistance towards making the pictorial section the best in America, has maintained his interest in the collection and has been of aid in obtaining accessions, exhibits and much needed publicity.

Special mention should be made of the following additions:

In the history of the projection of motion pictures, the first machine to be in any way successful was invented by Woodville Latham and used in New York City in April, 1895. A similar machine, used by LeRoy Latham at Richmond and Norfolk, Va., during the summer of 1895, was given by him to the Museum. This is a genuine old machine and valuable from a historical point of view.

Walter G. Wolfe of Boston gave an early antinous shutter release, invented by him during 1896 to 1898. This was some years before similar releases appeared on the American market from England. This was used to operate the shutter and took the place of the rubber bulb and tube.

John Adams Gallagher of Washington gave an early Fox Talbot photogravure. Talbot invented this process about 1852. Prints of this kind are very rare and seldom seen outside of museums.

To the section of color photography was added a Hess-Ives color camera, 3¼ by 4¼, with hipack, film pack adapter and printing frame, lent to the Museum last year by Ransom Matthews, of Selma, Calif. When first received it was assigned to the division of mechanical technology from which it was recently transferred to graphic arts. Frederick E. Ives, the inventor of this camera, has been experimenting in color photography since 1879 and today is still a leader and authority on color separation.

Recent years have seen the development of aerial cameras for war, map, and commercial purposes. Two accessions were received from the Fairchild Aerial Camera Corporation of New York City. A K–3 aerial camera marks the beginning of a new exhibit which will be developed the coming year. These cameras have no bellows accommodations, as they always make pictures at infinity, are therefore fixed focus; they work at high shutter speeds and with wide apertures, to overcome the motion and vibration of the aeroplane.

Thomas A. Banning of Chicago continued to show his interest in the collection by sending 15 prints made by the McDonough color process. This makes a very complete showing of McDonough's work in color photography. A. G. McGregor of Chicago has donated three bromide enlargements, two of them made from pin hole camera negatives. It is always interesting to know that visitors appreciate the collections of photography and show it by continued contributions.

Fred Payne Clatworthy of Estes Park, Colo., noted traveler, lecturer, artist, and specialist in color photography, gave three of his very finest autochromes. Mr. Clatworthy lectured before the National Geographic Society using his autochromes as lantern slides.

C. Francis Jenkins of Washington, loaned prints of the first photographs transmitted by radio by his system, which differs from all other methods of sending illustrative matter by electricity.

The section assigned to portraits of early manufacturers and inventors of photographic materials received one of John Carbutt, gift of Mrs. Mary E. Carbutt of Montclair, N. J.; a splendid engraved one of M. A. Seed, from Miss Eleanor Seed, Pelham Manor, N. Y.; also one of Dr. L. H. Baekeland, of Yonkers, N. Y., who invented and perfected the developing paper now so much used in photography.

Valuable additions have been made to the pictorial group and the following deserve special mention for their fine and artistic qualities. Rudolf Eickemeyer, of Yonkers, generously gave five examples of his work. He is in the foremost rank of the pictorialists of America, and the collection would be incomplete without examples of his work. Louis J. Steele of Portsmouth, England, gave two excellent bromides of distinction, "The Cobblers" and "A Venetian Study." Another Englishman, Mr. Charles Job, of Richmond, Surrey, presented six splendid prints. Mr. Job has long been famous in England for his work in the pictorial line. Dr. E. G. Boon, of Italy, contributed two platinum prints of individual charm and tonal value. From Frank V. Chambers of Philadelphia was received an animal study entitled "Mickey's Family" that will have an appeal to animal lovers.

H. A. Latimer of Boston has again shown his interest by a gift of four multiple gum prints, two carbons, and three photogravures of some of his best pictures. Gum printing is his specialty.

Edward Weston of Glendale, Calif., sent nine splendid examples of the work of the newer school, which is also represented by five prints by Miss Margrethe Mather of Los Angeles. These are all proofs of rare charm and originality.

Two loan exhibits of pictorial photographs were shown this year, one the work of Alex. Keighley, F. R. P. S. of England and the other that of the Pictorial Photographers of America. Mr. Keighley sent 66 carbon prints which were on exhibition for two months from January first. They attracted much attention and favorable comment, some visitors coming back several times to study them. This was the second favor received from Mr. Keighley, who last year gave seven examples of his work to the permanent collection.

The exhibit of the Pictorial Photographers of America was on from March 15 to April 15 and consisted of 70 original prints by an equal number of artists. These had been selected from thousands submitted, and represent their choice of the best work of the past year. The various mediums used made this a valuable study series as well as an artistic one.

REPORT ON THE DIVISION OF HISTORY.

By T. T. Belote, *Curator.*

COMPARISON OF INCREMENT OF SPECIMENS OF 1922–23 WITH THAT OF 1921–22.

The additions to the historical collections received during the past fiscal year exceed in size and in scientific importance those received during the previous year. While the number of accessions received during the past year is somewhat smaller than that of the previous year, the number of specimens covered by these accessions is much larger than those covered by the accessions of the previous year, and the accessions of the past year represent compact scientific units of the very greatest importance.

ACCESSIONS DESERVING SPECIAL NOTICE.

The fiscal year just past has been one of most exceptional importance so far as the scientific development of the historical collections is concerned. Three accessions alone, received during this period, on account of their size and importance would justify this statement. These were, first, a collection of antiquarian materials bequeathed to the Museum by Mrs. Julian–James; second, a collection of military materials transferred from the Military Service Institution of the United States; and finally, the collection of numismatic material formerly exhibited at the United States Mint in Phiadelphia, which was transferred from the Treasury Department. These may now be described in the order mentioned together with other related accessions.

The Julian–James collection, it is true, has been in the possession of the Museum for a number of years as a loan, but its bequest as a permanency is deserving of more than casual notice. The materials of which it is composed were collected by Mrs. Julian-James of Washington, D. C., and New York City, and deposited by her in the Museum from time to time during the period, 1900–1921. Originally the collection was confined to objects primarily of art or antiquarian interest connected with the various members of the Bailey-Myers-Mason family, many of whom had attained high rank in the military, naval, or diplomatic service of the United States. In 1912, Mrs. James undertook to supplement the collection of this character with a variety of materials representing the history of costume

in America, using as a central exhibit a series of dresses worn by the mistresses of the White House during the administrations of the Presidents of the United States, beginning with that of George Washington. The dresses in this series were contributed to the Museum collection largely through the efforts of Mrs. James, and these she surrounded with a most bewildering array of costumes and costume accessories, many of which were of very great intrinsic value and historical interest. The objects lent to the Museum by Mrs. James in connection with these collections are now united in the Museum under the terms of Mrs. James' bequest, which includes also materials of historical interest relating primarily to the Bailey-Myers-Mason family. Of the greatest importance in this latter connection are the following: An ivory handled sword owned during the War of 1812–15 by Col. Mordecai Myers, United States Army; uniform and sword of Sidney Mason when United States Consul at Saint Johns, Porto Rico; gold and silver medals and foreign decorations awarded to Commander T. B. M. Mason, United States Navy, including the gold medal of the Benevolent and Life Saving Institution of New York, a medal awarded by the Italian Government, a number of naval uniforms worn by Commander Mason and his order books and commissions together with various pieces of insignia and patriotic society badges owned by him and other members of the Bailey-Myers-Mason family. This portion of the collection includes also a collection of miscellaneous antiques, such as arms, chinaware, silverware, jewelry, and other objects owned by members of the family noted above, as well as an unique and priceless collection of miniatures on ivory, daguerreotypes and photographs, and portraits. The portion of the collection relating to the history of female costume has been very fully described in previous reports. It includes a dress worn by Mrs. Abraham Lincoln and an immense collection of female costumes of various descriptions with accessories, such as jewelry, bags, fans, and other objects.

In addition to the objects of antiquarian interest included in the bequest from Mrs. James, the following accessions of note in this connection have been received during the past year: A Lowestoft china tea set which was presented during the early part of the nineteenth century by Commodore Matthew G. Perry, United States Navy, to Mrs. Elizabeth Brenton Shaw of Wickford, Rhode Island. The set includes a teapot, a creamer, a bowl, six cups, nine saucers, and five plates, all of the interesting and quaint design of the period when they were made. Each piece is decorated with the United States coat of arms in colors. The set has been presented to the Museum by Mrs. Louise S. Burge, Miss Marie Louise Burge,

and Miss Jessie Jay Burge. A silver teapot and creamer made during the colonial period by William Ball, and a silver bowl made during the same period by Joseph Richardson, both of Philadelphia, have been lent by William H. Potter and Beverly R. Potter. The collection of antique furniture has been increased by the transfer of an early American armchair from the Hydrographic Office of the Navy Department.

An accession of exceptional interest and value was the result of the transfer from Governors Island, New York, of the collection of military relics formerly shown there in the Museum of the Military Service Institution of the United States, which was organized in 1878. and which had assembled a notable collection of objects of military and historical interest. The collection had up to the period of the World War been housed in a building assigned by the War Department for that purpose, but the demands for space resulting from the entry of the United States into the War resulted in the storing of the collection in the attic of the building in which it had formerly been displayed, with the result that the valuable materials of which the collection was composed were not only removed from public view, but exposed to serious processes of deterioration. In view of these circumstances the council of the Military Service Institution arranged for the transfer of the collection to the Smithsonian Institution for exhibition in the National Museum, and the process of transferring the collection was accomplished in 1922. The collection includes a varied aggregation of military objects relating to various periods of American history, but the majority of which are connected with the Civil War. The object of greatest interest in this connection is the mounted figure of the war horse of General Philip H. Sheridan which was presented by him to the Military Service Institution on the death of the animal in 1878. While the collection contains many objects of popular sentimental and patriotic interest, it is of much scientific value on account of the very complete collection of small arms, such as guns, pistols, and swords which it includes. The last named series is of special interest including many United States Army swords of types not hitherto acquired by the Museum, and many foreign swords of special interest. Among the latter is a very handsome sword which was owned by Gen. Jean Victor Moreau. The collection of American swords includes one owned by Commodore Stephen Decatur. The series of fire arms covers the period of the nineteenth century and includes many interesting and rare specimens. A small cannon of exceptional interest in the collection is one which was captured from the British Army at the battle of Saratoga in 1777. Another gun of note of a later period is an experimental mortar made by D. King of Philadelphia in 1793.

To the collection of military objects of biographical interest have been added the sword carried by Maj. Gen. Richard Montgomery of the Continental Army, when he was killed during the attack on Quebec, December 31, 1775. This priceless relic was accepted as a gift to the nation from Miss Julian Barton Hunt by Joint Resolution of Congress adopted February 22, 1923, and deposited in the National Museum. A relic of similar interest is a gold embroidered military belt which was presented to Maj. Gen. Jacob Brown, United States Army, in recognition of his services during the War of 1812–15. This object has been presented to the Museum by Miss Virginia du Val Brown and Miss Emily Foster Brown through Mrs. Mary L. Brown.

The military collections relating to the World War have been increased by a collection of uniforms and equipment of the type used by the Australian and New Zealand forces, which were presented by the governments of those countries to the United States War Department and transferred to the Museum by that Department. The collection of naval material relating to that period has been increased by three table case models illustrating the establishment and the removal of the North Sea mine barrage by the United States and British Naval forces 1918–1919.

An accession to the historical collections of the most unparalleled importance received during the past fiscal year has been the collection of numismatic materials formerly shown at the United States Mint in Philadelphia. This collection, on account of the closing of the Mint to the public, was transferred to the Museum by the Treasury Department in June, 1923, and preparations are now being made for its display in an appropriate manner. The collection is already so well known to the public as to render a specific account of its character unnecessary. It includes about twenty thousand specimens of the ancient and modern coins of the world, all in exceptionally fine condition, and a large number of commemorative medals and decorations. The numismatic collection already in the Museum includes a remarkably fine collection of medals and decorations which will serve to supplement the material of this character received from the Mint, which is most remarkable on account of the coins which it contains. These include an almost complete series of American coins from the time of the establishment of the United States Mint in 1792, down to the present time. The foreign series is no less interesting and valuable. The ancient coins include about five hundred Greek and one thousand Roman specimens. All the great countries of the world are well represented in the modern series. The largest section of the collection in this connection consists of a very valuable series of specimens of the coinage of Spain and the Spanish American

Colonies issued during the eighteenth and nineteenth centuries. The collection of German pieces is of exceptional interest including sixty-nine bracteates, a very large number of gold and silver coins of the Roman-German Empire, the princely houses, cities, and bishops. The coinages of Austria, France, Italy, Great Britain, The Netherlands, Norway, Sweden, Denmark, Portugal, and Switzerland are also very completely illustrated as are those of Poland and Russia. The collection of oriental coins is a very complete one including an exceptionally fine representation of the coinages of China, Japan, and Turkey. The collection includes also a very large number of specimens of the temporary coinages issued in Europe during the World War and a series of the war badges awarded by various states, municipalities, and organizations in the United States in recognition of military or naval services during that period.

While the collection is in itself a very remarkable one on account of the wide range which it covers and the fine condition of the pieces it contains, the most notable fact in connection with its transfer from the Mint to the Museum is the opportunity thus offered for its future expansion and development. After being withdrawn from public view for a long period it will now be made available to the public in a new location where it may be seen and appreciated by the thousands of visitors who annually view the varied art and science collections housed in the National Museum.

In addition to the mammoth collection just described, a number of individual additions of note have been made to the numismatic collection. Chief among these are a collection of United States and foreign coins lent by Douglas N. Starr and a number of commemorative medals donated by various societies and individuals. Among the latter are the following: Bronze medal commemorating the fiftieth anniversary of the Wisconsin Academy of Sciences, Arts and Letters, 1920, which has been lent by the National Academy of Sciences; the Theodore N. Vail medal awarded annually to employees of the Bell Telephone System for noteworthy public service, the gift of the Theodore N. Vail Memorial Fund; bronze medal commemorating the centennial anniversary of the birth of Sabato Morais, the founder of the Jewish Theological Seminary of America, gift of the Congregation Mikve Israel, Philadelphia, Pa.; bronze medal commemorating the seventy-fifth anniversary of the Royal Institute of Engineers of Holland, deposited by the Institution; and a bronze medal commemorating the three hundredth anniversary of the founding of the city of Tornio, Finland, the gift of the Far North Home Society.

During the past year the philatelic collections have been increased by 4,221 specimens, consisting mainly of recent foreign issues re-

ceived by the Post Office Department from the Bureau of the International Postal Union, Berne, Switzerland, and transferred to the Museum by that Department.

An event of unusual importance in connection with the development of the historical collections, while not involving a new accession to the Museum collections, was the transfer from the Division of Mechanical Technology to the Division of History of the collection of arms formerly in the possession of the former division. The formation of this collection began about 1900 and continued up to the time of the transfer noted above. The collection now numbers nearly three thousand specimens. It consists for the most part of small arms, such as guns, pistols, and swords. The most notable single contribution to this collection has been that of the United States Cartridge Company, which was received by the Museum in 1908. This unit, which is now the property of the Estate of Paul Butler and Mrs. Blanche Butler Ames, includes over five hundred specimens of firearms of various periods installed in handsome mahogany wall cases and by means of this collection alone, the art of gunmaking can be traced from its earliest stages to its present degree of development. Very notable contributions to this collection have also been made by the Navy Department, the United States War Department, and the United States Patent Office, and by various individuals.

EXPLORATIONS AND EXPEDITIONS.

The activities of this character in connection with the work of the division during the past fiscal year were confined to one visit of two days duration to Philadelphia in March, for the purpose of arranging for the transfer of the numismatic material from the United States Mint at that place to the National Museum, and one visit of one day to New York City in May, for the purpose of conferring with the officers of the American Numismatic Society and the American Numismatic Association, concerning cooperation between these two societies and the National Museum in connection with the future development of the science of numismatics in the Museum.

Capt. Charles Carey, O. R. C., aid, was given leave on detached service for the period of June 15 to June 30, inclusive, for the purpose of attending the ordnance instruction course at Springfield Armory, Springfield, Mass.

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

The most notable achievement in connection with the work of the preserving and installing the collections has been the installation on the second floor of the southeast range of the Arts and Industries

building of the collection of military materials received from the Military Service Institution. This collection now occupies nine wall cases, six remodeled Jamestown slopetop cases, and seven small table top cases in the space noted. The flags, guns, swords, pistols and miscellaneous relics are grouped about General Sheridan's war horse which is exhibited in the open in a very effective manner.

In numerous other portions of the historical collections reinstallation has been undertaken with a view to rendering the exhibition series more homogeneous in character, to reduce overcrowding, and to improve appearances from the artistic point of view. The usual precautions have been observed to protect the textile collection from the incursions of moth and other destructive insects.

The acceptance of the Julian–James collection of historical costumes and other materials entailed the large work of checking off and marking the individual specimens of which this collection is composed. This was accomplished by the following committee appointed by the Administrative Assistant to the Secretary in charge of the Museum: Theodore T. Belote, curator of history, chairman; Dr. Walter Hough, head curator of anthropology, and Mr. H. S. Bryant, chief, division of correspondence.

The reinstallation of the philatelic materials described in the last report is proceeding satisfactorily and will be completed within the next three months. Of the 472 frames in the cabinet, 408 have already been completed.

RESEARCHES.

During the past year the curator has devoted much time to the preparation of two proposed publications. One of these is a catalogue of the swords in the historical collections embracing a description of the various specimens and with an introduction outlining the development of the American military and naval sword from the time of the Revolution to the present day. The second paper consists of a treatise descriptive of the classification of historical museum materials, a matter of very great interest and importance to all workers in this field.

The usual number of inquiries concerning the historical 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.

Antique fire arms and costumes have twice been lent to the Agricultural Department for use in the connection with the preparation of motion picture films by that Department.

Six frames containing 311 die proofs of the United States postage stamps, were lent to the Boston Philatelic Society for display at the Philatelic Exhibition held in Boston in March, 1923.

One hundred and thirty-seven colored portraits of eminent Americans were lent to the H. J. Heinz Company for temporary exhibition in Atlantic City, New Jersey.

Oil paintings of Brig. Gen. John Cropper and Mrs. Cropper by Charles Willson Peale, were lent to the Pennsylvania Academy of Fine Arts for temporary exhibition purposes.

NUMBER OF SPECIMENS IN THE DIVISION.

The number of historical objects received by the Museum during the year and assigned to the division of history was 26,107. In addition 2,898 specimens of firearms were transferred to the custody of the division from the division of mechanical technology. This brings the total number of objects in the division on June 30, 1923, up to 320,190.

LIST OF ACCESSIONS TO THE COLLECTIONS DURING THE FISCAL YEAR 1922–1923.

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

ABBOTT, Dr. WILLIAM L., Philadelphia, Pa.: A collection of frogs, lizards, and snakes, 15 bats, larva of a moth, bird skin and a bird in alcohol, about 600 plants, and 2 fragments of pottery from the Dominican Republic (69757).

ACADEMY OF NATURAL SCIENCES, Philadelphia, Pa.: Specimen of the mineral rhomboclase from Peru (69152); 23 specimens of minerals (69554); 196 plants from Yukon (69820); 3 plants from Canada (69856); 4 beetles, including 4 species (70144). Exchange.

ACUÑA, Señor JULIAN, Santiago de las Vegas, Cuba: Beetle of the family Buprestidae (70165).

ADAMS, C. F., Kansas City, Mo.: 8 mosquitoes (68934, exchange); 11 mosquitoes (69313).

ADAMS, PAUL J., Knoxville, Tenn.: About 50 mollusks from the vicinity of Knoxville, Tenn. (69735).

ADKINS, W. S., Tampico, Mexico: Pleistocene fossils representing 25 species, from an oyster bed seven feet above low water of Panuco River, El Humo Terminal, Tampico, Mexico (69747).

ADLER, Dr. CYRUS (See under Mikve Israel).

ADUTT, A. LEON, Cliftonville, Margate, Kent, England: 5 photographic plates showing Confederate States' envelopes from the Ferrari Collection, Paris, also a souvenir post card of the London International Stamp Exhibition, 1923, showing a pair of New York Postmaster's stamps of 1845 (68600).

AEOLIAN COMPANY, THE, New York City: The first practical penumatic piano-player, invented by Edwin S. Votey in 1896 (69233).

AGRICULTURAL EXPERIMENT STATION, Paramaribo, Dutch Guiana (through Mr. A. Reyne): 35 specimens of shrimps collected in the irrigation ditches at Paramaribo, Dutch Guiana, 6 fishes from trenches of the open sewerage system of Paramaribo, Dutch Guiana, and a flea (balsam mount) (70143).

AGRICULTURE, DEPARTMENT OF:

Bureau of Animal Industry (through Dr. C. Dwight Marsh): 16 specimens of cacti from Utah (68611, 68877); 6 plants from Utah collected by Dr. Marsh (68631, 68990); about 30 specimens of mollusks from Guam (69202); larva of a parasitic fly new to the Museum collection (69406); (through E. A. Chapin): 7 amphipods, 1 crayfish, a frog and a tadpole collected by W. B. Sheppard in northwestern Wyoming, in the vicinity of Yellowstone National Park (69506); 12 photographs illustrating the manufacture of dairy products (70208).

Bureau of Biological Survey: 17 beaver embryos in alcohol (68693); 39 skeletons, 1 skull, and 16 eggs of birds (68720, 69466); 785 specimens, representing 210 species of Diptera, Hymenoptera, Lepidoptera, and

AGRICULTURE, DEPARTMENT OF—Continued.

Bureau of Biological Survey—Con. Coleoptera (69048); 6 plants from Wisconsin (69120); 2 plants from Maryland (69121); (through E. P. Walker) skull of a humpback whale from Alitak Bay, Alaska (69370); 100 plants from Alaska, collected by Mr. Walker (69828); 31 specimens of birds, alcoholics and skeletons (69657); 817 plants (69764); 15 eggs, a nest and a head of a bald eagle from Alaska (69775); mollusks from Red Rock Lake, Monida, Mont. (69864); 103 plants from Alaska and California (69933); 981 specimens, representing 129 species, of the Orders Orthoptera, Diptera, Hymenoptera, and Hemiptera (69975); 40 plants from Florida, collected by A. H. Howell (70128); 844 mammals transferred and catalogued during the fiscal year not otherwise recorded (70173). (See also under Madera, Marcelino.)

Bureau of Chemistry (through J. H. Clevinger): 7 cultivated plants (68802); (through Dr. F. B. Power); specimens of genuine and false chaulmoogra seeds and products derived therefrom, prepared in the Phytochemical Laboratory (69472).

Bureau of Entomology: 4 specimens of isopods from Half Moon Bay, taken from artichokes, by Dr. E. O. Essig, November 8, 1922 (69212); 14 slugs from Baton Rouge, La. (69990); a collection of 9159 miscellaneous insects, including 2219 Diptera, 2715 Hymenoptera, 800 Orthoptera and Neuroptera; 1355 Coleoptera, 2070 Lepidoptera, received at various times during the fiscal year July 1, 1922 to June 30, 1923 (70239).

(See also under Brother Artemio Rene and Capt. H. E. Cross.)

Federal Horticultural Board: 2 isopods found in Mahaleb cherry stock from Orleans, France, by W. P. Hayes at the Wathena Nurseries, Wathena, Kans., March 30, 1922 (68604); 3 mollusks collected on bamboo plants from Canton Christian College, Canton, China (68694); 2 mollusks from Port Antonio, Jamaica (68741); 2 landshells collected in banana rubbish from Port Antonio, Jamaica, at Philadelphia, Pa. (68984); landshell collected at Baltimore, Md., on bananas from Port Antonio, Jamaica (68998); 2 mollusks from England (68815); isopod found on the root of an herbaceous perennial with soil, from Germany, taken from a passenger's baggage on the SS. *Mt. Clinton* at New York City, by E. Kostal, March 22, 1922 (68906); isopod also found by Mr. Kostal in soil about plants from Germany, September 18, 1922, at New York City (68928); landshell collected in soil about plants from Germany, at New York City (68953); isopod taken in yam from Porto Rico, intercepted at New York City by Mr. Kostal (69739); 4 marine bivalve mollusks taken from earth around potted shamrock from Liverpool, England, at Philadelphia, Pa. (68970); 4 specimens, 4 species, of landshells from Liverpool, taken at Philadelphia (69204); 2 isopods taken from tulip bulbs from Hillegom, Holland, intercepted by Max Kisliuk, jr., at Phila-

AGRICULTURE, DEPARTMENT OF—Continued.

Federal Horticultural Board—Continued.

delphia, September 27, 1922 (69022); 21 specimens, 3 species, of isopods found by Mr. Kisliuk at Philadelphia, December 1922, in soil about ferns from Buenos Aires, Argentina, and 15 specimens found in soil around cactus plants from St. Thomas, Virgin Islands of the United States (69444); isopod also taken by Mr. Kisliuk from a cargo of cork wood and cork waste on the American S. S. *Sarcoxie*, arriving at Philadelphia, from Bordeaux, France (69592); isopod taken from a bulb case from Lisse, Holland, at Philadelphia, by Messrs. H. L. Sanford and Kisliuk, October 11, 1922 (69223); landshell from Vancouver, B. C., and 2 landshells (1 species) from Manila, P. I. (69342); 3 isopods taken in soil about canna plant from Manilla, P. I., and 2 from soil about Manilla grass also from Manila (69386); 13 specimens, 4 species, of mollusks found in soil with plants (69408); 5 specimens, 3 species, of isopods found in sweet potatoes from China, July 1, 1922, collected by L. A. Whitney at Honolulu, Hawaii; also 3 specimens found in soil of plants from Buitenzorg, Java, December 10, 1922, collected by E. M. Ehrhorn, at Honolulu, Hawaii (69443); lizard found in a load of corkwood from Portugal (69539); 2 isopods taken in soil about mango plants of a shipment from Bello Horizante, Brazil (69548); slug taken in narcissus roots from England by Inspector C. A. Davis at the Post Office, Philadelphia, March 9, 1923 (69750); 7 specimens, 2 species, of slugs comprising 2 interceptions, from Glasgow, Scotland, and Germany, made at the Philadelphia Post Office by Mr. Davis (69755); 6 specimens, 2 species, of land mollusks from soil about roots of rose imported from England (70003); mollusk taken from the roots of fruit tree stock from Orleans, France (70001); 2 slugs found in earth on plants from Scotland, collected at New York City, by Inspector J. W. O'Brien (70102).

Forest Service: 23 plants from New Mexico (68688, 68772); (through Dr. F. V. Coville) 2 plants from Washington and New Mexico (68911); plant from Utah (69079); Forest Products Laboratory, Madison, Wisc.: A small piece of orange wood (69845).

Bureau of Plant Industry (through Prof. A. S. Hitchcock): 3000 mounted grasses (68532); 5100 mounted grasses including many types from Africa (69604); 32 plants from tropical America (69601); plant from Java (69867); 144 plants, chiefly from South America (68564); (through Roy G. Pierce) A series of specimens, photographs, and charts showing the destruction of white pine by white pine blister rust (68654); 38 plants from the United States, 1000 plants from Panama and the Canal Zone, and 180 plants from Michigan, all collected by Prof. C. V. Piper (68570, 69725, 69787); (through Prof. C. V. Piper) 61 plants from California (69788); 2 plants from New York (68677); 29 plants and a fern from Australia (68680, 68721); 12 plants from Surinam and British Guiana (68893); 2 plants (68941); 11 plants collected in

AGRICULTURE, DEPARTMENT OF—Continued.

Bureau of Plant Industry—Contd. Europe by Mrs. Agnes Chase (68942); (through Mrs. Chase) 1900 specimens of mounted grasses (70076); plant from Maryland (68967); plant from Costa Rica (69010); plant (69035); (through Dr. S. F. Blake) 14 specimens and 6 photographs of tropical American plants (69288); 1435 plants, chiefly from Arizona and New Mexico, collected by W. W. Eggleston (69513); (through W. W. Stockberger) 939 plants of the western United States collected by Mr. Eggleston (69719); 10 plants collected in California by H. G. McKeever (69596); 186 plants collected in Guatemala and British Honduras by Dr. O. F. Cook, also 10 plants collected by Dr. O. F. Cook in Petén, Guatemala (69679, 69761); 10 plants from Florida (69815); 40 plants collected in Florida by Dr. Edgar T. Wherry (69937); 16 specimens of Philippine Islands Government Grades of Abaca (Manila hemp), and 3 ungraded specimens (70109). (See also under Henry D. Baker and J. M. Grant.)

States Relations Service (through Dr. L. O. Howard): 23 specimens and 2 slides representing type material of 6 species of Hymenoptera described by Dr. D. T. Fullaway from the Island of Guam (69742).

(See also under Frits Johansen.)

AGUIRRE, STEPHEN E., American Vice Consul, Manzanillo, Mexico: 2 specimens of cacti, 4 plants, 2 photographs and a plant (69094, 69619, 69991).

AITCHESON, SAMUEL, Laurel, Md.: Pileated woodpecker (68907).

ALDRICH, Dr. J. M., U. S. National Museum: 2100 insects from the Adirondacks (68609); 360 specimens of

ALDRICH, Dr. J. M.—Continued. flies, including 64 species, and types of 2 species (69173); 151 specimens, 107 species, including cotypes of 7 species, of European and Formosan flies (69239).

ALLEN, C. C., Nassau, New Providence, Bahamas: 45 landshells from Nassau (68659).

ALLEN, COURTNEY C., New Rochelle, N. Y.: 8 etchings and 4 block prints (69793, loan).

AMALGAMATED PHOTOGRAPHIC MANUFACTURERS, LTD., London, England: Paget Color Process lantern slide (69855).

AMERICAN HOME ECONOMICS ASSOCIATION. Textile Section, Baltimore, Md. (through Miss Miriam Birdseye, U. S. Department of Agriculture, Washington, D. C.): 5 two-yard samples of "Homeco" standard silk fabrics and 5 silk petticoats used in testing wearing qualities of these fabrics (69397).

AMERICAN MUSEUM OF NATURAL HISTORY, New York City: Specimen of an ophiuran (68854); a 468-gram piece of the Rose City, Mich., meteoric stone (69113, exchange); skull of a bat from Porto Rico (69203, exchange); 181 specimens of Hymenoptera (ants and bees, mostly African ants), representing 52 species, 18 of which are represented by paratypes (69535); shrimp from the Gulf of California (70061).

AMERICAN PRESBYTERIAN CONGO MISSION, Luebo, Belgian Congo, Africa: 4 quartzite paleolithic implements from gravels near Luebo (70046).

AMERICAN THREAD COMPANY, INC., THE, New York City: Series of specimens illustrating 6 types of cotton threads used for embroidering, crocheting, mending, and machine sewing (69934).

AMERICAN TYPE FOUNDERS COMPANY, Jersey City, N. J.: 13 Nottlng steel quoins and 1 lock-up key (69568); Unitype typesetting

AMERICAN TYPE FOUNDERS COMPANY—Continued.
machine (69636); bookbinder's lettering pallet contalning a line of ten point brass type (70077).

AMES, OAKES, Boston, Mass.: 184 ferns from Honduras (69811, exchange); 40 ferns from Honduras, collected by Herbert J. Spinden (69969).

AMOY, UNIVERSITY OF, Amoy, China (through Prof. S. F. Light): 77 crabs, 28 isopods, and a collection of insects, 9 mammals in alcohol, and 8 skins and skulls of mammals (69631).

ANDERSEN, Dr. OLAF, Christiania, Norway (through F. L. Hess): Examples of magnesite and a specimen of ilmenite with serpentine from Snarum, Norway (68718).

ANDERSON, C. C., U. S. National Museum: 4 specimens of milk products and a specimen of powdered chalk (69526).

ANDERSON, J. P., Juneau, Alaska: 7 plants from Alaska (69222).

ANDREWS, D. M., Boulder, Colo.: 11 ferns from Texas (69763).

ARISTE JOSEPH, Brother, Bogotà, Colombia: 636 plants from Colombia (68895, 68962, 69208, 69580, 69634 69824, 69836, 69893, 69952); 233 plants (69979, 70042, 70111, 70119); archeological specimens from Indian tombs of Guasca, a Chibcha ruin in Colombia (69752); (through Dr. J. B. Reeside, jr.): 500 specimens, mostly Cretaceous, a few Tertiary invertebrate fossils, 5 fossil teeth, and a miscellaneous lot of turtle fragments (69838); small collection of terra-cotta, shell, and stone objects from Colombia (70055).

(See also under Instituto de la Salle, Bogota, Colombia.)

ARIZONA, UNIVERSITY OF, Tucson, Ariz.: Plant (70007); (through Prof. Herbert C. Hanson): 73 plants (69486, 69871).

ARMES, Major GEORGE A. (through Mrs. George A. Armes, Atlantic City, N. J.): United States Army campaign badges and patriotic society membership badges owned by the late Major George A. Armes (5 specimens) (70121, bequest).

ARMS, JOHN TAYLOR, Fairfield, Conn.: 10 etchings (69794, loan); (through Mr. Will Simmons) an etching "Through Wind and Weather" and an aquatint in color "Dawn" (70034).

ARMSTRONG CORK COMPANY, Linoleum Division, Lancaster, Pa.: A series of specimens illustrating steps in the manufacture of plain, printed, and inlaid linoleum (69133).

ARMSTRONG, M. K., Hampton, Va.: 18 gold plated knives, 18 forks, and 18 spoons, in a leather case, presented by Joseph Bonaparte, former king of Spain, to Capt. E. E. Morgan in 1839 (69245, loan).

ARSÉNE, Brother G., Covington, La.: 13 vials of fossil diatoms from Auvergne, France (68573); 400 plants (69691).

ARTEMIO RENE, Brother, Managua, Nicaragua (through U. S. Department of Agriculture, Bureau of Entomology): Isopod from Managua (69760).

ASHE, W. W., Forest Service, U. S. Department of Agriculture, Washington, D. C.: 7 shrubby plants from the southern United States (68946); 14 plants (70035).

ASKEW, E. HOWARD, Baltimore, Md.: Model of Atlantic type locomotive and tender, made from actual measurements of the original (69270, loan).

ATTWATER, H. P., Houston, Tex.: 11 sheets of paper made in Loo Choo, and obtained from the natives by Captain Beechy, R. N., in 1827 (69166).

ATWOOD, Col. Wm. G. (See under Committee on Marine Piling Investigations).

AUSTRALIAN INSTITUTE OF TROPICAL MEDICINE, Townsville, North Queensland, Australia (through Dr. Gerald F. Hill): 18 mosquitoes and 63 tropical insects (68862, 69777).

AUSTRALIAN MUSEUM, Sydney, New South Wales, Australia: 47 macrurous crustaceans (shrimps) collected by the Australian F. I. S. *Endeavour* in Australian Seas, including paratypes of three new species (69063); (through Dr. G. W. Card): examples of the Barratta meteoric stone, Nos. 1, 2, and 3 (69869).

BACHE, Rene, Washington, D. C.: 10 photographs relating to Benjamin Franklin (69514, loan).

BAEKELAND, Mrs. L. H., Yonkers, N. Y.: Portrait of Dr. L. H. Baekeland, the originator of the present developing paper now used in photography to the exclusion of all others (69829).

BAER, John L., U. S. National Museum: 10 rhyolite blades, part of a cache of 106 plowed up on the farm of Frank Wilson, one mile south of Fawn Grove, York County, Pa. (68627, loan).

BAERLEIN, Fernando, Rio de Janeiro, Brazil: Stone ax head made by the Tupi-Guarani Indians of eastern Brazil (69175).

BAILEY, H. B., Philadelphia, Pa.: 193 beetles (68924).

BAILEY, Prof. L. H., Ithaca, N. Y.: Specimen and 3 photographs of cacti (68544); 29 ferns from Bermuda, and a plant (68745, 69511, exchange).

BAKENHUS, Capt. R. E., U. S. Navy, Washington, D. C.: Water color painting by L. W. Fontaine of a Filipino native in costume (70222).

BAKER, Dr. C. F., Los Banos, P. I.: 190 specimens, 123 species, of land, freshwater and marine mollusks from the east coast of Polillo, P. I. (68657); 4 specimens, 3 species, of land and freshwater mollusks from Luzon (68736); 1000 moths including many new species (69898); 23 specimens, representing 16 species, of land and freshwater mollusks from the Philippine Islands (69531); 315 moths representing many new species (70053); 96 specimens, 48 species, of land and marine mollusks from Luzon, Panay, and Palawan, P. I. (70175).

BAKER, Dr. F. H., Richmond, Victoria, Australia: Land shell and 2 insects from Richmond, Australia (68887); butterfly and a green beetle (69493); 23 beetles, and 3 specimens, 3 species, of marine mollusks from Australia (70188).

BAKER, Dr. Fred., Point Loma, Calif.: 4 species of Brazilian shells and a Japanese shell (69689).

BAKER, Henry D., American Consul, Trinidad, British West Indies (through Department of Agriculture, Bureau of Plant Industry): Plant from Tobago (69766).

BALDINGER, Major O. M., U. S. Army, Washington, D. C.: Chinaware, dolls and accessories of the early part of the 19th century (24 specimens). (68764, loan).

BALDWIN, Ernest G., Clarendon, Va.: Plant from Virginia (68931).

BALL, Dr. C. R., Washington, D. C.: 4 specimens of willows from Michigan (69517).

BANKS, R. R., Smithsonia, Ala.: Hematite cone used in grinding paint (68568).

BANNING, Thomas, Chicago, Ill.: 15 color prints by the McDonnough Process, made in 1899–1900 on a cylinder press (69666).

BARBER, H. S. (See under V. S. Barber).

BARBER, Manly D., Knoxville, Tenn.: 128 specimens, 19 species, of land and freshwater mollusks from near Knoxville, Tenn. (69494); 16 specimens of Tertiary bryozoans from St. Petersburg, Fla., and 10 specimens, 4 species of mollusks, from Panama (69785); mollusk from Panama (69971).

BARBER, V. S., Caribou, Calif. (through H. S. Barber, U. S. Department of Agriculture): A slab showing willow leaves from a hot spring deposit (69540).

BARBOUR, Dr. THOMAS, Cambridge, Mass.: 2 lizards from Navassa Island (69345).

(See also under Harvard University, Museum of Comparative Zoology.)

BARNHART BROTHERS & SPINDLER, Chicago, Ill. (through F. C. Lampe): 2 stereotype matrices; 1 sample of matrix paper, and 1 stereotype (or cast) from matrix (68821); type chase (newspaper page size) (69013); a printer's "galley" for holding type (69146); 2 shooting sticks and 6 wood quoins (69740).

BARRETT, Dr. HARVEY P., Charlotte, N. C.: 30 mosquitoes (68591).

BARROS V., Rafael, Los Andes, Chile: Bird skin, new to the Museum collection (69505).

BARTLETT, JOHN H. (See under Post Office Department.)

BARTON, LOREN R., Los Angeles, Calif. (through Howell C. Brown): 5 etchings (70156).

BARTRAM, EDWIN B., Bushkill, Pa.: Plant (68929): 6 plants from Arizona (69409, 69789, 69834).

BASCOM, H. P., Bridgetown, Barbados, B. W. I.: 4 specimens of the glossy cowbird (68553); 3 skins of doves from Barbados (69290).

BASHFORD, Miss M. J., Alexandria, Va.: Great horned owl (69748).

BASSETT, Dr. V. H., Savannah, Ga.: Several fragments of oligochaetes (68695).

BASSLER, Dr. HARVEY, Myerstown, Pa.: Collections including Carboniferous plants from Paracas, Peru; Tertiary plants from South America, and Lower Cretaceous fossils from Nasca, Peru (68626).

BAYLEY, Dr. W. D., Philadelphia, Pa.: Water color painting of I. T. Norton, Professor of the Trumpet at the Royal Academy of Music, and

BAYLEY, Dr. W. D.—Continued.

2 sphygmographs and a trocar (obsolete medical instruments) (68571).

BECK ENGRAVING COMPANY, THE, Philadelphia, Pa.: 1 set of 8 proofs of a series of half tone illustrations for the story of "Rip Van Winkle" (68846).

BEHRE, Miss ELINOR A., Baton Rouge, La. (through Dr. B. H. Ransom, U. S. Department of Agriculture): Lizard from Panama (69882).

BEHUMIN, WILLIAM C., Sigurd, Utah (through Interior Department, U. S. Geological Survey): 6 crystals of smoky quartz and 3 nodular aggregates of black quartz crystals from near Fruita, Wayne County, Utah (70162).

BEKKER, Dr. H. (See under Institutum Geologicum Universitatis.)

BELL, ERNEST L., Flushing, N. Y.: 2 specimens (paratypes) of butterflies (68948).

BELLAMY, Mrs. ELLEN WASHINGTON, Macon, Ga.: Miniatures, jewelry and miscellaneous relices, 34 specimens (68743).

BELLARD, Dr. E. P. DE, Valera, Venezuela: 58 plants from Venezuela (69315).

BELLOWS, Mrs. FLORENCE S. (see under B. E. Eames).

BENCOMO, CELESTINO, Chargé d'Affaires of Cuba, Port-au-Prince, Haiti: Waterworn pebbles, chert nodules, and a few miscellaneous objects; archeological objects; mollusks and corals, echinoderms, a sponge and a crustacean, and 3 fishes, all from Haiti (68748).

BENEDICT, J. E., jr., Linden, Md.: 8 beetles from Long Lake, Lake County, Ind. (68538); skin and skull of a red squirrel from Linden (69305).

BENHAM, Mrs. ANNE M., Allison, N. Mex.: Navaho blanket formerly belonging to Geronimo, and a pair of Sioux leggings (69387).

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

BENJAMIN, Foster H., Decatur, Ill.: 3 moths (68991).

BENNETT, Mrs. Louis, Weston, W. Va.: Medals, documents and photographs relating to the military service during the World War of Lieut. Louis Bennett, jr., Royal Air Force, 11 specimens (69138).

BERBERICH, Robert B., Washington, D. C.: Great blue heron (69140).

BERLIN, PFLANZENPHYSIOLOGISCHES INSTITUT DER UNIVERSITÄT, Berlin-Dahlem, Germany (through Herman Nessel): 10 fragmentary specimens of tropical American plants (69758, exchange).

BERLINER, Emile (See under John W. Brackett).

BERNICE PAUAHI BISHOP MUSEUM, Honolulu, Hawaii (through Dr. C. H. Edmondson): 122 specimens of marine invertebrates, comprising 36 species of crustaceans and 4 species of annelid worms, taken in the Hawaiian Islands and adjacent regions by Dr. Edmondson and others; 5 specimens, 5 species, of crabs from Palmyra Island, Fanning Island, and Hawaii, collected by Dr. Edmondson and Messrs. L. A. Thurston and C. M. Cooke; 2 crabs collected at Waikiki reef, Honolulu, by Dr. Edmondson (68812, 69394, 69693); (through E. H. Bryan, jr.) 12 flies (70137); 6 flies collected in Honolulu, Buitenzorg, Java, and South China (70199).

BERRY, Prof. E. W., Baltimore, Md.: A collection of fossil plants from Oaxaca and Vera Cruz, Mexico, including types described by the donor in Volume 62, Article 19, of the Proceedings of the U. S. National Museum (69573).

BERTIERI, Raffaello, Milan, Italy: Pamphlet by Raffaello Bertieri, 1921, showing examples of early Italian typography, entitled "Pagine Di Antichi Maestri Della Tipografia Italiana" (68765).

BEUTENMUELLER, William, Highwood, N. J.: 194 adults, and 4 galls of gall-flies of the Family Cynipidae, representing 34 species, 26 of which are represented by cotypes, and 9 of them new to the Museum collections (69780).

BEUTENMUELLER, William—Con.

BEZZI, Prof. M., Turin, Italy: 12 flies, 9 species, 3 of which are new to the Museum collections (69244, exchange).

BIDDLE, Commander Clement, U. S. Navy, Philadelphia, Pa.: Sponge taken from a tidal salt water tributary (Carter's Creek), lower Rappahannock River (69115).

BILSING, Prof. S. W. (See under Texas Agricultural and Mechanical College.)

BIRDSEYE, Miss Miriam (See under American Home Economic Association).

BLACKISTON, A. H., El Paso, Tex.: 2 claws of very large specimens of crabs from Yucatan (69588).

BLACKMORE, E. H., Victoria, B. C.: 8 paratypes of moths (69236, 69321).

BLAKE, Dr. S. F. (See under Agriculture, Department of, Bureau of Plant Industry, and Mulford Biological Exploration of the Amazon Basin).

BLY, Mrs. Charles, Yucca, Ariz.: 3 plants (69407).

BÖGGILD, Prof. O. B., Copenhagen, Denmark: 4 specimens of okenite from Greenland (68978, exchange).

BOLTON, Theodore, Washington, D. C.: Dry point etching in colors by M. Malo Renault (69570); 8 etchings (69807, loan).

BONAPARTE, HERBARIUM OF PRINCE ROLAND, Paris, France: 517 specimens of pteridophyta (68628); 23 fragmentary specimens and 2 photographs of types of South American ferns (69430); fragmentary specimen of the type specimen of a fern from Colombia (69522). Exchange.

BONEBRAKE, A. C., Goldendale, Wash.: 3 pieces of the skull of a bear from Yukon Territory, Canada (69659).

BOON, Dr. E. G., La Vista, Alassio, Italy: 2 platinum prints (69039).

BOSTON SOCIETY OF NATURAL HISTORY, Boston, Mass. (through Mr. S. N. F. Sanford): 6 specimens of amphipods from wharf piles in New England (69333).

BOTANIC GARDENS, Brisbane, Queensland, Australia: 70 plants (70079, exchange).

BOTANIC GARDENS, Georgetown, British Guiana: 39 ferns (68562).

BOTANIC GARDENS, Sydney, New South Wales, Australia: 75 plants, chiefly from Australia (69155, exchange).

BOTANISCHER GARTEN UND MUSEUM, Berlin-Dahlem, Germany: 5 fragmentary specimens and 2 sketches of ferns, mostly types (68855, exchange).

BOUVIER, CAFFEY, AND BEALE (See under Arthur S. Walcott).

BOWEN, C. F., New York City (See under Standard Oil Co. (N. J.)).

BOWEN, J. E., Abbeville, Ga.: Hammerstone and 2 rubbing stones from an old Indian camping ground (69319).

BOWMAN, C. A., Washington, D. C.: Snake from Croom, Md. (68724).

BOX, HAROLD E., Berbice, British Guiana: 18 insects (70005).

BOXLER, Mrs. EDNA H., Rocky Mount, N. C.: An old double case silver watch, 1788, marked "John Stangrove, London, No. 926" (69754, loan).

BRACKETT, JOHN W. (through his widow, Mrs. John W. Brackett, Boston, Mass., and Emile Berliner, Washington, D. C.): Violin showing the method of stringing designed by Emile Berliner in 1882 in trying to solve the question of why an old violin is better than a new one (68614).

BRADLEY, W. G., Agricultural Experiment Station, Baton Rouge, La.: Male specimen of a horse fly, new to the Museum collections (69119).

BRANN, Mrs. B. S. (See under Mrs. Fremont Smith).

BRIDGE, JOSIAH, Rolla, Mo.: 2 specimens of fossil coral from Missouri (69643).

BRIGDEN, Miss FRANCES, Hornell, N. Y.: Photograph of a velocipede (69228).

BRIGGS, LAWRENCE P., Care, Consular Bureau, State Department, Washington, D. C.: Burmese and Indo-Chinese ethnological objects (69359, loan).

BRINKMAN, A. H., Craigmyle, Alberta, Canada: 2 plants from Alberta (68696); 334 plants (69559).

BRITISH GOVERNMENT:

British Museum (Natural History), London, England (through Dr. A. B. Rendle): Photograph of the type specimen of a plant (69523, exchange); (through C. J. Gahan) a very rare and interesting specimen of larva of the click beetle, which lives in termite-nests in different parts of Africa (69685); 456 plants, chiefly from Mexico and Central America (69791, exchange); (through Dr. Frank Springer) 4 stem fragments of crinoids (69821); (through James Waterston) 7 specimens, representing 5 species, of chalcid wasps, including 1 cotype; 4 cotypes of a chalcid-fly (69560, 69831, exchange); 200 specimens of Orthoptera, consisting of grasshoppers, cockroaches, etc. (69941, exchange).

Imperial Bureau of Entomology, London, England (through Dr. G. A. K. Marshall, Director): 179 specimens of named beetles, mostly from South Africa, and many of them new to the Museum collections (69193).

Royal Botanic Gardens, Kew, Surrey, England; Photograph and fragments of type specimen of a fern from Mexico (69669, exchange).

BRITISH GUIANA, Science and Agriculture Department, Biological Division, Georgetown (through L. D. Clear, jr.,): 3 shipworms from British Guiana (69384).

BROCKETT, PAUL (See under National Academy of Sciences).

BRODE, Dr. H. S., Walla Walla, Wash.: 4 mollusks from Seattle, Wash. (68823); mollusk from the vicinity of Walla Walla (69606).

BROOKES, ALBERT E., Okania, Matamata, Waikato, New Zealand: 43 specimens representing 16 species of New Zealand beetles (Buprestidae) (69745, exchange).

BROOKLYN BOTANIC GARDEN, Brooklyn, N. Y.: Plant (70085).

BROOKLYN SOCIETY OF ETCHERS, THE, New York City: 95 prints, including etchings, soft grounds, aquatints, dry points, and mezzotints (69396, loan); (through Will Simmons, Corresponding Secretary): 92 etchings, part of the 2nd International Exhibition of Etchings recently held in New York at the Anderson Gallery (70002, loan); (through Mr. Simmons) Drypoint "L'Insaisissable" by Mr. Simmons; etching "Calle Paradiso, Venice" by Sydney Vacher, and an etching "Study of an Old Man" by Arthur Wm. Heintselman (70027).

BROWN, EDWARD J., Eustis, Fla.: Skin of a ring-necked duck from Florida (69503).

BROWN, Miss EMILY FOSTER (See under Virginia du Val Brown).

BROWN, Master FREDERICK LOUIS, Lewisburg, Pa. (through Prof. Glenn V. Brown): Series of 12 sinkers from the west branch of the Susquehanna River, near Lewisburg, Pennsylvania (68790).

BROWN, GLENN MADISON, Washington, D. C.: 2 block prints (69795, loan).

BROWN, Prof. GLENN V. (See under Master Frederick Louis Brown).

BROWN, HOWELL C., Pasadena, Calif.: 2 lithographs, 2 drypoints and 1 etching (70153).

(See also under Loren R. Barton, John W. Cotton, Miss Frances H. Gearhart, and Miss May Gearhart).

BROWN, Mrs. MARY L. (See under Virginia du Val Brown and Emily Foster Brown).

BROWN, Miss VIRGINIA DU VAL and Miss EMILY FOSTER BROWN (through Mrs. Mary L. Brown, Washington, D. C.): Embroidered military belt owned during the early part of the 19th century by Maj. Gen. Jacob Brown, U. S. Army (69709).

BRUNER, Dr. STEPHEN C., Santiago de las Vegas, Cuba: 8 specimens, representing 8 species of beetles of the family Buprestidae (70166).

BRYAN, E. H., jr. (See under Bernice Pauahi Bishop Museum).

BUCHANAN, L. L., Washington, D. C.: 55 specimens of beetles (70140, exchange).

BUCHOLZ, J. T., Fayetteville, Ark. (through Dr. A. S. Hitchcock): 2 plants from Arkansas (69340).

BUCHTIEN, Dr. OTTO, La Paz, Bolivia: 1300 plants from Bolivia (68589).

BUCKELL, E. R., Department of Agriculture, Ottawa, Canada: 12 katydids, 8 of them being of a species hitherto represented in the Museum collections only by the type and allotype (69499, exchange).

BULLBROOK, Dr. J. H., Port of Spain, Trinidad, B. W. I.: 3 cases of invertebrate fossils from Trinidad (69450).

BULLOCK, D. S., Washington, D. C.: Archeological and ethnological specimens from Chile, Peru, and Bolivia (69996).

(See also under Edwardo A. Holburgh).

BURGE, Mrs. LOUISE S., and the Misses MARIE LOUISE and JESSIE JAY BURGE, East Greenwich, R. I.: Lowestoft china tea set presented by Commodore Matthew G. Perry, U. S. Navy, to Elizabeth Brenton Shaw, wife of Dr. William Gorham Shaw, of Wickford, R. I., also a china pitcher and a pewter coffee pot (68968).

BURGESS, F., Washington, D. C.: Butterfly from Trinidad, new to the Museum collections, and a moth representing a local species (70236).

BURKS, F. M., Onalaska, Tex. (through Dr. O. P. Hay): Portion of tooth of a fossil elephant from Texas (70114).

BURLING, G. L., Westminster, S. W., London, England: 15 lots of marine mollusks from Moruga, Trinidad (69496).

BURROWS, GEORGE E., Washington, D. C.: Fish from Rock Creek, near Chevy Chase, Md. (69060).

BUSH-BROWN, Mrs. H. K., Washington, D. C.: 8 etchings (69797, loan).

BUSHNELL, DAVID I., Charlottesville, Va.: Hammer said to have been made from a piece of a meteor now in the National Museum, City of Mexico (68586); 3 finger-rings (68621).

BUTLER, WILLIAM ALLEN (See under James, Mrs. Julian).

CALDERON, Sr. Dr. Don SALVADOR, San Salvador, Salvador: 814 plants (68776, 68837, 69377, 69708).

(See also under Salvador, Gov't of).

CALIFORNIA ACADEMY OF SCIENCES, San Francisco, Calif.: 31 plants (69663, 69902, exchange); (through Dr. W. H. Dall) 51 species of land mollusks and 3 species of marine mollusks from the Galapagos Islands (70117).

CALIFORNIA CENTRAL CREAMERIES, San Francisco, Calif.: 20 samples of casein and lactose products obtained from cow's milk (69428).

CALIFORNIA, UNIVERSITY OF, Berkeley, Calif.: 22 specimens of minerals and 16 cultivated ferns (68894, 69732, exchange); (through Prof. E. O. Essig) 20 grasshoppers (70233).

CAMPBELL ART COMPANY, Elizabeth, N. J.: Chromo collotype entitled "Golden Autumn" (69687).

CANADIAN GOVERNMENT:

Department of Agriculture, Entomological Branch, Ottawa, Canada: Fly (a bird parasite) (68740); (through Dr. J. McDunnough) 3 flies (69605); (through C. Howard Curran) 10 flies, paratypes of 4 species (69727, exchange); 3 flies (70045).

Biological Board of Canada: (through Dr. C. McLean Fraser, Pacific Station, Nanaimo, British Columbia): 53 specimens, 2 species, of lower chordates from Vancouver Island (68779).

Department of Mines, Geological Survey, Ottawa, Canada: 2 specimens of minerals, camsellite and colerainite (69227, exchange).

Victoria Memorial Museum, Ottawa, Canada (through Frits Johansen): 5 specimens of amphipods from Botanie Valley, British Columbia, collected by F. Johansen, July, 1922, at an elevation of 4000 feet (69180); 48 fishes from western Canada (69967, exchange).

CANTERBURY MUSEUM, Christchurch, New Zealand (through R. Speight, Curator): 3 frogs from New Zealand (70164, exchange).

CANTON CHRISTIAN COLLEGE, Canton, China (through Prof. C. W. Howard): 100 specimens of Lepidoptera, chiefly moths (69946).

CANU, F., Versailles, France: 2 slabs containing Permo-Carboniferous fossils from Algeria (68616).

CAPPS, S. R., U. S. Geological Survey, Washington, D. C.: Mesozoic fossils from Palestine (69680); (through Dr. M. T. Lukovitch, University of Belgrade, and Department of State): A small collection of invertebrate fossils from the Middle Eocene, about 25 miles northwest of Zvornik, Bosnia, Jugoslavia, collected by the donor June 24, 1922 (70159).

CARBUTT, Mrs. MARY E., Montclair, N. J.: Cabinet oval photograph of John Carbutt (68850).

CARD, Dr. G. W. (See under Australian Museum).

CAREY, CHARLES, U. S. National Museum: Coast Artillery first class marksmanship badge (70180).

CARMICHAEL, ALFRED LEE, Washington, D. C.: Cretaceous shell (69142).

CARNEGIE INSTITUTION OF WASHINGTON, Washington, D. C.: Type material of the mineral lepidocrocite from Easton, Pa. (68902); (through Prof. W. A. Setchell, University of California, Berkeley, Calif.) 112 ferns from Tahiti (69263); (through Dr. J. C. Merriam, President); plant collected by Sylvanus G. Morley (69665).

Desert Laboratory, Tucson, Ariz. (through Dr. D. T. MacDougal, Director): 3 plants and 15 specimens of cacti from northern Sonora (70008, 70123).

CARNEGIE MUSEUM, Pittsburgh, Pa.: 24 specimens, 9 species, of Bembecid wasps (68610); (through Dr. W. J. Holland) 4 beetles, including 3 species (70183, exchange).

CARPENTER, J. HERBERT (See under James, Mrs. Julian).

CARR, F. S., Edmonton, Alberta, Canada: 18 specimens, 4 species, of beetles (lampyrids) (68886, exchange).

CARR, WILBUR J., Washington, D. C.: Barong and kris, with their scabbards from Mindanao, P. I. (69401).

CARTER, A. Q. (See under Ralph M. Erskine).

CASE, C. P., Tenakee, Alaska: Egg case of the big skate found on the beach near Tenakee (68534).

CAVINS, O. A. (See under Richmond Petroleum Company of Mexico, S. A.).

CAWSTON, Dr. F. G., Durban, Natal, South Africa: 5 freshwater mollusks from South Africa (68947).

CHACE, E. P., San Fernando, Calif.: 79 specimens of marine invertebrates, 17 insects, and 2 mollusk eggs collected by the donor at Redondo and Santa Monica, Calif. (70044); (through Dr. W. H. Dall) about 100 specimens, 30 species, of Pleistocene fossil shells from near Point Resort, 4 miles south of Redondo (70056); 46 specimens of marine invertebrates, 8 insect larvae and 14 mites collected by the donor at Mugu Bay, Ventura County, Calif. (70224).

CHALLENGE MACHINERY COMPANY, Grand Haven, Mich.: Photograph of machine used in addressing newspapers, catalogues, etc. (69154).

CHAMBERLAIN FUND, FRANCES LEA, Smithsonian Institution: Cut citrine quartz from Brazil, weighing 1180 carats (68738); 2 aquamarines and a golden-green beryl from Madagascar (68913); a 50-carat aquamarine from Brazil (68916); a 14-carat cut stone of pink beryl from California (68980); garnet (essonite) weighing 3.5 carats, from California (69251); 5 carved objects including jade, variety nephrite, and serpentine (69266); a mandarin buckle of jade (nephrite), from Shantung, China (69822); cut blue zircon weighing 9.5 carats (70017); 2 carved Chinese jadeites (70074); 59 specimens, 15 species, of landshells from Trinidad (70221); a carved pendant of pink tourmaline (70036).

CHAMBERLAIN, Dr. JAMES E. (See under W. L. Keech).

CHAMBERS, B. L., U. S. National Museum: Woodchuck from Maryland (69421).

CHAMBERS, Prof. C. O., Stillwater, Okla.: 2 specimens of cacti (68569).

CHAMBERS, FRANK V., Philadelphia, Pa.: A bromide print (69186).

CHAMPION COATED PAPER COMPANY, New York City: 2 copies of "Book of Samples of Paper" containing samples of all "Champion" papers printed and lithographed in all the principal processes used for printing (68667).

CHANDLER, ASA C., Houston, Tex.: 2 slugs from Texas (69908).

CHANTLAND, CHARLES H., Spokane, Wash. (through W. T. Chantland): Bronze and enamel Harrison badge worn during the presidential campaign of 1840 (70198).

CHAPIN, EDWARD A., Washington, D. C.: 6 skulls of birds (69564).

(See also under Agriculture, Department of, Bureau of Animal Industry.)

CHAPIN, Mrs. ELISE H., Chattanooga, Tenn.: 3 plants (69875, 69909).

CHAPIN, Miss LUCILE ANN, New York City: A drum of the period of the American revolution (68542).

CHAPMAN, Miss ELIZA M. (See under Miss G. P. Patterson).

CHAPMAN, W. E., American Consul, Mazatlan, Sinaloa, Mexico: 105 amphipods, collected off the West Mexican coast by Mr. Harry Notton (69629); 7 specimens of shrimps "cuaques," collected by Senor Jesus Gonzales Ortega of Mazatlan in the Quelite River, State of Sinaloa, Mexico (69814); 16 lots of fishes, 3 lots of mollusks, a snake, and 7 lots of marine invertebrates, also collected by Senor Ortega from the estuaries of the State of Sinaloa (70004).

CHASE, Mrs. AGNES (See under Agriculture, Department of, Bureau of Plant Industry).

CHASE & Co., L. C., Boston, Mass.: 6 samples of printed and figured mohair pile fabrics (69645); 11 samples of "Leatherwove" imitation leathers (69992).

CHICAGO TRIBUNE, THE, Chicago, Ill.: 18 specimens (Sunday supplements, etc.) of four color printing by the Rotogravure process, including the first newspaper so published, April 9, 1922 (68602).

CHICAGO, UNIVERSITY OF, Chicago, Ill. (through Dr. C. A. Shull): 8 flies (68652).

CHINA COMMERCIAL COMPANY, LTD., New York City (through F. L. Hess): Examples of romelte from China (68719).

CHRISTENSEN, Dr. CARL (See under Universitetets Botaniske Museum).

CHRISTIAN RECORD PUBLISHING COMPANY, College View, Nebr.: 2 periodicals for the blind, being a copy of the Christian Record printed in New York Point, and a copy of the same in Revised Braille (69711).

CHUMLEY, JAMES, University of Glasgow, Glasgow, Scotland: 29 specimens of an echinoderm, the rosy feather star; a fine series of the parasite *Myzostomum cirriferum* and some other invertebrates (70065).

CLAGETT, R. M., Smithsonian Institution: 2 eggs of Cooper's hawk from Maryland (70093).

CLAPHAM, Mrs. THOMAS, Port Washington, L. I., N. Y.: Antique seal inscribed "General Post Office, Ireland" (68845).

CLAPP, Dr. GEORGE H., Sewickley, Pa.: About 3000 specimens of West Indian landshells (69593).

CLAPP, Dr. WM. E. (See under Committee on Marine Piling Investigations, and Harvard University, Museum of Comparative Zoology).

CLARK, B. PRESTON, Boston, Mass.: 27 moths including a pair of very rare ones from Australia, all new to the Museum collections, and 75 moths from Gizo, British Solomon Islands (69958); 1050 specimens of butterflies and moths from Yunnan, China, containing many species new to the Museum collections (70187).

CLARK, L. F., Marathon, Fla.: 2 teeth of a sperm whale (68641).

CLARK, ROBERT STERLING, New York City: 264 mammals, 153 birds, 8 lots of crabs, 7 lots of shrimps, 2 lots of myriapods, 7 insects, 259 fishes, 311 mollusks, 15 lichens, 308 reptiles and batrachians, collected by Arthur deC. Sowerby in China (68806).

CLARKE, MORTIMER, jr., Washington, D. C.: Casts of 4 Egyptian sculptures (69122).

CLATWORTHY, FRED P., Estes Park, Colo.: 3 autochromes (69630).

CLAUDE JOSEPH, Rev. Bro., Correo Nuñoa, Chile: 191 plants from Chile (69835).

(See also under Instituto de la Salle, Correo Nuñoa.)

CLEAR, L. D., jr. (See under British Guiana, Science and Agriculture Department).

CLEMENS, Mrs. JOSEPH, Corvallis, Oreg.: 3 plants (68753).

CLEMENTS, Miss GABRIELLE DEV., Lanesville, P. O., Gloucester, Mass.: 2 progressive proofs of a color etching (69390); 12 etchings (69806, loan).

CLENCH, Prof. WILLIAM J., Ann Arbor, Mich.: 13 mollusks from Cintra Bay, Africa (70134).

CLEVINGER, J. H. (See under Agriculture, Department of, Bureau of Chemistry).

CLINTON, H. G., Manhattan, Nev.: Fibrous orpiment from White Caps Mine, Manhattan (69459, exchange); specimen of fibrous orpiment from White Caps Mine (69527); miscellaneous ores, minerals, and fossils, from Nevada (69840); specimen of gold in calcite (69962); 34 specimens of minerals, and a small collection of archaeological specimens (70064).

(See also under W. L. Taylor.)

CLOKEY, IRA W., Denver, Colo.: 43 specimens of plants from Colorado (68702, exchange).

CLOVERNOOK HOME FOR THE BLIND, Mount Healthy, Ohio: Pack of playing cards for the blind (69746).

COALE, HENRY K., Highland Park, Ill.: 2 bird skins (68690, exchange).

COCKERELL, Prof. T. D. A., Boulder, Colo.: 22 specimens of insects, including 6 specimens representing 6 determined species, of which 2 are represented by types (68795); 7 plants from Colorado (68919); 16 specimens of Hymenoptera, 14 being determined species of bees and wasps, including types of 2 species of bees (69000); 66 specimens of insects from Colombia (69129); 24 miscellaneous insects (69382); 5 specimens, 4 species, of land shells from Porto Santo, Madeira Islands, including the types of 1 new species and of 2 new subspecies (69501); 3 specimens of identified bees (69507); 6 specimens, 5 species, of bees and wasps, 4 of the species being represented by cotypes (69591); 2 butterflies and 4 moths from Funchal, Madeira Islands, including a type of a new species, and a moth from Colorado (69616); 2 specimens of Pleistocene fossils from a well at Campo do Baixa, Madeira (69617); 3 specimens of Hymenoptera, including a cotype of a bee (69749); 20 moths, including 3 types (69783); 150 moths (Ithomiinae), and 5 moths, including a type species (69826); 35 specimens, 19 species, of mollusks from Madeira (70014).

(See also under Colorado, University of).

COKER, Dr. R. E., Chapel Hill, N. C.: 2 amphipods collected at Beaufort, N. C. (69943).

COLE, Miss LILIAN A., Union, Me.: 5 plants (68842, 68917).

COLEGIO DEL SAGRADO CORAZÓN, Guantánamo, Oriente, Cuba (through Bro. Hioram): 12 ferns from Cuba (68831).

COLONIAL DAMES OF AMERICA, NATIONAL SOCIETY OF THE, Washington, D. C. (through Mrs. Carolyn Gilbert Benjamin): Chinaware and glassware of the latter part of the 18th century (68827); U. S. Navy Nurse Corps uniform of the period of the World War (17 specimens) (68865); child's sampler made by Jane Robertson in 1814, silver tea caddy owned by Alexander Spottswood, Governor of Virginia, during the early part of the 18th century, Lowestoft china vase made during the latter part of the 18th century (69918). Loan.

COLORADO, UNIVERSITY OF, Boulder, Col. (through Prof. T. D. A. Cockerell): 12 specimens of fossil insects described and figured by Prof. Cockerell, fossil seeds from England, and a part of the type material of a fossil plant (69456).

COLORPLATE ENGRAVING COMPANY, THE, New York City: Reproduction, photo-mechanical relief in four colors, of Salome by Henri Regnault (69843).

COMMERCE, DEPARTMENT OF:

Bureau of Fisheries: Crustaceans, marine invertebrates and mollusks collected by the U. S. Bureau of Fisheries Steamer *Fish Hawk* during July and August, 1920, in connection with a biological survey of Chesapeake Bay, 191 bottles in all (68558); 69 bottles of crustaceans and 22 bottles of mollusks, collected by the steamer *Fish Hawk* in Chesapeake Bay, during October, 1920, cruise (68885); 130 lots of marine invertebrates, 17 lots of mollusks, and 5 lots of corals, taken by the *Fish Hawk* on various cruises during the hydrographic and biological survey of Chesapeake Bay in 1920 (69024); 119 lots of marine invertebrates and 37 lots of mollusks taken by the *Fish Hawk* on various cruises during the hydrographic and biological survey of Chesapeake Bay in January, 1921 (69314); butterfly ray taken in fish-trap at Woods Hole, Mass. (68624); a few small pieces of wood containing shipworm borings from Charleston, S. C. (68642); 20 specimens of barnacles taken from the gills and gill cavities of a female spiny lobster at Key West, Fla., in 1919, by D. R. Crawford (68786); 22 bottles of crustaceans taken in Chesapeake Bay on various cruises during 1921 and 1922 (69410); 6 specimens of shrimps taken from Duncan Canal and Frederick Sound, Alaska (69411); 30 mollusks from Idaho (69448); shrimp from brackish water near Lockport, La., obtained by E. A. Tulian, Superintendent, Fisheries Division, Louisiana Department of Conservation, New Orleans (69473); 17 crustaceans collected at Madison, Conn., by Lester W. Smith (69476); 5 plants from Utah (69550); 130 fishes collected in the Gulf of Mexico and near Wilmington, N. C., by the *Grampus*, including types of 2 species (69584); 161 fishes, a frog and a mollusk, collected at Augusta, Ga., during 1922 by Samuel F. Hildebrand, and 6 vials of crustaceans taken from stomachs of trout, collected by S. B. Locke, in Fish Lake, Utah (69628); 11 minnows collected by E. H. Magoon at Rio de Janeiro, Brazil (69694); (through Charles J. Fish) 33 crustaceans, comprising 30 amphipods and 3 larvae from Woods Hole (69932); a comprehensive collection of marine invertebrates, 115 lots in all, comprising 58 lots of crustaceans, 4 lots of sea anemones, 21 lots of nematodes, and 32 lots of mollusks, taken by the *Fish Hawk* on various cruises during the hydrographic and biological survey of Chesapeake Bay in March and April, 1921 (69936); a collection of Philippine sponges, including types of new species described by Prof. H. V. Wilson in his report taken by the *Albatross* on the Philippine Expedition of 1907–10 (70062); (through Dr. George S. Lesher) 2 nudibranchs (seaslugs) and a hermit crab (70206).

Bureau of Lighthouses: 10 specimens of living cacti from Navassa Island (69332).

COMMITTEE ON MARINE PILING INVESTIGATIONS, New York City (through Dr. S. I. Kornhauser): 2 rock boring mollusks from West Rigolets Lighthouse, La.; 3 specimens and 2 dead shells of mollusks from Point O'Woods, Long Island; shipworm from Staten Island, N. Y.; 2 shipworms from Perth Amboy, N. J.; shipworm and several fragments from Bayonne, N. J.; 14 shipworms from Point Pleasant, Atlantic City, N. J., and Newport News, Va.; 4 shipworms from Davids Island, New York, and Barnegat City, N. J.; about 30 mollusks and about 5 shipworms, all from Coney Island, N. Y.; several fragmentary shipworms from Sandy Hook, N. J.; several fragments of shipworms from West Sayville, L. I.; a piece of wood containing shipworms from Point O'Woods, L. I., N. Y.: (68656; 68670; 68671; 68717; 68727; 68731; 68773; 68799; 68800; 68816; 68819; (through Col. William G. Atwood, Director, New York City) shipworms from Jersey City, N. J., and Mystic and New London, Conn.; about 12 boring mollusks from Sneads Island, Tampa Bay, Fla., and Mystic, Conn. (68889; 68966); about 50 shipworms from New York City, Hoboken, N. J., and Guantanamo Bay, including the type of a new species (69004); about 30 shipworms from New York, New Jersey, Connecticut, Virginia and Cuba (69364); (through Dr. William E. Clapp, Cambridge, Mass.) 4 mollusks from Tampa Bay, Fort Dade, Fla.; shipworm from Key West, Fla. (69385, 69497); 20 shipworms from Shaw's Cove, R. I., South Norwalk, Conn., Mystic River, Conn., Westport, Conn., Fort Lafayette, N. Y., and Porto Rico (69427); 8 shipworms from Fort Lafayette, N. Y. (69468); 10 specimens of shipworms from New York and Connecticut (70126).

COMPANIA DEL PETROLEO "EL AGUILA" S. A., Tampico, Mexico (through Dr. T. Wayland Vaughan): About 225 lots of Tertiary and Cretaceous fossils from northeastern Mexico, representing about 500 species (69736); 18 lots and 18 mounted slides of Tertiary fossils from Mexico (69737).

COMSTOCK, Dr. JOHN A. (See under Southwest Museum, The):

CONDENSITE COMPANY OF AMERICA, Division of Bakelite Corporation, Bloomfield, N. J.: 9 specimens of molded condensite (69696).

CONGRESS OF THE UNITED STATES, Washington, D. C.: Sword carried by Maj. Gen. Richard Montgomery, Continental Army, when he was killed during the attack on Quebec, December 31, 1775, accepted as a gift to the Nation from Miss Julia Barton Hunt and deposited in the National Museum by Joint Resolution of Congress, adopted February 22, 1923 (69626, deposit).

CONZATTI, Prof. C., Oaxaca de Juarez, Oaxaca, Mexico: 267 plants (68843, 68882, 68956, 69002, 69156, 69306, 69357, 69701).

COOLIDGE, KARL R., Hollywood, Calif.: 279 beetles (69028).

COOPER ENGINEERING & MANUFACTURING CO., CHICAGO, Ill.: 3 brass printing plates, 4 printed sheets and a photograph of the printing press used in printing for the blind (69818).

COPENHAVER, Miss MAXINE, Washington, D. C.: Specimen of bird (troupial) (68879).

CORCORAN ART GALLERY, THE, Washington, D. C. (through C. Powell Minnigerode, Director): Photograph of the building occupied by the Corcoran Art Gallery from 1872 to 1897 (69873).

CORNELL UNIVERSITY, Department of Botany, Ithaca, N. Y.: 4 plants from Central America (68555).

CORNING, Mrs. HOWARD, Bangor, Me.: Original letter, dated March 13, 1830, written by William Austin Burt to his wife, Phebe, on the typewriting machine invented by Mr. Burt in 1829 (69721).

CORPE, Mr., Nogales, Ariz.: 2 plants (69087).

COTTON, JOHN W., Glendale, Calif. (through Howell C. Brown): Drypoint (70151).

COVILLE, Dr. FREDERICK V., Botanist, Department of Agriculture, Washington, D. C.: 4 specimens of Wokas (pondlily seeds) prepared for food by the Klamath Indians, collected at Klamath Marsh, Oreg., August, 1902 (69465).

(See also under Agriculture, Department of, Forest Service).

COWDRY, N. H., New York City: 32 ferns from China (69874).

COYKENDALL, M. A., Washington, D. C.: Blue china platter of the early part of the 19th century (69352, loan).

CRAWLEY, HOWARD (See under Pennsylvania State Department of Agriculture).

CRITTENDEN, E. C. (See under Philosophical Society of Washington).

CROCKER, WILLIAM J., Washington, D. C.: Loon (69158).

CROSS, Capt. H. E., Schawa, District Jhelum, India (through U. S. Department of Agriculture, Bureau of Entomology, Washington, D. C.): 32 flies from India, including 2 species of bot-fly new to the Museum collections (69999).

CUMMMINGS, Mrs. J. H., Wilmington, N. C.: 5 plants from North Carolina (69118).

CUNDY, H. J., Republic, Wash.: Stone pestle, chipped blades, and rejectage (69851).

CURRAN, C. HOWARD (See under Canadian Government, Department of Agriculture, Entomological Branch).

CUSHMAN, Dr. JOSEPH A., Boston, Mass. (through Dr. T. Wayland Vaughan): Eocene foramlnifera from Peru, comprising 4 or 5 species (69058).

DAHLGREN, Mrs. LOUISA, Washington, D .C.: 2 suits of antique Scandinavian armor of the 16th and 17th century (70107, loan).

DALL, Dr. W. H., U. S. Geological Survey, Washington, D. C. (See under California Academy of Sciences, E. P. Chace, Mrs. W. H. Eshnaur, Chas. J. Gabriel, Mrs. T. S. Oldroyd, D. Thaanum, Dr. R. H. Tremper, and Alex. Walker).

DARLING, JOSEPH R., Kew Gardens, Long Island, N. Y.: Three-wheeled, gasoline automobile, designed and built by Carl W. Kelsey in 1898 (69850).

DARRAH, Col. THOMAS W., U. S. Army, Washington, D. C.: A German military helmet of the period of the World War (69102).

DARTON, Dr. N. H., U. S. Geological Survey, Washington, D. C.: 4 specimens of minerals from Lower California (69753).

DAUGHERTY, JAMES H., New York City: 5 etchings (69796, loan).

DAVIDSON, Dr. A., Los Angeles, Calif.: 13 plants (68778, 68974, 69907, 69164, 70071, 70125); 3 plants from California (68672, 68723, 68791).

DAVIS, HARRY (See under North Carolina State Museum).

DAVIS, J. S., Battle Mountain, Nev.: Specimen of silicified wood from Nevada (70148).

DAY, L. G., Washington, D. C.: A boulder of quartzite simulating a human foot (69613).

DAY, Mrs. ROBERT G., New York City: Pair of earrings of the latter part of the 18th century (70177).

DAYTON, Miss MARY T., Chestnut Hill, Philadelphia, Pa.: A daylight projector, and a daguerreotype of a group of children (68951).

DE BEERS CONSOLIDATED MINES, LTD., Kimberley, Griqualand West, Union of South Africa (through Fred E. Wright): An example of bacteriologically precipitated calcite, from a shaft pipe in the De Beers diamond mine at Kimberley (69916).

DE FRANCE, Mrs. B. K., Washington, D. C.: Dulcimer of red cherry, made about 1800 by George Daugherty, Grider, Ky. (69891, loan).

DELFT TECHNISCHE HOOGESCHOOL, Instituut voor Mijnbouwkunde, Delft, Holland: 43 species of Paleozoic and Mesozoic fossils from the Island of Timor (69989, exchange).

DENISON, George P., Honolulu, Hawaii: Collection of rock boring mollusks from Pearl Island, Hawaii (70108).

DENSLOW, Rev. H. M., New York City: 5 orchids (69487, exchange).

DENSMORE, Miss Frances, Red Wing, Minn.: Tortilla baked by the Yaki Indians of Mexico (69562).

DENT, E. Z., Oakley, Md.: Great blue heron from Maryland (69484).

DETWILLER, Frederick K., New York City: 6 etchings by the donor showing the construction of wooden ships in the United States shipyard at Noank, Conn., during the War with Germany (70084); 4 aquatints (70197).

DEVEREUX, Mrs. J. Ryan, Chevy Chase, Md.: 2 Tanagra figurines (69170).

DEY, John T., Waterford, Pa.: Facsimile of the newspaper "The Daily Citizen" originally printed on wall paper in Vicksburg, Miss., July 2, 1863 (70176).

DICKEY, Donald R., Pasadena, Calif.: 2 skins and 2 skulls of gophers from the White Mountains, Calif. (69391).

DODDS, Clifford T., Berkeley, Calif.: 2 species of leeches, one adult with about 100 young, and 3 other specimens collected at Los Mochis, Sinaloa, Mexico, by the donor (69206).

DOLBEAR, C. E. (See under Industrial Research Company).

DOMINICA BOTANIC GARDENS, Dominica, British West Indies (through Joseph Jones, Curator): Plant (68908).

DOMINION MUSEUM, Wellington, New Zealand: 4 photographs of whale skulls (68706); (through Dr. J. Allan Thomson, Director): 3 specimens of mollusks from New Zealand (69019); 23 specimens of mollusks, topotypes, from the Tertiary Mount Brown beds, Waipara, New Zealand (70011).

DONNELLEY & SONS COMPANY, R. R., Chicago, Ill.: 11 specimens of printing, showing the work of The Lakeside Press (70081).

DORT, Mrs. J. Cummings, Washington, D. C.: 5 plants from Alaska (69668).

DRAKE PROCESS INCORPORATED, Cleveland, Ohio: 2 copper-plated wood-pulp spheres for steam floats (69677).

DRAKOULIS, Nicholas, Washington, D. C.: Postage stamps of Greece issued in 1912–14 (48 specimens) (68918).

DRAPER, Major W. P., Hopedale, Mass.: 19 skulls and scalps of African antelopes, skull and scalp of an African warthog, skull and scalp of a hyena, skull of a hunting dog, and an ear of an elephant (69229).

DRURY, William H., Newport, R. I. (through Will Simmons): Etching "The Skipper" (70031).

DUKES, Dr. W. C., Mobile, Ala.: Moth, paratype (69781).

DU PONT DE NEMOURS & CO., INC., E. I., Wilmington, Del.: Series of 283 specimens illustrating the manufacture and applications of the pyroxylin plastic "Pyralin" prepared in the Pyralin Department at Arlington, N. J.: also 12 specimens showing steps in the manufacture of Fabrikoid, or leather substitute, from the plant at Newburgh, N. Y. (69884); 31 samples of bookbinding qualities of Fabrikoid (69931).

DUVAL, HUGH H., Bastrop, Tex.: 4 specimens, representing 3 species, of fossil shells, from Bastrop County, Tex. (69536).

DYER, FRANCIS J., American Consul, Nogales, Mexico: Fungus from Mexico (68756).

EAGLE ENGINEERING COMPANY, Springfield, Ohio: An Eagle composing stick and a Star composing stick (69738).

EAMES, B. E. (through Mrs. Florence S. Bellows, Corning, N. Y.): Luna moth (70237).

EARLE, CHARLES T., Palma Sola, Fla.: Fish "Bagre Sapo" from Palma Sola (69495).

EAST, CHARLES S., U. S. National Museum: Garter snake from Anacostia, D. C. (70209).

EASTMAN KODAK COMPANY, Rochester, N. Y.: A series of 9 specimens to illustrate the manufacture of cellulose acetate and its use in making motion picture films (69699).

EBERLY, AUGUST FREDERICK, Washington, D. C.: War club from the Fiji Islands (70096).

ECONOMIC LABORATORIES, INC., THE, Philadelphia, Pa.: 20 specimens of gums and resins (70219).

EDMONDSON, Dr. C. H. (See under Bernice Pauahi Bishop Museum).

EICHLER, A., Philadelphia, Pa.: Fragment of a tusk of an extinct elephant (69718).

EICKEMEYER, RUDOLF, Yonkers, N. Y.: 5 framed pictorial photographs (68540).

EMERSON, ALFRED, Pittsburgh, Pa.: 66 species of termites including 40 paratypes (68599).

EMERY, D. L., St. Petersburg, Fla.: 3 specimens of mollusks from Florida (69464); 60 specimens, 7 species, of shells from west Florida, and 1 from San Diego, Calif. (69897).

ENGBERG, Dr. C. C., Lincoln, Neb.: 80 specimens, 11 species of mollusks; and about 40 additional specimens of mollusks, all from the State of Washington (69091, exchange; 69181).

ENGEL, Dr. E. O., Munich, Bavaria: 59 specimens of flies, including 43 species, 17 of which are new to the Museum collections (69949, exchange).

(See also under Zoologische Sammlung des Bayerischen-Staates.)

ERSKINE, RALPH M., Jefferson, Me. (through A. Q. Carter): Northern pileated woodpecker from Maine (69759).

ERWIN, RICHARD P., Boise, Idaho: Batrachians and reptiles collected in Idaho (68923).

ESHNAUR, Mrs. W. H., Bellflower, Calif. (through Dr. W. H. Dall): About 30 specimens, 7 species, of rare marine shells from Terminal Island, San Pedro, Calif. (69888, exchange).

ESSEX INSTITUTE, THE, Salem, Mass.: United States Flag of the latter part of the 19th century (69283, deposit).

ESSIG, Prof. E. O. (See under California, University of).

EVANS, VICTOR J., Washington, D. C.: Hindu temple vessel of bronze (68704); red-neck paroquet from Australia (68807); Indian skull from Marajo Island, Amazon, Brazil (69252).

EVENING STAR NEWSPAPER COMPANY, THE, Washington, D. C.: 4 stereotype casts from matrices owned by the Museum (68817); 25 copies of Evening Star of October 11, 1922; type form of Evening Star of October 11, 1922; 3 stereotype matrices of the same; a curved stereotype plate, and 12 photographs of this "form" going through newspaper plant (69015); a piece of newspaper copy, proof of the same set in type, and a galley of type matter (69231).

FABER, CHARLES L., Cincinnati, Ohio: 22 specimens of rare bryozoans and brachiopods from southwestern Ohio (69646).

FABER, Dr. GEORGE A., Waterbury, Conn. (through Dr. John Uri Lloyd, Cincinnati, Ohio): 47 bound books treating of eclectic medicine (69392).

FAIR, HENRY, Spokane, Wash.: Boulangerite and other minerals from the Cleveland Mine, Stevens County, Wash. (68830).

FAIRCHILD AERIAL CAMERA CORPORATION, THE, New York City: Fairchild K–3 aerial camera, and an aerial view of the lower part of New York City (69088); photograph showing the K–3 camera placed in aeroplane (70133).

FAIRCHILD, Dr. DAVID, Washington, D. C.: Termites from the Moluccas (68598).

FAIRCHILD, GRAHAM, Washington, D. C.: 3 butterflies from the Orient, new to the Museum collections (68567); 2 butterflies from Trinidad, new to the Museum collections (70135); butterfly (70234).

FAIRMAN, CHARLES E., Washington, D. C.: gum print (68769).

FAR NORTH HOME SOCIETY, FINLAND (through The Consulate General of Finland, New York City): Bronze medal commemorating, 1921, the Three Hundredth Anniversary of the Founding of the City of Tornio, Finland, 1621 (68662).

FAZ, ALFREDO, Santiago, Chile: Collection of South American flies, 36 specimens, representing several species new to the Museum collections (69103).

FELIPPONE, Dr. FLORENTINO, Montevideo, Uruguay: Mollusk, insects, fishes, reptiles, marine invertebrates and a starfish from Uruguay (69009); fishes, insects, reptiles and batrachians, marine invertebrates, and mollusks (69414); 46 specimens, 26 species, of mollusks from South America; also 1 echinoderm and 3 invertebrates (69768); 6 moths from South America (70190).

FERGUSON, C. B., Atlantic City, N. J.: Minerals representing 10 varieties from Alaska (79529).

FERGUSON, Mrs. HENRY G., Washington, D. C.: Ethnological material from Bolivia and France, and ethnological and archeological specimens from Egypt (69594, loan).

FERRIS, Mrs. ROXANA S. (See under Stanford University).

FERRISS, JAMES H., Joliet, Ill.: 17 plants (69006, 69016, 69041, 69105); 43 plants from the southwestern United States (69254, 69349, 69435, 69612); plant and a colored photograph of a plant (69446).

FIELD MUSEUM OF NATURAL HISTORY, Chicago, Ill.: 313 plants from Cuba (68595); (through Dr. C. F. Millspaugh) Plant and 4 photographs (68703); 61 plants (Compositae) from Peru; 29 specimens of plants (Compositae and Polygalaceae) from Peru (69686, 69772): 10 specimens and 4 photographs of South American plants (69625); 164 plants from Peru and California (69662); 93 plants collected in Peru by Mr. McBride (69714, 69876); 416 plants from Peru (69724, 69813, 69832, 69927); 22 photographs of plants (69895); 227 plants (69983, 69970, 70010). Exchange.

FINLAND, CONSULATE GENERAL OF (See under Far North Home Society, Finland).

FISH, CHARLES J. (See under Commerce, Department of, Bureau of Fisheries).

FISHER, GEORGE L., Houston, Tex.: 395 plants (68661, 69003, 69054).

FISHER, Dr. W. K., Pacific Grove, Calif.: Piece of sponge containing commensal amphipods of the family Dexaminidae, and 30 amphipods from California (68644); starfish (type) (69395).

FISHER, W. S. (See under Prof. H. F. Wickham).

FLORIDA STATE MUSEUM, Gainesville, Fla. (through T. Van Hyning): 20 skins and skulls of bats (69533).

FLORIDA, UNIVERSITY OF, Agricultural Experiment Station (through W. E. Stokes): Plant (68982).

FOERSTE, Dr. AUGUST F., Dayton, Ohio: Casts of 60 types of Paleozoic cephalopods (68699); 200 specimens of Tertiary bryozoans from Bainbridge, Ga., and 500 specimens of

FOERSTE, Dr. AUGUST F.—Continued. Silurian fossils from southwestern Ohio; also about 100 specimens, 13 species, of Pleistocene mollusks, from Silver Lake, Ohio, west of Medway, half way between Dayton and Springfield (68949).

FORBES, Dr. W. T. M., Cornell University, Ithaca, N. Y.: 10 South American moths (69335).

FORD, EDWARD A., Shiloh, Ohio: Collection comprising 38 species of marine shells, 6 specimens, 1 species, of whale barnacle, and 10 specimens, 1 species, of echinoderm, from Cape Lopez Bay, French Equatorial Africa (69928).

FORD MOTOR COMPANY, Dearborn, Mich.: Ford magneto coil testing machine (70132).

FOREST RESEARCH INSTITUTE AND COLLEGE, THE, Dehra Dun, U. P., India (through R. N. Parker): 319 Indian plants; (through R. S. Hole) 243 plants from northwestern India (70016, 68960). Exchange.

FORREST, W. R., St. John, Antigua, B. W. I.: 17 specimens of fossil echini and 6 specimens of corals; echinoids, corals and other fossils; 14 lots of invertebrate fossils; 9 lots of fossil invertebrates, all from Antigua, B. W. I. (68668; 69610; 69841; 69920).

FORSELL, M. J., Everett, Wash.: 4 specimens of a moth, the first record of its occurrence in America (69240).

FOSHAG, W. F., U. S. National Museum: 100 specimens of Pleistocene bryozoans from California (68781).

FOUTS, ROBERT M., Washington, D. C.: 1685 specimens of undetermined miscellaneous Hymenoptera (69569).

FOX, Mrs. M. M. TAYLOR, Linden, Md.: 6 etchings (69798, loan).

FOY, JAMES BEAUFORD, Reidel, Mont.: Vertebrae of a plesiosaurian reptile (69439).

FRANK, P. M., U. S. National Museum: Specimen of copper-silver ore from the Lake Superior region (69257).

FRANKE, Dr. F., Dortmund, Germany: About 500 specimens of Cretaceous bryozoans from Germany (69728, exchange).

FRASER, Dr. C. MCLEAN (See under Canadian Government, Biological Board of Canada).

FRENCH WOOD HEEL COMPANY, INC., Brooklyn, N. Y.: 10 specimens showing the manufacture of wood heels (70146).

FRIES, E. F. B. (See under Treasury Department, U. S. Coast Guard, Cambridge, Mass.).

FRISON, Theodore H., Urbana, Ill.: Paratypes of 2 species of bumble bees (68872).

FROST, S. W., Arendtsville, Pa.: 5 glow-worms representing 3 species (69664).

FUKAI, T., Shitaya, Tokyo, Japan: 2 scale insects (69445).

FULLER, HENRY C., Washington, D. C.: A small bundle of pegwood sticks from France used for jewelry polishing (69844).

GABRIEL, CHAS. J., Abbotsford, Victoria, Australia (through Dr. W. H. Dall): 15 specimens, 8 species, of Eocene and Miocene shells, and 29 specimens, 13 species, of recent shells from Australia (69889).

GAERSTE, Dr. THOMAS, Curaçao, Dutch West Indies: Katydid (69671).

GAHAN, C. J. (See under British Government, British Museum (Natural History)).

GALE, HOYT S., New York City (through Dr. T. Wayland Vaughan): 29 lots of fossils from Colombia (69880).

GALLAGHER, JOHN ADAMS, Washington, D. C.: Silver print, Fox Talbot process (69380).

GANE BROTHERS AND COMPANY, New York City: 23 samples of bookbinders leather and cloth (69451).

GARBER, PAUL EDWARD, U. S. National Museum: Airplane wing rib (69525).

GARCIA Y MERCET, Prof. RICARDO, Hipódromo, Madrid, Spain: 16 specimens, representing 14 species, of chalcid flies of the family Encyrtidae, 12 of the species being represented by cotypes (68766); 19 specimens of chalcid flies, representing 17 species, 6 of which are represented by type material (69334). Exchange.

GARDENER, Mrs. H. H. (See under National American Woman's Suffrage Association).

GARNER, HARRY, Washington, D. C.: Lot of heterogeneous lantern slides of prehistoric man, etc. (69226).

GARNER, WALTER, Chase City, Va.: Bat from Virginia (69951).

GARRETT, Prof. A. O., Salt Lake City, Utah: Plant from Montana (68548).

GAUMER, Dr. GEORGE, Izamal, Yucatan, Mexico: 4 specimens of cacti (68552); 2 specimens of cacti from Yucatan (68681).

GEARHART, Miss FRANCES H., Pasadena, Calif. (through Howell C. Brown): 4 wood block prints (70155).

GEARHART, Miss MAY, Pasadena, Calif. (through Howell C. Brown): 3 soft ground etchings (70154).

GENERAL BAKELITE COMPANY, Perth Amboy, N. J.: A series of raw, intermediate, and finished products, showing the manufacture of Bakelite (69471).

GERSDORFF, W. A., Washington, D. C.: Myriapod from Oklahoma (69488).

GIBSON, J. J., Monticello, Ky.: Pharyngeal bone of a drumfish (69316).

GIBSON, Mrs. PERSIFOR FRAZER, Paris, France: Iron spearhead from India 68705).

GIESLER, RUDOLPH G., Beeville, Tex.: Tarantula (69678).

GILL, DE LANCEY, Bureau of American Ethnology, Washington, D. C.: Old cutter for stereoscopic prints (69038).

GILL, GEORGE C., Quincy, Ill.: Knife found by a Union soldier on the battlefield of Perryville, Ky. (68826).

GILLETTE, Mrs. E. F. (through Mrs. Bertha E. Jaques): An etching in color, and 22 woodcuts printed in color, all of them the work of Helen Hyde (1868–1919) (69905).

GISLEN, Dr. TORSTEN (See under Upsala Universitetets Zoologiska Institution).

GLASCOCK, ALFRED E., Washington, D. C.: Specimen of herring gull in the plumage of the first year (69304).

GLOVER, Dr. NORMAN C. (See under Mrs. George A. Still).

GODING, Dr. F. W., American Consul General, Guayaquil, Ecuador: Toad, crustacean and a scorpion from Ecuador (70170).

GOLDSMITH, J. S., U. S. National Museum: Hicrometer—a tint meter used in the Hess-Ives color process (69590).

GOLDTHWAITE, Miss ANNE, New York City (through Will Simmons): Etching "Head" (70026).

GONGGRYP, J. W., The Hague, Holland: 18 lots of shipworms from South America and the West Indies (70116).

GOODYEAR, DAVID C., New York City: 51 photographs of locomotives (68742, 69311, 69475, 69552). Exchange.

GOSS PRINTING PRESS COMPANY, THE, Chicago, Ill.: 5 photographs of Goss newspaper printing presses, and 4 half tones of Goss presses on 1 sheet (69130).

GOUGH, Miss LULA C., Stephenville, Tex.: 30 plants (68847, 69399).

GOVERNMENT PRINTING OFFICE, Washington, D. C.: 2 photographs showing tubs and materials used in making marbled paper, and 28 sheets of marbled paper showing the various stages (68937); brass stamping die; 2 impressions from brass dies; line of brass type; 1 impression from type, and 2 impressions from brass stamps (70142).

GRAHAM, Rev. DAVID C., Suifu, Szechuen, China: 305 insects, 17 fossils, an eel and 4 mollusks (68648); 3500 insects, collection of amphibians and reptiles, 3 mammal skins with skulls and 1 mammal skin without a skull, 1 mollusk, 1 crab, from China (69165); 500 butterflies and moths (69343); reptiles, mammals, insects, mollusks, earthworms, shrimps, and an isopod from China (69347); 3 shrews from Suifu (69985); a small collection of miscellaneous insects (69998).

(See also under Dr. Carrie Slaght.)

GRANT, J. M., Langley, Wash.: 21 plants from Washington (69779); (through Dept. of Agriculture, Bureau of Plant Industry, Washington, D. C.): 48 cryptogams from Washington (69518, exchange).

GREELEY, F. A. (See under Dr. O. C. Thompson, Phoenix, Ariz.).

GREEN, BERRYMAN, South Boston, Va.: Waterworn boulder illustrating exfoliation (69312).

GREENE, FRANK C., Tulsa, Okla.: 2 plants from Oklahoma (68539).

GREENE, GEORGE M., Philadelphia, Pa.: 4 beetles (68643).

GREER, Miss BLANCHE, Overbrook, Philadelphia, Pa.: Etching (69799, loan).

GREER & Co., R. T., Marion, Va.: 4 specimens of mandrake root (69381).

GREGER, D. K., St. Louis, Mo.: 2 slabs of Coal Measures crustacea (69234).

GRIEVE, W. HESTON, Prospect, Oreg.: 6 crane-flies and 2 moths (68871).

GRIMES, Mrs. MARGARET McA., Washington, D. C.: Uniform coat and trousers owned during the early part of the 20th century by Brig. Gen. George S. Grimes, U. S. Army (69769).

GRISCOM, LUDLOW F., New York City: 228 plants from Newfoundland (69547, 69622). Exchange.

GROUT, Dr. A. J., New Dorp, Staten Island, N. Y.: 13 mosses (68618, exchange).

GUATEMALA, GOVERNMENT OF:

Direccion General de Agricultura (through Sr. Don Jorge Garcia Salas, Director): 749 plants from Central America (68836, 69012, 69088, 69219, 69328, 69534, 69705, 69842, 70058); 386 plants (68783, 68955, 69978).

Facultad de Ciencias Naturales y Farmacia: 67 bird skins from Guatemala (68698, 68936). Exchange.

GULICK, Lieut. Col. JOHN W., U. S. Army, Washington, D. C.: Prehistoric pottery and wood objects from northern Chile (70052).

HALE, Miss ELLEN DAY, Lanesville P. O., Gloucester, Mass.: 9 etchings (69805, loan).

HALFER COMPANY, THE, Middleton, Mass.: 5 sample bottles of colors used by marblers, "comb," and sample of carageen moss also used in the process of marbling (69280).

HALL, Mrs. CARLOTTA C., Berkeley, Calif.: 9 specimens of fern allies from California (69883).

HALL, P. E., jr., Everett, Wash.: Adz blade of nephrite, probably originally from Alaska (69982).

HALLOCK, Mrs. LENDAL V., Washington, D. C.: A pinhole camera lens, and an old style camera shutter—obsolete (69765).

HAMILTON, C. C., College Park, Md.: 7 vials of coleopterous larvae (68565).

HAMILTON WATCH COMPANY, Lancaster, Pa.: Working model of Hamilton 23-jewelled watch, enlarged six times (68873, loan).

HAMLIN, JOHN C., Uvalde, Tex.: Parasitic plant (68710); 3 specimens of cacti (69040).

HAMMOND, CHARLES, El Paso, Tex.: Plant (69987).

HAMPTON NORMAL & AGRICULTURAL INSTITUTE, Hampton, Va.: Mollusk from the West Indies (69638).

HANDFORTH, THOMAS S., Tacoma, Wash. (through Mrs. T. J. Handforth): 13 etchings (69808, loan).

HANNIBAL, HAROLD, Stanford University, Calif.: 13 specimens of mollusks from California (69644).

HANSEN, P. L., Salt Lake City, Utah: 2 specimens of compact and somewhat decomposed volcanic dust (68963).

HANSON, Prof. HERBERT C. (See under Arizona, University of).

HARBECK, H. S., Philadelphia, Pa.: 15 specimens of unidentified sawflies (69586).

HARDELL, Miss L. B.: Collection of miscellaneous, unsorted mollusks from Mount Lavinia, near Colombo, Ceylon (69373).

HARDING, President WARREN G., The White House, Washington, D. C. (see under Mrs. Mary J. D. Roland).

HARDISON, B. F., Grantsboro, N. C.: Rostrum of a beaked whale, from Bogue Banks, N. C. (69498).

HARDISTY, A. H., U. S. National Museum: 7 eggs of the Virginia rail from the District of Columbia (68574).

HARNED, R. W., Agricultural College, Miss.: Lizard (69294).

HARPER, R. M., University, Ala.: 42 plants from Arkansas and Oklahoma (69955, 70098).

HARRIS, G. CARR, Gem, Alberta, Canada: Plant (68810).

HART, GEORGE O., Coytesville, N. J. (through Will Simmons): Etching entitled "Native Baptism, Trinidad" (70158).

HARTING, G. W. (See under Pictorial Photographers of America).

HARVARD UNIVERSITY, Cambridge, Mass.:

Arnold Arboretum: (Jamaica Plain) (through Prof. C. S. Sargent): 436 North American plants (69563, exchange).

Gray Herbarium: (through Dr. B. L. Robinson): Plant (fern) from Minnesota, and plant from Jamaica (68958, 69368). Exchange.

Museum of Comparative Zoology: (through Dr. W. E. Clapp) A piece of wood containing shipworms from Port Bolivar, Tex. (68822); (through Dr. Thomas Barbour) 2 frogs from China (69583, exchange); 11 skins and skulls of mammals (69954, exchange).

HARVARD UNIVERSITY, Cambridge, Mass.—Continued.

Museum of Comparative Zoology—Continued.

HAVANA, UNIVERSITY OF, Havana, Cuba (through Prof. A. Mestre, New York City): 4 negro skulls from Cuba (68588, exchange).

HAWAIIAN SUGAR PLANTERS' ASSOCIATION EXPERIMENT STATION, Honolulu, Hawaii (through Harold L. Lyon): 8 plants from Hawaii (69640).

HAWKINS, P. H., Absarokee, Mont.: About 2,000 plants from the Yellowstone National Park (69921).

HAY, Dr. O. P. (See under F. M. Burks).

HAYNES AUTOMOBILE COMPANY, THE, Kokomo, Ind.: Framed photograph of 1922 Haynes automobile (69214).

HAYNES, Miss CAROLINE C., Ojai, Calif.: 7 plants from California (69730, 69823).

HEIGHWAY, A. E., El Paso, Tex.: Mineral specimens from New Mexico, including banded serpentine, fluospar, manganese, and talc (68900).

HEIKES, VICTOR C., Salt Lake City, Utah: Specimen of shale showing films of gold from the Flying Dutchman Mine near Bouse, Ariz. (69027): 3 small specimens of shale showing films of gold from the Flying Dutchman Mine, furnished by Robert T. Walker (70115); a group of fluorite crystals from the Wildcat Mountains, Tooele County, Utah (70196).

(See also under C. H. Rowley, and Tintic Standard Mining Co.).

HEIL, CHARLES E., New York City (through Will Simmons): Etching "Young Blue-Jay" (70030).

HEISER, Dr. VICTOR G. (See under International Health Board).

HELLER, A. A., Chico, Calif.: 22 plants from California (69532).

HEMPEL, Mrs. H. A., Buffalo, N. Y.: 4 pairs of improved Hempel quoins (69729).

HENDERSON, JOHN B., Washington, D. C.: The General Evezard collection of mollusks estimated at about 13,500 specimens, including a large number of types (69023).

HENDERSON, Judge JUNIUS, Boulder, Col. (through Dr. T. W. Stanton): 2 brachiopods from the Cretaceous of Colorado, and 31 specimens of Cretaceous invertebrate fossils from Colorado (69100, 69915).

HERING, Prof. Dr. MARTIN, Berlin, Germany: 63 specimens of leaf-mining insects (69981).

HERRERA, Dr. A. L., Mexico, Mexico: 26 specimens, 2 species, of slugs from Mexico City and Desierto de los Leones, Mexico (69504); 6 photographs of a whale skull from Campeche (69924); specimen of Brazilwood (69963, exchange).

HERRERA, Prof. FORTUNATO L., Cuzco, Peru: 24 plants from Peru (68606, 68619, 69255); 56 plants (68752, 69066, 69209, 69329, 69453); 2 photographs of plants (70000).

HESS, F. L. (See under Dr. Olaf Andersen, and China Commercial Co. Ltd.).

HEWETT, Mrs. D. FOSTER, Washington, D. C.: Plant from Nevada (69159).

HIBBARD, RAYMOND R., Buffalo, N. Y.: 350 specimens of Devonian fossils from New York (69092, exchange).

HIGGINS, EUGENE, New York City (through Mr. Will Simmons): Etching "The Marauders" (70032).

HIGGINS, MORTIMER L. J., Washington, D. C.: Skin of white-sided guitguit and of crimson-throated woodstar (68622); 30 butterflies, new to the Museum collections (68633); tropical beetle, representing a genus and species new to the Museum collections (68691); collection of insects from Panama, comprising 60 specimens, including at least 2 species new to the Museum collections (68746); 35 beetles (68925); a tropical butterfly, new to the Museum collections, and 10 moths from Kansas (69174); 4 butterflies, 40 beetles, 55 grasshoppers (69220); 4 butterflies and 2 moths from Australia (69542); 30 beetles representing about 10 species from Dunkeld, Victoria, Australia, collected by H. S. J. Bedley (69575).

HILL, Major GEORGE PLACE, Washington, D. C.: Wood carving from West Africa (69886).

HILL, Dr. GERALD F. (See under Australian Institute of Tropical Medicine).

HILTON, Mrs. C. H., Washington, D. C.: Attu basket made by the last basket weaver, who was about 100 years old (68977).

HILTON, Dr. SAMUEL L., Washington, D. C.: 50 historical books, pamphlets, and illustrations relating to the history of pharmacy in the United States, and the history of the U. S. Medical standards, the U. S. Pharmacopœia and the National Formulary (69172).

HIORAM, Brother (See under Colegio del Sagrado Corazón).

HITCHCOCK, Dr. A. S. (See under Agriculture, Department of, Bureau of Plant Industry; J. T. Bucholz, and Miss Janet R. Perkins).

HOES, Mrs. R. G. (See under Mrs. Carl Vrooman).

HOFF, Mrs. JOHN VAN RENSSELAER, Washington, D. C.: A silver salver and an illuminated testimonial letter presented to the late Col. John Van Rensselaer Hoff by military surgeons of the United States (69075); "The Colonel John Van Rensselaer Hoff Collection" Imperial Chinese harvest bell, 1668–1722, from the Temple of Earth, Pekin (69095).

HOFFMAN, WILLIAM A. (See under New York, University of the State of).

HOKKAIDO IMPERIAL UNIVERSITY, Sapporo, Japan (through Dr. Madoka Sasaki): 3 anomuran crabs from northern Japan (69425).

HOLBURGH, EDWARD A., Buenos Aires, Argentina (through D. S. Bullock): Native cord fish net made by the Mataco Indians, Pilcomayo River, Territory of Formosa (69168).

HOLE, R. S. (See under Forest Research Institute and College).

HOLLAND, Dr. W. J. (See under Carnegie Museum).

HOLM, Mrs. FRITS, New York City: Bronze medal commemorating the Frits Holm Nestorian Expedition to Sian-Fu, 1907–08 (69434).

HOLMES, Dr. W. H., National Gallery of Art, Washington, D. C.: Archeological specimens collected some years ago by the donor at old quarry sites on Piney Branch and Calvert Street extended (68926); oil painting of Chief Flat Iron, Sioux Indian, by J. H. Sharp (70124).

HOLWAY, Prof. E. W. D., Minneapolis, Minn.: 476 plants, chiefly from Brazil (69021, 69232).

HOOLE MACHINE & ENGRAVING WORKS INC., Brooklyn, N. Y.: Bookbinders tools, comprising a gilding roll, a fillet roll, and a hand pallet, 2 pieces of brass rule bearing same design as hand pallet and gilding roll (69589).

HORGAN, STEPHEN H., Orange, N. J.: 4 woodburytypes, 3 of them untrimmed (70009).

HORTON, Mrs. OZEY E., Balsam, N. C.: Hairworm (68730).

HOUGH, Dr. WALTER, U. S. National Museum: Specimens of gurana paste and figures of animals modeled therefrom by natives of the Amazon region, collected in Rio de Janeiro, August, 1922 (69372); molar tooth of an elephant sectioned to show dentine (70066).

HOUSE, Dr. H. D. (See under New York State Museum).

HOUSHOLDER, VIC H., Phoenix, Ariz.: Snake from Arizona (69618).

HOWARD, Prof. C. W. (See under Canton Christian College).

HOWARD, Dr. H. H., Laurel, Miss.: 2 fishes, male and female of the top minnow, collected at Vera Cruz, Mexico (70191).

HOWARD, Dr. L. O. (See under Agriculture, Department of, States Relations Service).

HOWELL, Miss PHOEBE, Washington, D. C.: 4 mammals and 4 birds from Michigan (69672).

HOY, CHARLES M., U. S. National Museum: Field mouse and 4 salamanders (68682); skin and skull of a field mouse, and the skin and skull of a cotton rat from South Carolina (69195); skin and skull of a bat from Lancaster, Pa. (69301).

HRDLICKA, Dr. ALEŠ, U. S. National Museum: Cast of the skull of La Quina and a cast of the intracranial cavity of the same skull (69205); casts of 2 skulls and parts of 2 skeletons of early man (69577).

HUCKEL, EARLE W., Germantown, Philadelphia, Pa.: 52 miscellaneous prints, booklets, etc., and 10 miscellaneous books (68834, loan).

HUGHES, Mrs. ANNA CHADBOURNE (See under Smithsonian Institution).

HUGHES, Hon. CHARLES E., Secretary of State: 4 mounted birds from Guatemala (70088).

HUGHES, Lieut. J. B., U. S. Army, Corozal, Canal Zone: Celts and blades found in the vicinity of Corozal (70178).

HUMBLE OIL AND REFINING COMPANY, Houston, Tex.: Part of a mastodon tusk from Duval County, Tex. (69293); 6 samples of Jackson clays from Trinity and San Augustine Counties, Tex. (69524, exchange).

HUNT, HECTOR D. R., Kampala, Uganda, East Africa (through Dr. Matilda Hunt, Washington, D. C.): Silk cocoons (69665).

HUNT, Miss JULIA BARTON (See under Congress of the United States).

HUNTER, DARD, Chillicothe, Ohio: Unfolded sheet (16 pages) of a religious work in German, published before the American Revolution by Miller of Ephrata, Pa. (68601); a sheet of paper showing "smoke impressions" (70099).

HYLAND, JACK, Pazna, Bolivia: Crystal of cassiterite from La Paz, Bolivia (69720).

HYMAN, Dr. O. W., Memphis, Tenn.: 37 specimens and numerous larvæ of Pinnotherid crabs (69961).

HYSLOP, J. A., Washington, D. C.: 1800 beetles, mostly exotic (Elateridae) from the Gorham collection (69966).

ICKIS, LYNN S., jr., Denver, Col.: Grasshopper (68663).

ILLINGWORTH, Dr. J. F., Honolulu, Hawaii: 20 roaches and 5 tropical flies (68581, 69153).

INDIA, ZOOLOGICAL SURVEY OF, Indian Museum, Calcutta, India: 22 specimens, 22 species, of Indian landshells (70193, exchange).

INDUSTRIAL RESEARCH COMPANY, San Francisco, Calif. (through C. E. Dolbear, President): Crystals of thenardite from Deep Spring Valley, Inyo County, Calif. (69147).

INGRAHAM COMPANY, E., Bristol, Conn.: Wood-working machine made in 1868 and used from that date until 1923 (70213).

INLAND PRINTER, THE, Chicago, Ill.: 9 portraits of early master printers; 12 sheets reproductions of book pages printed by William Morris (68747, 69776).

INSTITUTE OF AMERICAN MEAT PACKERS, Chicago, Ill.: 44 specimens of by-products from the meat packing industry (70215).

INSTITUTO DE LA SALLE, Bogota, Colombia (through Bro. Ariste Joseph, and Dr. J. B. Reeside, jr., Washington, D. C.): 33 specimens of Tertiary and Cretaceous invertebrates, a mastodon tooth, and a fragment of a terracotta head (human), all from Colombia (69032).

INSTITUTO DE LA SALLE, Correo Nuñoa, Chile (through Rev. Bro. Claude Joseph): 296 plants from Chile (68635); 95 specimens of miscellaneous insects, including Hymenoptera, Diptera, Hemiptera, Orthoptera, and Coleoptera (69460).

INSTITUTUM GEOLOGICUM UNIVERSITATIS, Tartu, Esthonia (through Dr. H. Bekker): 21 specimens, representing 14 species, of Ordovician trilobites and other fossils from Esthonia (69477, exchange).

INTERIOR DEPARTMENT:

U. S. Geological Survey: Collection of fossil plants from the Animas formation (Eocene) of Colorado, including types to be described by F. H. Knowlton in a Professional Paper of the U. S. Geological Survey (68692); collections of fossil plants from the Laramie formation of the Denver Basin, Colo., including types and figured specimens described by F. H. Knowlton in Professional Paper 130 (69515); figured specimen of a fossil worm tube (68755); crystal shells or crusts from the surface of Searles Lake, Calif., and the type material of the mineral tungstenite (68792); fragmentary remains of Miocene mammals collected by H. G. Ferguson in the Tonopah quadrangle, Nev. (68818); sample of platinum ore from platinum mine in Parahyba do Norte, Brazil (68969); rock specimens collected by R. W. Stone (68999); specimens studied by G. F. Loughlin in preparation of Professional Paper No. 111 (69059); types and figured specimens of Cretaceous fossils described by

INTERIOR DEPARTMENT—Contd.

U. S. Geological Survey—Contd.

J. B. Reeside, jr., in Professional Paper 131–H (69106); 25 specimens of Cretaceous invertebrates from the Colorado group of Bighorn County, Mont., including the types and figured specimens described by J. B. Reeside, jr., in Professional Paper 132–C (69277); 33 specimens of minerals from Mexico (69107); a small collection of tungsten ores representing a paper by R. S. Fitch and F. F. Loughlin, published in Economic Geology, volume 11, no. 1, January, 1916 (69131); miscellaneous specimens of sandstone, rhyolite, etc., collected principally from Colorado by Dean E. Winchester (69157); vertebrate fossils from the Esmeralda formation, Tonopah quadrangle, Nevada (69211); fragmentary bones of a plesiosaur from Alaska Peninsula, collected by W. R. Smith, and 3 lots of reptilian fossils collected by Frank Reeves in central Montana (69256); fragments of an upper molar tooth of a large fossil camel collected by Kirk Bryan at the base of a tuff near Hawthorne, Nevada (69276); 14 specimens of rocks described in Geologic Folio, Castle Rock, Colo., by G. B. Richardson (69576); manganese and iron minerals collected by H. D. Miser in western Virginia, and described in Bulletin 23 of the Virginia Geological Survey (69904); vertebrate fossils and other fish remains collected by Arthur M. Piper in Owyhee County, Idaho (69910).

(See also under William C. Behumin.)

National Park Service, Yellowstone National Park, Yellowstone Park, Wyo. (through M. P. Skinner): Skulls of 3 mountain sheep from Yellowstone National Park, and skull of a mountain sheep from Glacier Park, Mont. (69344).

INTERIOR DEPARTMENT—Contd.

National Park Service—Contd.

INTERNATIONAL HEALTH BOARD, New York City (through Dr. F. F. Russell): Fish from Peru (68944); 9 specimens of Poeciloid fishes and a goby, collected for the International Health Board in Guatemala, and forwarded through Dr. Victor G. Heiser (69237); 6 fishes collected in Mexico (69555).

IOWA, STATE UNIVERSITY OF, Iowa City, Iowa (through Dr. C. C. Nutting): 5 specimens of crabs collected in 1893 by the Bahama Expedition of the State University of Iowa (69400); a coral from off the coast of Barbados (70013, exchange).

IRWIN, A. W., Griffithville, Ark.: Milksnake (69295).

JACKSON, RALPH W., Cambridge, Md.: 2 skins, with skulls, of white-footed mice from Cambridge, Md., 24 specimens, 6 species, of marine mollusks from the State of Washington and Penang, Straits Settlements (69543); 34 specimens, 12 species, of fresh water and marine mollusks from the United States and India (70203).

JAEGER, EDMUND C., Riverside, Calif.: 80 plants from California (69624).

JAHN, Dr. ALFREDO, Caracas, Venezuela (through H. Pittier): 234 plants from Venezuela (68669, 69648).

JAMES, Mrs. JULIAN, Washington, D. C. (through Messrs. J. Herbert Carpenter and William Allen Butler, Executors): a collection of historical and ethnological materials (70138, bequest).

JAMES, Estate of Mrs. JULIAN (through Messrs. J. Herbert Carpenter and William Allen Butler, Executors): Gold membership badge of the National Society of the Colonial Dames of America owned by Mrs. James (69957).

JAPAN PAPER COMPANY, New York City (through George A. Nelson, Treasurer): Portfolio of prints on hand made paper, 41 specimens (69692).

JAPAN, IMPERIAL PLANT QUARANTINE STATION, Yokohama (through Prof. S. I. Kuwana): 3 flies from Japan (70089).

JAPAN, ZOOLOGICAL INSTITUTE, Science College, Imperial University, Tokyo, (through T. Kaburaki): 50 plus specimens of lower chordates from Japan (69026).

JAQUES, Mrs. BERTHA E., Chicago, Ill.: 80 etchings, 16 of them of flowers printed in color (69635, loan); 5 etchings by the donor, 3 in black and white and 2 in color; the original etched copper plate and a print in color of the work "The Bamboo Gate" by Helen Hyde (1868–1919); 2 half tones in color of Helen Hyde's water color "The Mexican Madonna", and a sheet of paper from Rittenhouse Mill, Philadelphia, about 1710 (69819).

(See also under Mrs. E. F. Gillette).

JENKINS, C. FRANCIS, Washington, D. C.: A display card and 2 booklets relating to the transmission of pictures by radio (69615, loan).

JIMÉNEZ, Dr. DON. OTÓN, San José, Costa Rica: 2 plants (69642).

JOB, CHARLES, Richmond, Surrey, England: 6 bromide prints of pictorial subjects (69050).

JOHANNSEN, Prof. O. A., Ithaca, N. Y.: 5 tropical flies, types of 3 species (68676, exchange).

JOHANSEN, FRITS, Ottawa, Canada: Freshwater isopod and one vial of copepods from Vancouver Island, British Columbia (68665); 16 specimens of amphipods collected in the Gaspe Peninsula, Prince Edward Island, Newfoundland, and Canada, by the donor during the autumn of 1922 (69062); (through Agriculture, U. S. Department of): freshwater copepods, comprising about 100 specimens, from Newfoundland, collected by the donor (69906); 3 fishes from the west coast of Newfoundland, collected by the donor (69968).

(See also under Canadian Government, Victorial Memorial Museum.)

JOHANSEN, HOLGER, Balboa Heights, Canal Zone (through Prof. C. V. Piper): 6 plants (70047).

JOHNSON, Dr. PAUL B., Washington, D. C.: Human sacrum (68592).

JOHNSTON, E. C., Washington, D. C.: 3 plants from St. Paul Island, Alaska (69731).

JOHNSTON, IVAN M., Manitou, Colo.: 50 plants from Colorado (68678, 69269).

JOHNSTON, ROBERT B., Collingswood, N. J.: Model of Brazilian chingada (fishing boat) (68796).

JONES, JOSEPH (See under Dominica, Botanic Gardens).

JORDAN, Dr. DAVID STARR (See under Stanford University).

JORDAN, Dr. H. E., Charlottesville, Va.: 18 specimens of mollusks from Charlottesville (68561).

JOYCE, E. F. (See under Dr. R. W. Shufeldt).

KABURAKI, T. (See under Japan, Zoological Institute).

KALMBACH, E. R., Washington, D. C.: 3 eggs of brown pelican from Louisiana (69069).

KEECH, W. L. (through Dr. James E. Chamberlain, Washington, D. C.): Skin and skull of a coati from Panama (69248).

KEENAN, MICHAEL, Springer, N. Mex.: Portion of the skull of a sheep from Springer (69609).

KEIGHLEY, ALEX., Steeton, near Keighley, England: 66 carbon photographs (69369, loan).

KELLERS, Lieut. H. C., U. S. Navy, Navy Yard, Norfolk, Va.: 742 crustaceans, 7 tow net samples, 2 starfishes, 5 lots of mollusks, 2 fishes and 7 lots of frogs collected by the donor from the Mediterranean Sea, Suez Canal, Gulf of Aden, and the Red Sea in 1922 (69500); a large collec-

KELLERS, Lieut. H. C.—Continued. tion of marine invertebrates from Gibraltar, Spain, and Constantinople, Turkey, collected by the donor, comprising 400+ crustaceans, 4 fishes and 100 mollusks (70048).

KELTON, Carlton B., Douglas, Ariz.: Fossil tooth of a mammoth from Sulphur Spring Valley, Ariz. (70214).

KENNEDY, Dr. Clarence H., Columbus, Ohio: 3 specimens of dragonfly nymphs (69183).

KENT, T. W., Smithsonia, Ala.: Stone pestle and small discoidal stone (68829); flattened tube (amulet) found nine miles east of Florence, Ala. (69656).

KENT, W. A., Contact, Nev.: Specimen of bird from southern Idaho (69137).

KEVORKIAN, Hagop, New York City (through H. H. Topakyan, Washington, D. C.): Royal Persian embroidered tent, 18 century (68701, loan).

KEYSER, E. W., Washington, D. C.: An embroidered robe from southern India (69713, exchange).

KILLIP, E. P., U. S. National Museum: 13 specimens, 13 species of Lepidoptera (69614).

KIMBALL, Miss Katherine D. (See under Rev. R. R. Stewart).

KINSER, B. M., Eustis, Fla.: 4 turtles from Eustis (68775).

KINSEY, Dr. Alfred C., Indiana University, Bloomington, Ind.: 493 gallflies of the family Cynipidae, representing types of 63 species (69712, exchange).

KIRBY, Edward T., New York City: 6 etchings (69800, loan).

KNAPPEN, Theo. M. (See under National Lumber Manufacturers Association).

KNOFF, Ezra C., Avalon, Calif.: 13 plants (68896, 68930, 69001, 69249).

KNOWLSON, Roy S., Kansas City, Mo.: Portions of a female Indian skeleton from a small cave near Noel, Mo. (69549).

KNOWLTON, Dr. F. H. (See under A. Kryshtofovich).

KNULL, J. N., Hummelstown, Pa.: 7 paratypes of beetles (69243, exchange).

KOHNSTAMM & CO., INC., H., New York City: 6 sample bottles of water colors used in the marbling of paper (69246).

KORNHAUSER, Dr. S. I. (See under Committee on Marine Piling Investigations).

KRYSHTOFOVICH, A. (through Dr. F. H. Knowlton): 2 specimens of fossil insects collected by A. Kuznetzov on Amagu River, Maritime Province, Siberia (69457).

KUWANA, Prof. S. I. (See under Japan Imperial Plant Quarantine Station).

LACOE, HEIRS OF R. D. (through R. D. Lacoe, Pittston, Pa.): The residue of the paleontological collection of the late R. D. Lacoe, including fossil plants, invertebrates, and vertebrates (estimated 10,000 specimens); also the paleontological library (estimated 2,000 volumes and 2,000 pamphlets) (70216).

LAMBORN, Mrs. Helen Morningstar, Columbus, Ohio: 5 specimens of Carboniferous bryozoans from Ohio (69452).

LAMPE, F. C. (See under Barnhart Brothers & Spindler).

LANCASTER, S. J., U. S. National Museum: Virginia rail (68997).

LANDER, Miss Anna H., Washington, D. C.: White metal medal commemorating the Harrison Jubilee, Bunker Hill, 1840; a Maryland electoral ticket of 1872, and a set of Chinese carved ivory chessmen (69284).

LANSTON MONOTYPE MACHINE COMPANY, Philadelphia, Pa.: Monotype keyboard and type-casting-setting machine, series 1900; microscope and stand with 12 point type on which is cast the Lord's Prayer; exhibition case containing the various products of the Monotype machine from 4 point to 48 point; type for various nations; leads, slugs, borders and ornaments (70235).

LARIMER, Captain E. B., U. S. Navy, Alexandria, Va.: Collection of miscellaneous cutting weapons and firearms, and 2 suits of Japanese armor (68563, loan).

LARSEN, Dr. E. S., Washington, D.C.: Specimen of sapphirine with ilmenite and rutile from St. Urbain, Quebec (69436).

(See also under Col. Washington A. Roebling.)

LATHAM AUTOMATIC REGISTERING COMPANY, New York City: Riebe quoin, Hancock quoin, a small size and a large size Challenge quoin (69858).

LATHAM, LEROY, Brooklyn, N. Y.: Latham motion picture projector of 1895 (69198).

LATHAM MACHINERY COMPANY, Philadelphia, Pa.: Photograph of a Monitor bench lever embosser, one of a Monitor wire stitcher No. 108, and one of a Monitor wire stitcher No. 102 (69620).

LATIMER, H. A., Boston, Mass.: 4 gum prints, 2 carbon prints, and 3 photogravures (69215).

LAUDOLF, MATHIAS J., Peebles, Wis.: A slab of dolomitic limestone containing shells of a fossil brachiopod from Fond du Lac County, Wis. (69723).

LAYNE, WILLIAM R. (See under Ernest S. Petersen).

LEA, A. V., Prattsville, N. Y.: 2 Devonian bivalves (68636).

LEACH, WARREN R., Rushville, Ill.: Egg of a blue goose, laid in captivity (69289).

LEE, JOSEPH, Passagrille, Fla.: Auditory capsule of a shark (69318).

LEON, Rev. Bro., Havana, Cuba: 7 ferns from Cuba (69710, 69827).

LEONARD DRUG COMPANY, Blountstown, Fla.: Horsehair worm (69404).

LEONARD, E. C., U. S. National Museum: 100 insects from Haiti (68632).

LESHER, Dr. GEORGE S. (See under Commerce, Department of, Bureau of Fisheries).

LIGHT, Prof. S. F. (See under Amoy, University of).

LILLY, WILLIAM, New York City: 5 pieces of Mexican folk-pottery, and specimens of miniature Mexican pottery (69080, 69398).

LINDMAN, Dr. CARL (See under Naturhistoriska Riksmuseum).

LINTON, Prof. EDWIN, Augusta, Ga.: 75 microscopic slides and 2 vials of cestode parasites of sharks and skates, including types of 9 new species (69816).

LITTELL, Mrs. I. W., Soldiers' Home, Washington, D. C.: Pair of Cheyenne leggins (68582).

LIVERSIDGE, Prof. A., Fieldhead, Kingston Hill, England: 2 casts of the Bingera, New South Wales, Australia, meteorite (70171).

LLAGUNO, Pablo, Washington, D. C.: 5 specimens of fossil Teredo from the Oligocene of Cuba (69008); fossil mollusk and a fossil echinoderm, probably Upper Oligocene, from Pinar del Rio, Cuba (69521).

LLOYD, Dr. JOHN URI, Cincinnati, Ohio: Copy of the History of Medicine, Edition 1904, by Alexander Wilder, M. D. (69658).

(See also under Dr. George A. Faber.)

LONG, Miss EMMA M., Athens, Ga.: An oil portrait of the late Dr. Crawford W. Long, painted by the donor (70150).

LONG, W. H., Albuquerque, N. Mex.: 6 plants (69574).

LONGUEUIL, COLLEGE OF, Longueuil, Canada (through Bro. Marie-Victorin): 378 plants from Quebec (70169, exchange).

LUKOVITCH, Dr. M. T. (See under S. R. Capps).

LYNCH, JAMES E., Ames, Iowa: 2 salamanders from Oregon (68866).

LYON, HAROLD L. (See under Hawaiian Sugar Planters' Association Experiment Station).

LYON, Dr. M. W., jr., South Bend, Ind.: Skull of a mink and 2 skulls and skeletons of skunks, from Porter County, Ind. (68777, 69310);

LYON, Dr. M. W., jr.—Continued. skins and skulls of 79 rodents and a lot of miscellaneous bones (69207, collected for the Museum).

MACALISTER, W. G., Tarrawarra, Victoria, Australia: Australian weapons (68828).

MacCREAGH, Gordon, New York City: Collection of vertebrates and insects from Rio Tique, Colombia (69089).

MacDOUGAL, Dr. D. T. (See under Carnegie Institution of Washington, Desert Laboratory).

MACOMB, Miss Nannie R. (See under Miss Catherine N. M. Rose).

MADDREN, A. G., Buenos Aires, Argentina: 74 specimens of Lepidoptera (69899).

MADERA, Marcelino, Macas, El Oriente, Ecuador (through the Department of State and the Bureau of Biological Survey of the Department of Agriculture): 15 snakes, 2 lizards, and 6 frogs from Ecuador (69418).

MALLINSON & CO., INC., H. R., New York City: 2 specimens of novelty silk fabrics (70218).

MANAWATU PHILOSOPHICAL SOCIETY, Palmerston North, New Zealand: A pair of birds from New Zealand (69809).

MANN, Dr. William M., U. S. National Museum: Egg of rhea from Bolivia (68556); collection of foreign antlike beetles, comprising about 75 specimens, 60 species, mostly new to the Museum collection (69320); 98 exotic beetles (Gorham collection of Scydmaenidae and Pselaphidae) (69965); 6 packages of incense made of copal gum and a cake of achiote red dye, from Tapachula, Chiapas, Mexico (70189).

MANUEL, Margaret, New York City (through Will Simmons): Etching "On the Pentland Hills, Edinburgh" (70022).

MARCHBANKS PRESS, THE, New York City: 43 samples of letter press printing, consisting of a book, 3 copies of "Ars Typographica," pamphlets, broadsides, etc. (69817); 3 numbers of "Ars Typographica" (69887).

MARIE VICTORIN, Bro. (See under Longueuil, College of).

MARSH, Dr. C. D. (See under Agriculture, Department of, Bureau of Animal Industry).

MARSHALL, Byron C., Imboden, Ark.: 8 specimens of seed-ticks (larvae) (69083); 5 crickets and 4 roaches (68670, 69830); 44 bees and wasps (70012).

MARSHALL, Ernest B., Laurel, Md.: Adult and 2 young birds of the prairie horned lark from Maryland, apparently the first breeding record for this region (68675); skull of a squirrel, skull of a mink, and skull of a coon (69297); squirrel (69339); pine siskin from Maryland (69422); skin and skull of a flying squirrel, and 3 skulls of minks, all from Laurel, Maryland (69561); 2 crows from Maryland (69652); 4 birds (Warblers) from Maryland (69973).

MARSHALL, Dr. G. A. K. (See under British Government, Imperial Bureau of Entomology).

MARSHALL, George, U. S. National Museum: Great blue heron from Maryland (69109); skull of a red fox from near Priest Bridge, Anne Arundel County, Md. (70174).

MARTINEZ, Senor Maximino (See under Mexico, Direccion de Estudios Biologicos).

MASON, Frank R., Philadelphia, Pa.: Beetle (type specimen) (70182).

MATHER, Miss Margrethe, Los Angeles, Calif.: 5 pictorial prints (69546).

MATLEY, Dr. C. A., Government Geologist of Jamaica, Kingston, Jamaica (through Dr. T. W. Stanton): 5 specimens, 3 species, of Cretaceous invertebrates from Jamaica (69184); (through Dr. T. Wayland Vaughan): A collection of fossils comprising foraminifera, corals, echinoids and mollusks from Jamaica (69611).

MATTHEWS, RANSOM, Selma, Calif.: Automobile accessories, including spark plugs, vulcanizers, magnetos, coils and porcelains (70172, loan).

MAURICE JOYCE ENGRAVING COMPANY, Washington, D. C.: Half tone plate and 3 proofs; line cut and 3 proofs (69810).

MAYER, W. E., Beni, Bolivia: 3 plants (69695).

McCARTHY, TIMOTHY C., Neihart, Mont.: 4 lots of specimens comprising zinc and silver ores from Montana (68533).

McCATTY, ALEXANDER, Pigeon Island, Old Harbour, Jamaica: Calabash used as a rum receptacle in Jamaica (68868).

McCOLL, W. R., Owen Sound, Ontario, Canada: 14 specimens of a plant from Ontario (68767, exchange).

McDUNNOUGH, Dr. J. (See under Canadian Government, Department of Agriculture, Entomological Branch).

McGRAW-PHILLIPS PRINTING COMPANY, INC., New York City: 3 half tone prints (68794).

McGREGOR, A. G., Chicago, Ill.: 3 bromide photographs, two of them made with pinhole lens (69877).

McGUIRE, JAMES C., New York City: Rifle made by Tryon, Philadelphia, and used by Jonathan Cilley on the occasion of his duel with William J. Graves in 1838; also a native battle-axe, probably from the Philippines (69176).

MEARNS, Estate of Col. EDGAR A. (through Dr. Charles W. Richmond): Medicine case supplied by E. R. Squibb & Sons for use on the Smithsonian African Expedition under the direction of Colonel Roosevelt, 1909–1910, and used by Dr. Mearns, U. S. A., physician of the expedition (69128); a pair of spurs and an extra spur (70101).

MELANDER, Prof. A. L. (See under Washington, The State College of).

MELHASE, JOHN, Berkeley, Calif.: 8 minerals (68728, exchange).

MELLON, Hon. ANDREW W. (See under Treasury, Department of).

MENZEL, R., Buitenzorg, Java, Dutch East Indies: 2 specimens, consisting of a fly and a puparium (68646).

MERGENTHALER LINOTYPE COMPANY, New York City: 2 photographs showing models 14 and 24 of their linotype machines; a line of matrices and space bands, and several slugs of different sizes and types (69189); 5 photographs of various models of linotype machines (69271).

MERRIAM, Dr. J. C. (See under Carnegie Institution of Washington).

MERWIN, Dr. H. E., Washington, D. C.: 3 specimens of minerals: 2 of lepidocrocite, and 1 of prismatine (69649).

MESSIC, Dr. H. L., Pomona, Calif.: An unfinished walking stick cut from a California shrub (70217).

MESTRE, Prof. A. (See under Havana, University of).

METCALF, Dr. MAYNARD M., Oberlin, Ohio: 226 microscopic slides of opalinids, including 144 types of new species, being the material upon which Bulletin 120 of the U. S. National Museum by the donor, is based (69767).

METCALF, Prof. Z. P. (See under North Carolina State College of Agriculture and Engineering).

MEUNIER, Prof. S. (See under Museum National d'Histoire Naturelle).

MEXICO, Mexico. *Direccion de Estudios Biologicos:* 7 bulbs of "Pata de Gallo" from Durango (68685); 15 plants (69182); (through Senor Maximino Martinez) 2 plants (70091).

MEYER, Dr. REINHOLD, Landsberg a. W., Germany: 542 specimens of Hymenoptera, representing 269 species, 33 of which are new to the Museum collections (68744, exchange).

MICHEL & CO., Dr. C. H., Cleveland, Ohio: Set of 7 anatomical charts and a wall rack (70057).

MICHIGAN AGRICULTURAL COLLEGE, Office of Cooperative Extension Work in Agriculture and Home

MICHIGAN AGRICULTURAL COLLEGE—Continued.
Economics, East Lansing, Mich. (through Miss Barbara Van Heulen, Assistant State Club Leader): 10 prize jars of canned food products, put up by Michigan children according to the cold pack process (69700).

MICHIGAN SCHOOL FOR THE BLIND, Lansing, Mich.: Copy of the "Michigan Herald for the Blind" (69674).

MIKVE ISRAEL, THE CONGREGATION, Philadelphia, Pa. (through Committee on Morais Centenary, Dr. Cyrus Adler, Chairman): Bronze medal commemorating the centennial anniversary of the birth of Sabato Morais (70105).

MILITARY SERVICE INSTITUTION, THE, Governors Island, N. Y.: War horse of General Philip H. Sheridan, small arms, documents, pictures, and miscellaneous relics relating to the military history of the United States during the 19th century (493 specimens) (69413); bronze mortar made by D. King of Philadelphia in 1793, and 9 antique pistols (10 specimens) (70050). Deposit.

MILLE, Rev. Louis, Quito, Ecuador: Plant from Ecuador (68805).

MILLER, Gerrit S. jr., U. S. National Museum: 14 plants from California (70059).

MILLS, Morris H., Los Angeles, Calif.: Hickory cane presented to Brigadier General William A. Mills, New York Militia, by President Andrew Jackson (69959).

MILLSPAUGH, Dr. C. F. (See under Field Museum of Natural History).

MINNESOTA, UNIVERSITY OF, Division of Entomology and Economic Zoology, St. Paul, Minn. (through Dr. W. A. Riley, Chief): 9 isopods (70082).

MINNIGERODE, C. Powell (See under The Corcoran Art Gallery).

MIRGUET, C. E., U. S. National Museum: 4 tanned frog skins (70207).

MISSOURI BOTANICAL GARDEN, St. Louis, Mo.: Fragment of type specimen of cactus, and 2 specimens of cactus (68808, 69258). Exchange.

MOELLER, A. F., San Pedro, Coahuila, Mexico: 33 plants (69717, 69890).

MONROE, Percy R., Lynchburg, Va.: Plant (68898).

MOORE, R. B., Washington, D. C.: Samples of silver lead ores from Pribram, Bohemia (69578).

MOORE, Dr. Riley D., Washington, D. C.: 2 pieces of native iron money from French Guiana (70006, exchange).

MOREIRA, Dr. Carlos, Rio de Janeiro, Brazil: 4 specimens, 2 species, of crabs collected by the donor (68853).

MORRILL, A. W., Los Angeles, Calif.: Spider (70019).

MORTENSEN, Dr. Th. (See under Zoological Museum, Copenhagen, Denmark).

MOTTER, Dr. Murray Galt (See under U. S. Pharmacopaeial Convention, Inc.).

MOXLEY, George L., Los Angeles, Calif.: Plant (70067).

MULFORD BIOLOGICAL EXPLORATION OF THE AMAZON BASIN, c/o H. K. Mulford Co., Philadelphia, Pa.: (through Dr. H. H. Rusby, New York City, Director) 260 specimens of South American plants (68603, 68683, 68759); (through Dr. S. F. Blake, Washington, D. C.) 31 plants from Bolivia (69020).

MULLANY, Dr. Hugh, Tohatchi, N. Mex.: Small pottery "gaming disk" found near Tohatchi (69557).

MUNDER, Norman T. A., Baltimore, Md.: 2 halftones and 2 pamphlets (70205).

MUNZ, Dr. Philip A., Claremont, Calif.: 2 plants from California (68634), 3 cacti (68543).
(See also under Pomona College.)

MURRAY, W. A., East Falls Church, Va.: Box-turtle (70229).

MUSEO NACIONAL, San José, Costa Rica: 140 tropical insects, mostly mosquitoes (68863).

MUSÉUM NATIONAL D'HISTORIE NATURELLE, Paris, France: (through Mons. E. Séguy) 6 mosquitoes (68903); 3095 plants (69262); portion of type specimens of a fern from Tahiti (69581); 9 specimens of minerals (69661); (through Prof. S. Meunier) a 60-gram example of the Garraf, Barcelona, Spain, aumalite (69995). Exchange.

NACHTRIEB, Prof. HENRY F., Minneapolis, Minn.; Snake from Winsted, Minn. (70210).

NATIONAL ACADEMY OF SCIENCES, THE, Washington, D. C. (through Mr. Paul Brockett, Assistant Secretary): Bronze plaque commemorating the Semi-Centennial of the Wisconsin Academy of Sciences, Arts, and Letters, 1920 (68651, deposit).

NATIONAL AMERICAN WOMAN'S SUFFRAGE ASSOCIATION, New York City: (through Mrs. H. H. Gardener, U. S. Civil Service Commission) Silhouette of Lucretia Mott (1793–1880) (69480); Volumes V and VI of "History of Woman Suffrage" by Ida Husted Harper (69676).

NATIONAL GEOGRAPHIC SOCIETY, Washington, D. C.: Archeological material from various sites in Chaco Canyon, N. Mex., collected by Neil M. Judd (69346).

NATIONAL LUMBER MANUFACTURERS ASSOCIATION, Washington, D. C. (through Mr. Theo. M. Knappen): 3 specimens and 6 photographs of the ancient cypress taken from the new Walker Hotel excavation, Connecticut Avenue and De Sales Street, Washington, D. C. (70069).

NATIONAL SOUTHEASTERN UNIVERSITY, Nanking, China (through Dr. C. Ping). Echinoderms, mollusks, fishes, reptiles and marine invertebrates from China (69376, exchange).

NATURHISTORISCHES STAATSMUSEUM, Vienna, Austria:

Botanischer Abteilung (through Dr. A. Zahlbruckner): 200 specimens of plants, comprising Centuries XXII and XXVI Kryptogamae exsiccatae (68804, 69275). Exchange.

Zoologische Abteilung (through Dr. H. Zerny): 3 flies, one a cotype (70086, exchange).

NATURHISTORISKA RIKSMUSEUM, Stockholm, Sweden:

Botaniska Avdelning (through Dr. Carl Lindman, Director): 1216 plants, chiefly from Scandinavia; 635 specimens of algae (69896, 70039). Exchange.

Entomologiska Avdelning (through Prof. Dr. Yngve Sjöstedt): 527 specimens of Orthoptera (68788, exchange).

Evertebrater Avdelning (through Dr. T. Odhner): a crab collected at Gilbert Island by S. Bock in 1917 (69224, exchange); 66 specimens, 39 species, of crustaceans collected in West Australia by Dr. E. Mjoberg's Swedish Scientific Expedition in 1910–13 (69253).

NAVY DEPARTMENT:

Models of storehouse No. S–2, Navy Supply Depot, Brooklyn, N. Y., Naval Supply Station, Naval Operating Base, Hampton Roads, Va., transverse section of a superdreadnaught; and various small ship models showing types of camouflage used by the Navy Department during the World War (68989); 22 photographs showing the launching of aircraft (69210).

Bureau of Aeronautics. Series of 28 photographic enlargements showing the development of launching equipment for aircraft (68897); twelve cylinder Liberty Engine, one of the four used on the NC–4 in its trans-Atlantic flight (68905); 6 models of naval aircraft (70202).

NAVY DEPARTMENT—Continued.

Bureau of Ordnance: 3 table-case models illustrating the establishment and the removal of the North Sea mine barrage by United States and Great Britain naval forces, 1918–1919 (69627, loan).

Hydrographic Office: American armchair of the early part of the 19th century (69702).

Marine Corps: 2 Haiti Campaign service medals, one bearing the Navy service reverse and the other the Marine Corps service reverse; a bronze clasp inscribed "(1919–1920)," a Haiti Campaign ribbon bar, and a bronze star (70015).

NEBRASKA, UNIVERSITY OF, Department of Entomology, College of Agriculture, Lincoln, Neb. (through E. E. Wehr): Fly (69200, exchange).

NELSON, ELIAS, Yakima, Wash.: 37 plants (68825, 69135).

NELSON, Dr. E. W. (See under L. A. Powless).

NELSON, GEORGE A. (See under Japan Paper Company).

NELSON, Prof. J. C., Salem, Oreg.: 13 plants from Oregon (68577, 68653, 68785, 68861, 69111); 2 plants (68735, 68922).

NELSON, WILBUR A., Nashville, Tenn.: 20 specimens of bentonite from Kentucky and Tennessee (68964).

(See also under Tennessee State Geological Survey.)

NESSEL, HERMAN (See under Berlin, Pflanzenphysiologisches Institut der Universitat).

NEWBOLD, Miss PATTY, Washington, D. C.: Cape May warbler (69986).

NEWCOMB & CO., INC., JAMES F., New York City: Original drawing for cover of a booklet; a set of progressive half tone proofs, and a copy of a booklet entitled "Direct Reflections" (68975).

NEW YORK BOTANICAL GARDEN, Bronx Park, New York City: 7 ferns from California (68529); 17 specimens of cacti from Bolivia (68566); 97 ferns and 4 plants from Porto Rico (68579, 68803); 34 plants from Porto Rico and Florida (70106); 86 plants from Trinidad (68675, 68838, 69007, 69483, 69112); fragments of type specimen of tree fern from Trinidad (68798); 70 specimens of mosses and 5 of lichens collected on Mount Rainier, Washington, by J. B. Flett (68899); 9 specimens of hepatica from Washington, collected by Mr. Flett (69356); 30 plants (68950, 69199, 69351, 69375, 69461, 69919); 46 ferns and plants from Cuba (68985, 69163, 69362, 69792); 60 plants from Cuba, collected by Bro. Leon (68959); 221 specimens of West Indian plants and 112 specimens of hepatica and mosses from the West Indies (69187, 69454); 521 plants from British Guiana, collected by Dr. H. A. Gleason (69001); 20 plants from French Guiana (69433) plant from North Carolina (70168). Exchange.

NEW YORK STATE MUSEUM, Albany, N. Y. (through Dr. H. D. House): 68 plants from New York State (69336, exchange).

NEW YORK TRIBUNE, THE, New York City: 2 illustrated folders descriptive of rotagravure, entitled "Gravure in Newspapers" (68938).

NEW YORK, UNIVERSITY OF THE STATE OF, Albany, N. Y.: (through W. A. Hoffman): A small collection of flies (Diptera) from Texas (70054).

NIKITA, HERBIER DU JARDIN BOTANIQUE DE, Crimea (through S. Stankoff): 26 plants (69447, exchange).

NOELCKE, ALBERT, Cincinnati, Ohio: 6 prints of linotype ornamental borders in the form of an American eagle (69930).

NOONAN, ALBERT S., Philadelphia, Pa.: A set of Bidwell Thomas pneumatic bicycle tires, purchased and used by the donor in 1891 (70051).

NORDELL, CARL J., Boston, Mass. (through Will Simmons): Etching "Pole Hill, Gloucester" (70020).

NORTH CAROLINA STATE COLLEGE OF AGRICULTURE AND ENGINEERING, Raleigh, N. C. (through Prof. Z. P. Metcalf): 2 specimens of beetles (69161).

NORTH CAROLINA STATE MUSEUM, Raleigh, N. C. (through Harry Davis): A 320-gram piece of an iron meteorite from McDowell County, N. C. (69688).

NORTH DAKOTA AGRICULTURAL COLLEGE, Agricultural College, N. Dak. (through Prof. O. A. Stevens): 6 plants (69272).

NORTON, Prof. J. B. S., College Park, Md.: Plant from Maryland (68739).

NOTMAN, HOWARD, Brooklyn, N. Y.: Beetle (paratype) (69052).

NUTTING, Prof. C. C. (See under Iowa, State University of).

NUTTING, Mrs. RALPH, Washington, D. C.: Chromo lithograph after Sir Edwin Landseer (68870).

OBERLIN, Mrs. E. G., Anacostia, D. C.: Water-snake from Anacostia (69944).

ODHNER, Dr. T. (See under Naturhistoriska Riksmuseum).

O'DONOGHUE, C. DENNIS, Ilford, England: 3 specimens and 3 photographs of plants (68833, exchange).

OHIO MATCH COMPANY, THE, Wadsworth, Ohio (through Mr. L. E. Parker): A series of 37 specimens showing the manufacture of double dip matches (69847).

OHLINGER, Mrs. F. E., Frostproof, Fla.: 6 plants from Florida (69358, 69621).

OLDROYD, Mrs. T. S., Stanford University, Calif. (through Dr. W. H. Dall): Mollusks collected at Monterey, Calif., and 68 specimens, 8 species, of land and freshwater mollusks from various localities (69865, 69072).

OLMSTED, A. J., U. S. National Museum: Proof on Japan paper of a line cut after Gibson, and a two-color half tone of Dutch Girl (68629).

ORCUTT, C. R., La Jolla, Calif.: 74 plants (68593, 68645, 68660, 68689, 68914, 68995, 69046, 69051, 69110, 69177, 69217, 69264, 69298, 69462, 69733, 69925); mollusks, plants, marine invertebrates, mammal skin, and insects from Mexico (68920); about 300 specimens, 4 species, of fresh water shells from the irrigating ditch at Daggett, California (69917).

OREGON, UNIVERSITY OF, Botanical Department, Eugene, Oreg.. Plant from Oregon (69981).

ORTEGA, J. G., Mazatlan, Mexico: 833 plants from Mexico (68541, 68835, 69018, 69076, 69307, 69599, 70118); 159 specimens, 36 species, of marine mollusks from Topolobampo, Mexico (70181).

OSHIMA, M., Taihoku, Formosa: 2 salamanders from Hokkaido (69956).

OSWALD PUBLISHING COMPANY, New York City: 84 miscellaneous prints which appeared in the Franklin Bi-Centennial Number of "The American Printer," including examples of typography, linoleum block printing, wood-engraving, lithography, etc. (69509).

OTIS, IRA C., Seattle, Wash.: 5 plants from Washington and California (69582).

OVER, Prof. W. H., Vermilion, S. Dak.: 2 frogs from Iowa and South Dakota (69282).

(See also under South Dakota, Museum of the University of.)

OWEN, Prof. E. T., Madison, Wis.: 4 very rare tropical butterflies, new to the Museum collections (69926).

OWEN, W. O. C., Washington, D. C.: 2 plants (68927).

PACIFIC AND ATLANTIC PHOTOS, INC., New York City: 6 photographs (one duplicate) showing the various steps in book-binding (69296).

PADILLA, Senor Dr. SISTO ALBERTO, Ahuachapan, El Salvador, Central America: 310 plants (69673, 70072); 90 plants from Salvador (69878).

PAINTER, REGINALD H., Austin, Tex.: 32 plants (69984).

PARK, Miss LOUISE, Washington, D. C.: Sioux Indian beaded pouch (68859).

PARKER, L. E. (See under Ohio Match Co.).

PARKER, R. N. (See under Forest Research Institute and College, The).

PARKS, CHARLES JOSEPH, Lawrence, Calif. (through Charles Parks, Chevy Chase, D. C.): Ethnological specimens from Samoa and Melanesia (69912).

PARLIN, JOHN C., Freedom, Me.: Lichen from Maine (69261).

PATTERSON, Miss G. P., Shippan Point, Stamford, Conn. (through Miss Eliza M. Chapman, Washington, D. C.): A French clock of the early part of the 19th century (69081, loan).

PATTISON, Mrs. S. L., El Paso, Tex.: 2 plants (68750, 70131).

PATTON, Major W. S., Edinburgh, Scotland: A named collection of Oriental scavenger flies, 51 specimens (69564, exchange).

PEARCE, M., Clemenceau, Ariz.: 2 specimens of bird parasites (69171).

PENNSYLVANIA STATE DEPARTMENT OF AGRICULTURE, Philadelphia, Pa. (through Mr. Howard Crawley): Fly larva (69929).

PEREZ, GILBERT S., Lucena, Tayabas, Luzon, P. I.: 28 specimens, 13 species, of landshells from the Philippine Islands, including the type of 1 new species (68546); snake from Lucena, and 3 landshells from Baler, P. I. (68839); 4 mollusks from the P. I. (69070).

PERINGUEY, Dr. L. (See under South African Museum).

PERKINS, Miss JANET R., Berlin-Dahlem, Germany (through Prof. A. S. Hitchcock): 13 plants from Jamaica (68782).

PETERSEN, ERNEST S., Mobridge, S. Dak. (through William R. Layne, Washington, D. C.): Skull from an old Indian burying-ground near Mobridge (69139); complete skeleton of an Indian from a burial ground near Mobridge, and miscellaneous archeological material from village site near Mobridge (69190, 69374).

PETROCCHI, Dr. JUANA, Buenos Aires, Argentina: 4 mosquitoes (68856).

PHILIPPINE ISLANDS, GOVERNMENT OF:

Bureau of Science, Manila, P. I.: 618 lichens, mainly from the Philippine Islands (68793, exchange); 81 skins and skulls of mammals from the P. I. (69675).

University of the Philippines, Manila, P. I.:

College of Agriculture, Los Banos, P. I.: 4 specimens of parasitic tropical flies (68993); (through Prof. H. E. Woodworth): 4 parasitic flies (69084).

PHILLIPS, E. PERCY, Pretoria, South Africa (through Dr. William Trelease): Cactus (69784).

PHILOSOPHICAL SOCIETY OF WASHINGTON, Washington, D. C. (through E. C. Crittenden, Bureau of Standards): Bronze plaque commemorating the one hundred and fiftieth anniversary of the establishment of the Royal Academy of Belgium (69603).

PICKING, Lieut. Commander SHERWOOD, U. S. Navy, Washington, D. C.: Skull of a caribou from Quebec (69074); mounted head of a Philippine buffalo, and a mounted head of a Philippine deer, both from the Island of Mindanao (69197, loan).

PICTORIAL PHOTOGRAPHERS OF AMERICA, New York City (through G. W. Harting, Secretary, Exhibition Committee): 70 pictorial photographs (70145, loan).

PIERCE, ROY G. (See under Agriculture, Department of, Bureau of Plant Industry).

PILLING, Mrs. M. H., Charmian, Pa.: Curved knife with beaded scabbard and a double curved dagger with beaded scabbard from Khartoum, Sudan, Egypt (70194).

PILSBRY Dr. H. A., Academy of Natural Sciences, Philadelphia, Pa.: 4 specimens, 2 species, of landshells from Arizona (68551).

(See also under Dr. T. Wayland Vaughan.)

PINCHOT, Hon. GIFFORD, Milford, Pa.: 90 specimens, 24 lots, of landshells from Hawaii (68649).

PING, Dr. C. (See under National Southeastern University).

PIPER, Dr. C. V., Washington, D. C.: 80 freshwater mollusks from Pearl River, Miss., and 20 land mollusks from Palm Beach, Fla. (69416); 25 insects from Panama (69751); 3 plants from Bolivia (69786).

(See also under Agriculture, Department of, Bureau of Plant Industry, Holger Johansen, and J. Zetek.)

PISA, ITALY, REGIA UNIVERSITÀ DEGLI STUDI, Geological Institute: 10 casts of type specimens of trilobites studied by Prof. Meneghini (69773, exchange).

PITTIER, C. H., Caracas, Venezuela: 43 tropical butterflies (69145).

PITTIER, H., Caracas, Venezuela: 81 specimens of butterflies, including 50 species (68530); 102 specimens of South American Lepidoptera, and 14 miscellaneous insects (69417); 604 plants from Venezuela (68607, 68623, 69647), 9 fishes collected at Valera, Trujillo, Venezuela (70122).

(See also under Dr. Alfredo Jahn.)

PLIMPTON PRESS, Norwood, Mass.: Series of progressives showing edition bookbinding (70078).

POHL, BRUNO, Sao Paulo, Brazil: Collection of Lepidoptera, including 45 species, from Sao Paulo (69683).

POHL, ERWIN, Albany, N. Y.: 500 specimens of Ordovician fossils from Rysedorph Hill, N. Y. (68784).

POMONA COLLEGE, Claremont, Calif. (through Dr. Philip A. Munz): Plant (68833, exchange).

PORTER, Prof. CARLOS E., Santiago, Chile: 6 crustaceans, 1 starfish, 6 mollusks, and a small collection of insects, collected by Luis Moreira at Chiloe Islands, January, 1923 (69860).

PORTO, P. CAMPOS, Rio de Janeiro, Brazil: 15 plants (69104); 2 plants (69432, exchange).

POST OFFICE DEPARTMENT: 13 sets of specimen stamps, etc., in triplicate (4173 specimens), received from the International Bureau of the Universal Postal Union, Berne, Switzerland (68608, 68722, 68840, 68971, 69185, 69327, 69478, 69545, 69715, 69778, 69940, 70238); handmade brass lock inscribed "General Post Office, U. S. America, 1798" (69033); (through John H. Bartlett, First Assistant Postmaster General) 76 elk teeth (69096).

POTTER, BEVERLEY ROBINSON (See under William Hubley Potter).

POTTER, WILLIAM HUBLEY, Washington, D. C., and BEVERLEY ROBINSON POTTER, Philadelphia, Pa.: Silver teapot, cream pitcher, and bowl of the Colonial Period (69031, loan).

POTTS, F. A., Central Aguirre, Porto Rico: Specimen of upland plover from Porto Rico, the second record for the species on the Island (68630).

POTTS, Capt. F. A., Cambridge, England: Collection of marine invertebrates collected by the donor in the vicinity of the Tortugas Laboratory of the Carnegie Institution, during the month of July, 1922, comprising 365 specimens of crustacea and 3 annelid worms (68708).

POUNTNEY COMPANY, W. H., Boston, Mass.: Building tool and wax used in engraving (68820).

POWER, Dr. FREDERICK B., Washington, D. C.: 13 specimens of quinine sulphate manufactured by American and foreign firms, being portions of an original series of samples assembled about 1882 for use by an international committee of analysts in formulating standard tests for purity (69510).

(See also under Agriculture, Department of, Bureau of Chemistry).

POWLESS, L. A., Bureau of Biological Survey, U. S. Department of Agriculture, Washington, D. C. (through Dr. E. W. Nelson): 4 pottery heads (fragments of pottery), from Santo Domingo (69440).

POYER, Mrs. JOHN M., Washington, D. C.: Kava bowl, wand of household authority, and the skin of a bird of paradise, from the Samoan Islands (68605).

PREBLE, E. A., Bureau of Biological Survey, U. S. Department of Agriculture, Washington, D. C.: 2 plants from Maryland (69703).

PRESCKOW, EDMOND VON, American Consul, Arica, Peru: 4 pottery vessels from Arica (69980).

PRICE, Mrs. M. H., Washington, D. C.: Tooth of a sperm whale (69771).

PRINT MAKERS SOCIETY OF CALIFORNIA, THE, Pasadena, Calif.: 156 miscellaneous prints comprising the Traveling Exhibit of the Society (69587, loan).

PROTSMAN, WILLIAM R., Washington, D. C.: 20 specimens of Ordovician and Silurian fossils from Indiana and Kentucky (69371).

PURPUS, Dr. C. A., Huatusco, Vera Cruz, Mexico: 4 plants (70147).

PYNSON PRINTERS INCORPORATED, New York City: 25 examples of printing, folders, cards, etc. (69866).

RAMSEY, MATILDA J. (through The Washington Loan and Trust Company, Washington, D. C.): Military and household relics; also documents, photographs, pamphlets, and periodicals of the period of the Civil War (69082, bequest).

RANSOM, Dr. B. H. (See under Miss Elinor A. Behre).

RAVENEL, WILLIAM DEC., U. S. National Museum: Gilt token commemorating the seventieth anniversary of the Rock Island Railroad lines, 1922 (68988).

RAVENEL, Mrs. WILLIAM DEC., Washington, D. C.: 2 baby dresses of the 19th century (69216, loan).

REESIDE, Dr. J. B., jr. (See under Bro. Ariste Joseph, and Instituto de la Salle, Bogota, Colombia).

REHDER, HAROLD A., Jamaica Plain, Mass.: 7 specimens, 2 species, of freshwater mollusks from Missouri and Texas (68716).

REHN, J. A. G., Philadelphia, Pa.: 4 roaches (68578, exchange).

REICHE, Dr. K., Mexico City, Mexico: 9 plants (68583, 69861, 69964).

REID, E. D., U. S. National Museum: 4 fishes from Chesapeake Bay, and the head of a large fish collected in the Washington Market and said to be from off the Carolina coast (69061).

REINHARD, H. J., College Station, Tex.: 6 flies, and 5 specimens of parasitic flies (69011, 69512).

REKO, Dr. BLAS P., Guadalajara, Jalisco, Mexico: 157 plants (68751, 68774, 69201, 69265, 69309, 69544); 62 plants from Mexico (69442, 70095).

RENDLE, Dr. A. B. (See under British Government, British Museum (Natural History)).

RESLER, GEORGE, St. Paul, Minn. (through Will Simmons): Drypoint etching, entitled "The Old Trees" (70149).

REYNE, A., Department van Landbouw, Paramaribo, Surinam: 2 plants and 9 crustaceans (68875, 69393).

(See also under Agricultural Experiment Station.)

REYNOLDS, GEORGE C., American Vice Consul, Manzanillo, Mexico: 4 plants (69044).

REYNOLDS, J. C., Owensboro, Ky.: Fragment from petrified trunk of a tree (69782).

RICE, ARTHUR P., Boston, Mass.: 5 copper bells found by the donor at Nicte Ha, south of Chichen Itza, Yucatan (69065).

RICHARDSON, Mrs. CHARLES W., Washington, D. C.: Basket made by Thompson River Indians, British Columbia (70227).

RICHMOND, Dr. C. W., U. S. National Museum: Ovenbird (68901); 8 skins representing 8 species of hummingbirds from South America (69302); red-breasted merganser from Maryland (69420); 12 hummingbirds from South America (70100).

(See also under Mearns, Estate of Col. Edgar A.)

RICHMOND PETROLEUM COMPANY OF MEXICO, S. A., Mexico, D. F., Mexico (through O. A. Cavins): About 200 species of Tertiary fossils from various localities on the Isthmus of Tehuantepec, Central America (69567).

RICKETTS, Dr. B. MERRILL, Cincinnati, Ohio: Bronze medal commemorating the erection of a fountain in Cincinnati, Ohio, to the memory of Corp. Merrill L. Ricketts, U. S. M. C., 1921 (69595).

RILEY, Dr. W. A. (See under Minnesota, University of).

ROACH, J. E., Tampa, Fla.: Pottery fragments, shell ornament, and fragments of a male Indian skeleton (68892).

ROBERTS, Miss HELEN, New York City: Archeological objects from the Canyon de Chelly, northeastern Arizona (68972).

ROBERTS CO., W. F., Washington, D. C.: Paper making materials (69141).

ROBERTSON & CO., LTD., J. R., St. Annes-On-the-Sea, England: 8 copies of the Blackpool Times, printed entirely by offset lithography, and an unprinted sample of the paper used (68650).

ROBERTSON-MILLER, Mrs. ELLEN, Painesville, Ohio: Tropical moth (69268).

ROBINSON, Dr. B. L. (See under Harvard University, Gray Herbarium).

ROBY, CHARLES, Laurel, Md.: Skin and skull of a woodchuck from Laurel (70112).

ROEBLING, Col. WASHINGTON A., Trenton, N. J. (through Dr. E. S. Larsen): Specimen of the mineral beckelite from Russia (69894); specimen of mineral paligorskite from Billowitz, near Brunn, Czechoslovakia (70179).

ROGERS, Maj. Gen. H. L., U. S. Army (retired), Washington, D. C.: German steel helmet of the Imperial Guard Regiment (68844, loan).

ROIG, Dr. MARIO SANCHEZ, Havana, Cuba (through Dr. T. W. Stanton): Echinoid from Cuba (68762).

ROLAND, Mrs. MARY J. D., Mountain View, Calif. (through President Warren G. Harding, The White House, Washington, D. C.): United States flag presented to Captain William Driver of Salem, Mass., in 1824, and termed by him "Old Glory," the first American flag to be thus called (69281).

ROLLE, A. H. O., Washington, D. C.: 2 block prints (69803, loan).

RORER, Mrs. ETHEL WIMER, Guayaquil, Ecuador: 131 butterflies representing 30 species new to the Museum collections, and at least 4 new to science (68939); about 170 specimens of tropical butterflies and miscellaneous insects (69383); 9 butterflies from South America (69429).

ROSE, Miss CATHERINE N. M., Keuka Park, N. Y. (through Miss Nannie R. Macomb, Washington, D. C.): An old English lute made by Longman and Broderip, London, England (69366).

ROSE, Dr. J. N., U. S. National Museum: 5 seaweeds from New Jersey (69361).

ROSENBERG, Louis C., New York City (through Will Simmons): Etching "Isola Tiberina" (70037).

ROSS, Mrs. Ruth C., Klondyke, Ariz.: 16 specimens of cacti from Arizona (68545, 68673).

ROST, E. C., Alhambra, Calif.: Plant (70127).

ROTH, Ernest D., New York City (through Will Simmons): 2 etchings "Burgos, Spain" and "Segovia Cathedral and Valley" (70021).

ROWE, Charles H., Worcester, Mass.: 5 specimens, 3 species, of land mollusks from the United States and Ecuador (70186).

ROWLEY, C. H., Salt Lake City, Utah (through Victor C. Heikes): Specimen of arsenopyrite with its oxidation product scorodite, from mine of the Western Utah Copper Company, Gold Hill, Utah (70200).

ROYAL ONTARIO MUSEUM OF MINERALOGY, Toronto, Canada: 28 specimens of minerals and 1 of tubular amygdaloid from Canada (69169); 11 specimens of minerals (69743). Exchange.

RUGG, Harold G., Hanover, N. H.: Fern from Vermont (69607).

RUGG, S. A., Home, Oreg.: Hairworm (68674).

RUNYON, Robert, Brownsville, Tex.: 56 plants from Texas (68559, 68612, 68658, 68734); 6 living specimens of cacti (68585); 29 plants (68811, 69057); plant and 2 photographs (68876); photograph of a plant (69892); 7 plants from Mexico (69722).

RUSBY, Dr. H. H. (See under Mulford Biological Exploration of the Amazon Basin).

RUSH, Frank, Supervisor, Wichita National Forest, Cache, Okla.: 3 plants (68760).

RUSSELL, Dr. F. F. (See under International Health Board).

RUTH, Prof. Albert, Polytechnic, Tex.: 7 plants (69042, 69149).

RYAN, Everett R., Milroy, Ind.: Mollusk from Eten, Peru (68697).

RYERSON, Miss Margery, New York City (through Will Simmons): Drypoint "Brother and Sister" (70033).

SALAS, Sr. Don Jorge Garcia (See under Guatemala, Government of, Direccion General de Agricultura).

SALVADOR, GOVERNMENT OF. DIRECCION GENERAL DE AGRICULTURA: 7 specimens, 2 species, of marine mollusks from between Chiltiupan and Jicalapa, Salvador (69602); 39 plants from Salvador (70094); (through Sr. Dr. Don Salvador Calderon); 815 plants from Salvador (68640, 69017).

SANDERS, R. K., jr., Bristol, Tenn.: 2 salamanders (70223).

SANDERSON, John G., Courtland, Ala.: Skeleton of an aged male Indian (69292).

SANDGROUND, J., Baltimore, Md. (through School of Hygiene and Public Health): Frog from Africa (70152).

SANFORD, S. N. F. (See under Boston Society of Natural History).

SARGENT, Prof. C. S. (See under Harvard University, Arnold Arboretum).

SASAKI, Dr. Madoka (See under Hokkaido Imperial University).

SCALCO, S., Washington, D. C.: Katydid from Colombia, new to the Museum collections (68725); centipede collected in Washington, D. C., in bananas from Costa Rica (69490).

SCHAUS, William, U. S. National Museum: A collection of moths from New Guinea and Solomon Islands, consisting of 1,390 specimens, 610 species, mostly new to the Museum collection; also 150 specimens of butterflies (Lepidoptera) from Ecuador (69704); 2,000 moths and butterflies (chiefly Heterocera), from Nyassaland, British East Africa, all new to the Museum collection; also 320 moths from Argentina, consisting almost entirely of rare and new species (69762).

SCHEONBORN, HENRY F., Chevy Chase, Md.: Skin and skull of a squirrel from the Patuxent River, Md. (69194).

SCHEUCH, GEORGE C., Washington, D. C.: Duck from Maryland (69132).

SCHIEFFLIN & COMPANY, New York City: 2 ounces of dry flea seed (69230).

SCHILKE, PAUL, Washington, D. C.: Paper currency issued by the City of Striegau, Germany, September, 1921 (6 specimens) (68637).

SCHMID, EDWARD S., Washington, D. C.: Ostrich chick, and a Cuban parrot; also body, in alcohol, of a young ostrich (68675); 8 birds, including 2 ostrich chicks (68904); 9 parrots and parakeets (68976); 2 parrots and 2 weaver finches (69053); 25 birds (69108, 69423, 69502, 69556); monkey, skin and skull of a guinea pig, skin, and skull of a monkey (69196); 4 parrots and an owl (69213); skin and skull of a monkey (69303); cockatoo and a sharp-shinned hawk (70092); 2 cotton head monkeys (alcoholics) (70110).

SCHMIDT, Dr. JOHS, Carlsberg Laboratorium, Copenhagen, Denmark: 20 specimens of larval eels (69360, exchange).

SCHMITT, Dr. WALDO L., U. S. National Museum: 3 lots of plankton from Ostsee, near Greifswald, Germany, and 1 from the Adriatic Sea at Rovigno, collected by Dr. Anton Krausse (69741).

SCHOOL OF HYGIENE AND PUBLIC HEALTH, Baltimore, Md. (See under J. Sandground).

SCHOTT, FRED. M., Newark, N. J.: 5 Lepidoptera (69482).

SCHULZ, Miss ELLEN D., San Antonio, Tex.: 111 plants from Texas (69086).

SCIDMORE, Miss ELIZA R., Washington, D. C.: 7 Japanese Shinto charms (69379); 5 samples of yarns, white, yellow, black, blue, and twisted with bark, used by the Chilkat Indians of Alaska in weaving blankets; card with 48 named varieties of incense used ceremoniously in Japan; 3 mica frames for burning incense; also descriptions in English and Japanese of the ceremonies, and a written table giving details of the burning of the incense (69474).

SCIENCE AND AGRICULTURE DEPARTMENT (See under British Guiana).

SCOFIELD, KENDRICK, Washington, D. C.: Mongolian mortuary table, 17th century, Japanese bronze placque, Tibetan carved boulder, and a pair of Egyptian mummy feet (70103, exchange).

SCOLLICK, J. W., U. S. National Museum: Skull of a domestic goose (69242).

SEBASTIEN, E., St. Thomas, Virgin Islands of the United States: Snake and a basket-star from St. Thomas (70225).

SEED, Miss ELEANOR, Pelham Manor, N. Y.: Portrait of the donor's father, M. A. Seed, an early manufacturer of photographic plates (69508).

SÉGUY, Mons. E. (See under Museum National d'Histoire Naturelle, Paris, France).

SENSENEY, GEORGE, Northampton, Mass.: Block print (69802, loan).

SETCHELL, Prof. W. A. (See under Carnegie Institution of Washington).

SEVEREN, Sr. Dr. ANDRES VAN, Tela, Honduras: 36 plants (69948).

SEYBOLD MACHINE COMPANY, Dayton, Ohio: 2 photographs and 3 half tone prints of Seybold book compressers and book trimmers (69571).

SHANNON, R. C., Ithaca, N. Y.: 4 mosquitoes (68945, exchange).

SHANTZ, Dr. H. L., Washington, D. C.: 274 samples of freshwater plankton and 3 lots of mollusks, material upon which the donor's paper "A Biological Study of the Lakes of the Pike's Peak Region" is based (69774).

SHEARER, Dr. A. R., Mont Belvieu, Tex.: 2 fossil shells from well drilling for oil at Mont Belvieu, 2000 feet deep (68664).

SHELDON, CHAS., Washington, D. C.: 2 skulls of mountain sheep from Wyoming; 7 ethnological objects of the Seri Indians of Mexico; skull and scalp of a sheep from eastern Siberia (68787; 69538; 69812).

SHELDON, THOMAS B., Pearisburg, Va.: Osprey from Virginia (69259).

SHEPHERD, JOHN, Bristol, Md.: Specimens of shells from the Miocene of Calvert and Anne Arundel Counties, Md. (69043).

SHEPPARD, WALTER B., Jackson, Wyo.: 3 spotted fever ticks (68757).

SHIR-CLIFF, W. H., Washington, D. C.: Carved stone image from the Makah Indians, Neah Bay, Wash. (70113).

SHIRK, Dr. J. K., Lancaster, Pa.: Plant from Pennsylvania (69025).

SHOEMAKER, C. R., U. S. National Museum: 3 crabs from Virginia Beach, Va.; 2 isopods and 2 amphipods from Dismal Swamp, Va., and 2 bryozoans from Cape Henry, Va. (68560).

SHOPE, HENRY B., New York City (through Will Simmons): Etchings "Horizons" and "Theatre of Marcellus, Rome" (70025).

SHREVE, Dr. FORREST, Tucson, Ariz.: Fern from Arizona (69977).

SHROPSHIRE, J. B., Ancon, Canal Zone: 2,801 mosquitoes (68888, 68910, 68932, 69330, 69365, 69426, 69489, 69516).

SHUFELDT, Dr. R. W., U. S. Army (ret'd.), Washington, D. C.: 3 skeletons of the starling (68554); red-shouldered hawk from Virginia (70097).

SHUFELDT, Dr. R. W., U. S. Army (ret'd.), Washington, D. C., and E. F. JOYCE: 2 young water-snakes (68848).

SHULL, Dr. C. A. (See under Chicago, University of).

SIMMONS, WILL, New York City: Pure aquatint "Timber Wolf, Halall" (70028).

(See also under John Taylor Arms, Brooklyn Society of Etchers, William H. Drury, Miss Anne Goldthwaite, George O. Hart, Charles E. Heil, Eugene Higgins, Margaret Manuel, Carl J. Nordell, George Resler, Louis C. Rosenberg, Ernest D. Roth, Miss Margery Ryerson, Henry B. Shope, George C. Wales, Frederick Weber).

SIMONDS AND CO., GEORGE A., Washington, D. C.: Specimens showing the different stages of job book binding including 2 completed books bound in full French Levant (69997).

SINE, FRANK W., Maurertown, Va.: Abnormal egg of a domestic fowl (69469).

SINGER SEWING MACHINE COMPANY, New York City: 4 photographs showing the methods of sewing books (69681).

SISK, CHAS. T., Bryson City, N. C.: Fragmentary Indian skeleton excavated near the banks of the Tuckaseegee River, N. C. (69287).

SJÖSTEDT, Prof. Dr. YNGVE (See under Naturhistoriska Riksmuseum Entomologiska Avdelning).

SKINNER, M. P. (See under Interior, Department of, National Park Service).

SLAGHT, Dr. CARRIE, Suifu, Szechuen, China (through Rev. David C. Graham): 65 butterflies and moths from the borderland of Tibet (69405).

SLATER, Mrs. H. D., El Paso, Tex.: 6 plants (69770).

SMITH, Rev. Bro. DAMIAN, St. Anselm's College, Manchester, N. H.: 58 plants from New Hampshire (68549).

SMITH, EDWARD L., Bolinas, Calif. (through Dr. T. W. Stanton): Mollusk and the rock from which it was taken, from Bolinas (68597); 5 photographs of rock boring mollusks (68707).

SMITH, Prof. EUGENE A., University, Ala.: A sand barite crystal (69726, exchange).

SMITH, Mrs. FREMONT, Bar Harbor, Me. (through Mrs. B. S. Brann, Cabin John, Md.): 111 birds, a few eggs and 2 mammals (68801).

SMITH & CO., INC., GEO. W., Philadelphia, Pa.: A rough veneered blank for curved surface "Woodisk" auto wheel (69247).

SMITH, Dr. HUGH M., Washington, D. C.: 58 lots of fishes, 36 lots of reptiles and batrachians, 1 bird, 1 set of eggs and 1 nest, 7 lots of plants, 8 lots of insects, 4 lots of starfishes, 28 lots of marine invertebrates, 6 bolas balls, 5 specimens of minerals, and 31 lots of mollusks collected by the donor in South America (69415); Japanese wall panel made of wood shavings (70220).

SMITH, Dr. MALCOLM, Bangkok, Siam: 6 frogs from South Annam, Indo-China, 2 being paratypes of new species described by the donor (70230).

SMITH, MAXWELL, Hartsdale, N. Y.: 20 specimens, 18 species, of Philippine land and freshwater mollusks, including types (68547); 14 specimens, 13 species of landshells, from the Philippines; 2 barnacles collected by Aquilino E. Adamos, at Nasugbu Beach, P. I.; 10 specimens, 3 species of landshells from Mindanao and Negros, including the types of 2 new sub-species (69099, exchange); also 2 landshells from Negros; mollusk from Passi, Iloilo, Panay, P. I.; 3 landshells from Tay Tay, Palawan, P. I.; 4 landshells from Cagayan, Misamis, P. I. (68596, 69682, 69047, 69071, 69857, 69939); 135 specimens of land and marine mollusks from Europe, South Asia, Philippine Islands and the United States (68666, exchange); 3 landshells from Rondo, Cebu (69056, exchange); 4 specimens, 2 species of landshells from Rondo, Cebu (69651).

SMITH, R. D., Los Angeles, Calif.: Calcite (Iceland spar) from near Cordoba, Argentina (68761).

SMITH, W. A., Crown Point, N. Mex.: 2 grooved stone axes, pottery disk, and 2 human skeletons from a small ruin on the donor's ranch, about 10 miles southeast from Pueblo Bonito in the Chaco Canyon, N. Mex. (68973).

SMITHSONIAN INSTITUTION:

Bronze medal commemorating the seventy-fifth anniversary of the Royal Institute of Engineers, Holland, 1922 (68858); a Sebartian Erard harp (Patent 3828), London, 1811?, a legacy to the Institution from Mrs. Anna Chadbourne Hughes of Cambridge, Massachusetts (69068).

Smithsonian Biological Survey of the Panama Canal Zone: A collection of crustaceans from Panama collected by Dr. S. E. Meek and S. F. Hildebrand in 1912 (69974).

Bureau of American Ethnology: A meteoric iron found in the Sun Shrine of Pipe Shrine House, Mesa Verde National Park, Colo. (68890); archeological objects from Alaska collected by Dr. T. T. Waterman in the spring of 1922 (69367); stone collar from Mayaguez, Porto Rico (69530); 2 incense burners found in a cave in southern Yucatan, and presented to the Bureau by Maj. E. H. Ropes, U. S. Army (69660); 2 stone pestles from the Isle of Pines (69885); archeological specimens collected along the Susquehanna River, Maryland and Pennsylvania, in October, 1922, by John L. Baer (69881).

National Museum, collected by members of the staff: Aschemeier, C. R.: Skeleton of a porpoise, portion of the skull of

SMITHSONIAN INSTITUTION—Con.

National Museum, collected by members of the staff—Contd.

a whale, 7 birds and 12 fishes from Florida (69537). Baer, John L.: Stone artifacts and implements found along the Susquehanna River, Pa. (68613). Bartsch, Paul: Shipworms from Woods Hole, Mass. (68789); about 15,000 land, freshwater and marine mollusks, 48 bats, a lizard, some ectoparasites, a collection of ants and 3 fungi from the West Indies (70090). Bassler, R. S.: 2 slabs illustrating sun cracking and worm boring, 2 slabs of blue phosphate, and miscellaneous collections of invertebrate fossils from central Tennessee (68709). Boss, Norman H.: Cetacean from near Chesapeake Beach, Calvert County, Md. (69291). Foshag, W. F., and Earl V. Shannon: 100 specimens of minerals from old mines in Carroll County, Md. (68935); 80 specimens of rocks and minerals from vicinity of Leesburg, Va. (70023). Killip, Ellsworth P.: 500 plants from Panama (69085). Pennell, Dr. F. W., and Ellsworth P. Killip: 5,413 specimens of Colombian plants (69839, 69976, 70104). Stejneger, L.: Plants, insects, myriapods, spiders, fishes, crustaceans and worms, from Alaska and Asiatic coasts of the North Pacific (68912). Walcott, C. D.: Skin and skull of a deer, and skin and skull of a mountain goat from Alberta, Canada (69188).

National Museum, obtained by purchase 145 photographs of British locomotives (68979); 143 plants collected in Mexico by C. A. Purpus (69402); fragment weighing 810 grams of meteoric iron from Dungannon, Scott County, Va. (68625); collection of Yuma Indian ethnological material (70192); specimen of American spikenard, or Indian root, called "okadak" by the Chippewa Indians (69470); 150 plants from Mount Longust, British East Africa (68536); 100 plants from Uganda (69597); collection of ants (69136); Oriental and Ethiopian bees (68639); 10 beetles (69134); 874 British Guiana plants collected by de la Cruz (70018); 271 British Guiana plants (69519); chipped hoe and clay concretion bearing carvings (68797); European flies (129 specimens of Agromyzidae) (68594); 133 plants from the desert region of southern California (69598); miscellaneous insects and 44 vials of unidentified freshwater plankton (69117); 820 European horseflies (69388); Cretaceous fossils from Alberta, Canada (69150); Baxter oil print "The Reconciliation" and 9 wood blocks and 1 steel plate, from which the print was made (68638); specimen of cactus (69846); photograph of the earliest wood cut in the British Museum (68711); 1875 plants (*Bryotheca baltica*) (68909); 117 plants from Ecuador (69324, 69945); mass of meteoric iron from Glasgow, Barren County, Ky. (68617); ethnological material from Formosa (70226); 113 plants from Venezuela (69684); 434 plants from South Africa (69286, 69558, 69938); 4 skulls and 1 skin of seals from Lobos Island, Uruguay (69492); 60 fossil shells from the Tertiary of Hungary (69923); archeological specimens from Kentucky (70201); 14 plants collected by Buch (70060); 244

SMITHSONIAN INSTITUTION—Con.
National Museum, obtained by purchase—Continued.
West Indian plants (69250); 492 isopods and 665 specimens of insect larvae (68884); Cretaceous invertebrates from Germany (68943); page from the Gutenberg Bible (69348); a septarian nodule from near Fort Seybert, Pendleton County, W. Va. (69325); 8 salamanders and 1 lizard (69389).

National Museum, made in the Museum Laboratories: 14 casts from 6 bannerstones (69553); colored plaster copy of an Indian pot plowed up in the farm of William Hollar, on Laurel Fork of the Watauga River, Watauga County, N. C., original the property of Joseph Blount Cheshire, Ravenscroft, Raleigh, N. C. (69637); colored plaster casts of 3 birdstones in the possession of K. A. Perkins, Bonaparte, Iowa (70185); miniature hair paintings; pan of hair paint (without medium), and a pan of hair paint (mixed in gum water) (69014); 3 reproductions of ancient wood cutters' knives (68537); series of copper plates showing the steps in the process of etching (8 specimens); a mezzotint plate and a print from it (70075); 117 slides of insects combed from mammal skins (70160); a series of 33 models illustrating simple mechanical elements (68535, 69034, 69520, 69852, 70087); one-quarter size model of Cayley aircraft and 2 mechanical development models illustrating pulley combinations (70195); model showing two processes for the manufacture of manufactured gas, constructed in cooperation with S. S. Wyer, Columbus, Ohio (69116); 9 photographs of 8 printers sticks (69935).

SMITHSONIAN INSTITUTION—Con.
National Zoological Park: Skin and skeleton of a yellow-footed rock wallaby, and skin and skeleton of a lama (68715); skin and skull of a black-headed woolly monkey (68780); monkey (alcoholic) and skin and skull of a monkey (68983); skin and skeleton of a great anteater (69078); skull of a wolf from Arkansas, and a fire-cat (69221); 16 birds (69267, 69565, 69825, 70080); skin and skeleton of a cat from Sumatra (69833); 2 eggs of an eagle owl, and 1 egg of a large Indian pariquet (69879); monkey (alcoholic) (69903).

SMOOT, MARK L. E., Washington, D. C.: Pileated woodpecker (69378).

SNYDER, T. E. Washington, D. C.: 2 specimens of purple grackle from Washington, D. C. (68584).

SOLEY, Lieut. Commander JOHN C., U. S. Navy (See under George Watson).

SOLIS, Senor OCTAVIO, Mexico City, Mexico: 10 plants (69331).

SOTH, Mrs. M. E., Pocatello, Idaho: 7 plants from Idaho (69144).

SOUTH AFRICAN MUSEUM, THE, Cape Town, Union of South Africa (through Dr. L. Peringuey, Director): South African crustaceans comprising 6 shrimps from off the Great Fish Point Lighthouse, and 3 hermit crabs from the coast of Natal (69479, exchange).

SOUTH CAROLINA, UNIVERSITY OF, Department of Geology, Columbia, S. C.: Examples of 3 meteorites, Benares, Weston, and Cold Bokkeveld (69238, exchange).

SOUTH DAKOTA, MUSEUM OF THE UNIVERSITY OF, Vermillion, S. D. (through Prof. W. H. Over): 226 plants (69055, 69273).

SOUTHERN BIOLOGICAL SUPPLY COMPANY, New Orleans, La. (through Percy Viosca, jr.): 3 larval salamanders from Covington, La., and 12 musk-turtles from Louisiana (69859, 70211).

SOUTHWEST MUSEUM, THE, Los Angeles, Calif. (through Dr. John A. Comstock): Moth (68992).

SPEEDAUMATIC COMPANY, THE, Chicago, Ill.: 9 photographs of mailing machines, 3 wrapped and addressed newspapers, 1 addressed newspaper, and 1 Speedaumat address printing plate (69308).

SPEIGHT, R. (See under Canterbury Museum).

SPENCER, L. B., Mina, Nev.: 4 mineral specimens from Nevada (68729, exchange).

SPRINGER, Dr. FRANK, East Las Vegas, N. Mex.: About 800 specimens of Upper Carboniferous fossils from Jemez Springs, 100 miles southwest of Santa Fe, N. Mex. (69338); the paleontological collection of the late Orestes St. John, consisting of a general collection of Devonian fossils from Iowa, and a valuable collection of fossil fish remains, comprising about 3000 specimens and including many types (69706).

(See also under British Government, British Museum (Natural History)).

STABLER, H. GRAHAM, Philadelphia, Pa.: Bald eagle, in immature plumage, from Fairfax, Va. (69403).

STANDARD OIL COMPANY (N. J.), New York City (through C. F. Bowen): 33 lots of fossils from Venezuela (69049) Fragmentary dinosaur bones from Argentina (69299).

STANFORD UNIVERSITY, Stanford University, Calif. (through Mrs. Roxana S. Ferris): Plant from Texas (68754). Plant (68921); (through Dr. David Starr Jordan): 2 paratypes of fishes (69790). Exchange.

STANKOFF, S. (See under Nitika, Herbier du Jardin Botanique de).

STANTON, Dr. T. W. (See under Judge Junius Henderson, Dr. C. A. Matley, Dr. Mario Sanchez Roig, and Edward L. Smith).

STARR, DOUGLAS N., Washington, D. C.: 46 European and Central American coins (68851); United States coins comprising a ten dollar gold piece, 1907, Alabama Centennial silver half dollar, 1919, and a Grant centennial half dollar, 1922 (68852, loan); 15 coins of Austria, Bulgaria, and Czechoslovakia of the period of the World War (69350); United States ten dollar gold piece of 1907 (proof condition), and a United States half-cent of 1793 (69353, loan); German World War Prison Camp currency (399 specimens) (69463); 16 coins of Austria and Hungary issued during the period of the World War (69467).

STATE, DEPARTMENT OF (See under S. R. Capps, and Marcelino Madera).

STEELE, LOUIS J., Portsmouth, England: 2 pictorial prints (68714).

STEJNEGER, Dr. L., U. S. National Museum: Night lighting taper made in Nuremburg, Germany about 1890 (69178).

STEPHENS, Dr. W. B., Alameda, Calif.: Large ceremonial bow, carved and painted by the Chilkat Indians of Alaska (69744).

STEPHENS & WICKERSHAM QUOIN COMPANY, SAMUEL, Boston, Mass.: 1 each No. 0 No. 1 No. 2 Wickersham quoins; a 48 em Morton lock-up—No. 1 Stevens expansion lock; register key, and a No. 0 key (69756).

STERLING, Mrs. ETHEL ROBESON, London, England: 11 pieces of jewelry with Brazilian beetle settings (beetles collected for the Hon. George M. Robeson in 1876). Presented in memory of Mrs. George M. Robeson by her daughter (69167).

STEVENS, Mrs. MARY C., Washington, D. C.: Spanish hand stamp used on the Island of Guam (69241).

STEVENS, Prof. O. A. (See under North Dakota Agricultural College).

STEWART, Rev. R. R., Rawalpindi, India (through Miss Katherine D. Kimball, Washington, D. C.): 19

STEWART, Rev. R. R.—Continued.
ferns from India and Himalayas (68550, 69623); 69 plants from India (69323, 69412).

STEWART, T. DALE, Delta, Pa.: 3 argillite blades found in a cache at Peach Bottom, Pa. (68864).

STILES, Dr. C. W., Hygienic Laboratory, Washington, D. C.: 9 mollusks from Fort Caswell, Southport, N. C. (68965).

STILL, Mrs. GEORGE A., Kirksville, Mo. (through Dr. Norman C. Glover, Washington, D. C.): Photograph of the late Dr. George A. Still, president of the American School of Osteopathy (70157).

STILLINGER, C. R., Moscow, Idaho: 26 plants from Idaho (69449).

STITZEL, J. B., Philadelphia, Pa. (through Dr. Alexander Wetmore): Head of a wild turkey from Pennsylvania (69160).

STOCKBERGER, W. W. (See under Agriculture, Department of, Bureau of Plant Industry).

STOKES, W. E. (See under Florida, University of).

STOLL, CHAS. H., New York City: 2 skulls of bears from Nova Scotia (68733).

STONE, R. W., Assistant State Geologist, Harrisburg, Pa.: Fragment from a meteoric iron found near New Baltimore, Somerset County, Pa. (69326).

STRATHMORE PAPER COMPANY, Mittineague, Mass.: Pamphlet entitled "A Grammar of Color" (68880).

STRONG, A. M., Los Angeles, Calif.: 138 marine mollusks from California (69341, 69690).

STUBBS COMPANY, THE, Detroit, Mich.: 2 chromo lithographs (68869).

SWALES, B. H., U. S. National Museum: 10 bird skins from the Azores (68557); 15 bird skins, chiefly from South America (68587); 5 bird skins, chiefly from Africa, including 2 genera new to the Museum collections (68813); 4 bird skins from the Sudan, representing 2 genera new to

SWALES, B. H.—Continued.
the Museum collections (69870); 6 bird skins representing 4 genera and species new to the Museum collections (68961); 11 bird skins from South America (69126); 13 bird skins from the South Shetland Islands (69854).

SWANTON, J. W., Bureau of American Ethnology, Washington, D. C.: 2 medical manuscripts written by James Parker, Hartford, Conn., in the year 1790 (70163)

SWEDEN, GEOLOGICAL SURVEY OF, Stockholm (through Dr. A. H. Westergård): 130 specimens of Upper Cambrian fossils from Sweden (70167, exchange).

SYKES, PETER, Radium, Va.: Salamander from Radium (68771).

TABLER, Miss ELIZABETH D., U. S. National Museum: Brass taper stand and extinguisher (69148).

TATTERSALL, Prof. W. M., Cardiff, Wales: 75 lots of crustaceans, comprising 46 specimens, 11 species of isopods, and 838 specimens, 64 species, of amphipods, all from the Irish Sea (69837, exchange).

TAVARES, Prof. J. DA SILVA, La Guardia, Pontevedra, Spain: 38 adults and 38 lots of galls of cynipid gall-flies (68726, exchange).

TAYLOR, E. W. B., Haverhill, Mass.: Lithograph showing the birthplace of Harriet Newell, Haverhill, Mass. (69872).

TAYLOR, W. L., Manhattan, Nev. (through H. G. Clinton): 2 specimens of radiated acicular stibnite from White Caps Mine, Manhattan (69337).

TELL, WILLIAM, Austin, Tex.: 6 plants (69300).

TENNESSEE STATE GEOLOGICAL SURVEY, Nashville, Tenn. (through Wilbur A. Nelson, State Geologist): One-half of a meteoric iron found in 1913 four miles northeast of Savannah, Hardin County, Tenn. (69101, exchange).

TENNEY, J. B., Bisbee, Ariz.: Samples of higginsite from the manganese workings of Higgins Mine, Bisbee (69485).

TEXAS AGRICULTURAL AND MECHANICAL COLLEGE, Dept. of Entomology, College Station, Texas (through Prof. S. W. Bilsing): 10 specimens of mollusks from San Antonio, Texas (68737).

TEXAS, UNIVERSITY OF, Austin, Tex. (through Prof. B. C. Tharp): 122 plants from Texas (68687); 681 plants (69363); 21 plants collected by Robert Runyon (69481, 69608).

THAANUM, D., Honolulu, Hawaii (through Dr. W. H. Dall): Marine shells from Palmyra Island, Mid-Pacific, consisting of 1009 specimens, about 190 species, including types of 28 new species and subspecies (69994).

THARP, Prof. B. C. (See under Texas, University of).

THOMAS, A. O., Iowa City, Iowa (through Dr. T. Wayland Vaughan): Invertebrate fossils from Antigua (69914).

THOMPSON, CHARLES A., Hillsdale, Mich.: Fossil wood from Branch County, Mich. (69716).

THOMPSON, Dr. O. C., Phoenix, Ariz. (through F. A. Greeley): 4 living cacti from Arizona (68700); 6 plants (68809).

THOMPSON, Col. W. B., New York City: Slice from a boulder of New Zealand nephrite (68615, exchange).

THOMSON, Dr. J. ALLAN (See under Dominion Museum).

THORPE, HERBERT, Clearwater, Fla.: Young mud-eel from Florida (69317).

TINTIC STANDARD MINING COMPANY, Dividend, Utah (through Victor C. Heikes): Examples of lead sulphate ores from the Tintic Standard Mine, Utah County, Utah (70204).

TISDEL, Miss CARRIE S., Washington, D. C.: Collection of ceramics, Indian pottery, and ethnological material from various localities (70038).

TOLMAN, RUEL P., U. S. National Museum: 22 early French half tones; 52 photogravures, a chromo lithograph, a hand colored collotype, and an original drawing, in pen and ink, by Louis Loeb (68860); 8 etchings (69804, loan).

TOLMAN, Mrs. RUEL P., Washington, D. C.: 2 photographs, portraits by N. Brock, Asheville, N. C. (68952).

TOMPKINS-KIEL MARBLE COMPANY, New York City: 5 slabs of marble 24 by 59 inches, York Fossil, Westfield Green, Sonora, Napoleon Gray, and Wellington Cream (68655).

TOPAKYAN, H. H. (See under Hagop Kevorkian).

TOWNE, STUART S., Los Angeles, Calif.: 24 plants from California (69143).

TRAUGER, FRANK, Philadelphia, Pa.: 115 specimens of butterflies from Colombia (69697).

TREASURY DEPARTMENT (through Hon. Andrew W. Mellon, Secretary): Collection of ancient and modern coins, modern tokens, medals, and decorations formerly in the U. S. Mint at Philadelphia, Pa. (70139).

Bureau of Engraving and Printing: Official engraved portraits of Presidents of the United States, namely, Harding, Wilson, Taft, Roosevelt, McKinley, Grant, and Lincoln (69124).

U. S. Coast Guard (through E. F. B. Fries, Cambridge, Mass.): Holothurians, bryozoa, barnacles on mussel shell, hermit crabs, ascidians, mollusks and a fish collected by Mr. Fries, being biological collections on the 1921 Ice Patrol (69868).

TRELEASE, Dr. WILLIAM (See under E. Percy Phillips).

TREMPER, Dr. R. H., Los Angeles, Calif. (through Dr. W. H. Dall): 3 mollusks from Oregon and Washington (70184).

TRICHROMATIC ENGRAVING COMPANY, New York City: 2 sets of progressive color proofs of a three color half tone of a butterfly's wing, enlarged to 3½ dots to the inch (68867).

TROVINGER, RAYMOND, U. S. National Museum: Black-crowned night heron from Maryland (69653).

TURNER, Dr. M. L., Washington, D. C.: 20 miscellaneous engravings; writing case and stationery case of the early part of the 19th century; 6 spoons, silver sugar tongs and a glass box of the early part of the 19th century (69355, 69707, 70231).

TURNER, Dr. and Mrs. M. L., Washington, D. C.: 3 old silver watches and combined clock and barometer desk set (69572).

TURNER, Mrs. WILBUR R., Washington, D. C.: 4 geodes from England (69947).

ULKE, TITUS, Washington, D. C.: 5 plants and 5 specimens, 2 species, of landshells from British Columbia (68878, 69005).

ULRICH, Dr. E. O., Washington, D. C.: 1500 specimens of Silurian fossils from the Island of Gotland (69030); 1000 invertebrate fossils from the Cambrian and associated formations of northern Europe (70070).

UNIVERSITETETS BOTANISKE MUSEUM, Copenhagen, Denmark: Fern from South America (69911); (through Dr. Carl Christensen, Inspector) 4 plants from Mexico and Central America (69322). Exchange.

UNIVERSITETS ZOOLOGISKA MUSEUM, Copenhagen, Denmark: 50 crinoids (69528).

UPSALA UNIVERSITETETS ZOOLOGISKA INSTITUTION, Upsala, Sweden (through Dr. Torsten Gislen): 10 recent crinoids from the Japanese Expedition of Dr. Sixten Bock, 1914 (69097, exchange).

U. S. PHARMACOPAOEIAL CONVENTION, INC. (through Dr. Murray Galt Motter, Washington, D. C.): Records of the Proceedings of the U. S. Pharmacopoeial Convention, 1910 (70161, deposit).

U. S. PRINTING & LITHOGRAPH COMPANY, THE, New York City: 6 chromo lithographs (photo mechanical) reproductions of paintings (68881); chromo lithograph entitled "The Builders' Wharf" (69667).

VAIL MEMORIAL FUND, THEODORE N., New York City: 2 bronze copies of the Theodore N. Vail medal awarded annually to members of the Bell Telephone System for noteworthy public service (68712).

VAN DUZEE, M. C., Buffalo, N. Y.: 7 flies, including 2 paratypes of new species (70068).

VAN HEULEN, Miss BARBARA (See under Michigan Agricultural College).

VAN HYNING, T. (See under Florida State Museum).

VAN STRAELEN, Dr. VICTOR, Brussels, Belgium: A large series of invertebrates, including 1000 crustaceans, 50+mollusks, 25+echinoderms, 5 sponges. 5 worms, and 10+ fishes, all from Belgium (69960, exchange).

VAUGHAN, Dr. T. WAYLAND, U. S. Geological Survey, Washington, D. C., and Dr. H. A. PILSBRY, Academy of Natural Sciences, Philadelphia, Pa.: A collection of Ordovician fossils and igneous rocks from the Lake Champlain district of New York (69942).

VAUGHAN, Dr. T. W. (See also under Compania del Petroleo "El Aguila" S. A., Dr. Joseph A. Cushman, Hoyt S. Gale, Dr. C. A. Matley, A. O. Thomas, and F. L. Wilde).

VAUPEL, Dr. F., Berlin-Dahlem, Germany: Plant (68933, exchange).

VEATCH, CHARLES, Kansas City, Mo.: 65 beetles from California and 2 mollusks (68940).

VERSAVEL, A., S. J., Benque Viejo, British Honduras: Salamander, and a gecko from Benque Viejo (68749).

VIDAL, RAFAEL, Mayaguez, Porto Rico: About a dozen bones of mammals and 3 bones of birds from Indian deposits at Mayaguez (69419).

VIOSCA, PERCY, jr. (See under Southern Biological Supply Company).

VONSEN, M., Petaluma, Calif.: 26 minerals (68832, exchange).

VROOMAN, Mrs. CARL, Bloomington, Ill. (through Mrs. R. G. Hoes): Black beaded dress worn by Mrs. Matthew T. Scott when President General of the National Society of the Daughters of the American Revolution (69491).

WAGNER, ROY S., Fresno, Calif.: About 400 specimens, 54 species, of beetles (68732).

WAKELAND, CLAUDE, Parma, Idaho: 7 moths (69900).

WALCOTT, ARTHUR L. (through Bouvier, Caffey and Beale, New York City: A suit of Korean armor (68986, bequest).

WALCOTT, Dr. CHARLES D., Smithsonian Institution: 10 living cacti from Alberta (68580); gilt token commemorating the seventieth anniversary of the Rock Island Railroad lines, 1922 (68987); an engraving by Thomas Doney, entitled "The Jolly Flat Boat Men" (69090); photograph of the delegates to the Darwin Celebration, 1909 (69098); a red and white patchwork quilt made about 1850 by Mrs. Mary L. Walcott of Utica, N. Y., mother of the donor, and 2 handwoven blue and white bedspreads obtained from an old residence in Washington County, N. Y., about 1892 (69191); box of child's blocks made in Germany during the early part of the 19th century (37 specimens) (69218); bronze paperweight, drop forged by Kraeuter and Company, Inc., Newark, N. J., bearing a relief portrait of Abraham Lincoln (69285, deposit); military medal awarded by the French Government in memory of Aviator Stuart Walcott, killed in action December 12, 1917, and a copy of the decree conferring the award (70130).

WALCOTT, Mrs. CHARLES D., Washington, D. C.: Plant from British Columbia (69123); 19 mollusks from a small lake at the head of Clearwater River, north of Lake Louise Station, Alberta, Canada (69127); 7 plants from the Canadian Rockies (69162).

WALCOTT, Miss HELEN B., Washington, D. C. 6 etchings (69801, loan).

WALES, GEORGE C., Boston, Mass. (through Will Simmons): Softground etching "Stand by to Let Go" (70024).

WALFORD, EDWIN A., West Bar, Banbury, England: Slab of Mesozoic crinoids from England, and 36 Miocene gastropods from Bordighera, northern Italy (68620); 150 specimens of Miocene fossils from Bordighera, Italy (68957); 25 specimens, 18 species, of Silurian fossils from the Wenlock shales of England (69077); 140 specimens, representing 80 species, of Silurian fossils from England; also 1 specimen of Middle Liassic ironstone, and 1 of Liassic coral (69848).

WALKER, ALEX., Blaine, Oreg. (through Dr. W. H. Dall): 32 specimens of shells from Blaine and Netarts, Oreg., representing about 7 species (70073); about 20 specimens, 3 species, of marine shells from Tillamook County, Oreg. (70212).

WALKER, Dr. BRYANT, Detroit, Mich.: 5 mollusks, including 1 cotype from Alabama (68824).

WALKER, E. P. (See under Agriculture, Department of, Bureau of Biological Survey).

WALKER, HOBART S., Chattanooga, Tenn.: 3 plants from Tennessee (68686).

WALLBRUNN, KLING & COMPANY, Chicago, Ill.: Fountain lettering pen, 1 set (15) assorted speedball lettering and drawing pens (68713).

WALTON, C., Peterhead, South Australia: About 8 shipworms, including the type of a new subgenus, from Largs Bay, Australia (69455).

WANGER, N., Washington, D. C.: Egg cases of a large sea shell (68857).

WAR DEPARTMENT:

Air Service: 23 Air Service photographs (70129).

Army Medical Museum: Skulls of reptiles and mammals, and snakes (alcoholic) from Panama (69993).

Quartermaster General, Office of: Australian military and naval uniforms and insignia of the period of the World War (69437); New Zealand military uniforms, insignia and equipment of the period of the World War (69849); articles of German cavalry equipment made from paper yarns, from Salvage Plant at Fort Myer, Va. (70063).

Signal Corps: American, French, and German Army field signalling apparatus, including telephone, telegraph, and radio; also airplane communication equipment (69853); radio equipment, including receiving set, connectors, and insulators (70141).

Public Buildings and Grounds: Specimens of white elm (68684).

WARD, MRS. L. A. COONLEY, Wyoming, N. Y.: The residual portion of the Ward-Coonley collection of meteorites (68994).

WARD'S NATURAL SCIENCE ESTABLISHMENT, Rochester, N. Y.: 4 specimens of minerals (68891); 16 specimens of minerals representing 9 species (69274); specimen of the mineral pyrobelonite from Langban, Sweden (69541); fragmentary pieces of New Concord, Ohio, and Waconda, Kans., meteoric stones (69600); a large exhibition specimen of the mineral descloizite from South Africa (70049). Exchange.

WASHINGTON, Dr. HENRY S., Washington, D. C. Echinoid from Barbados (68841); specimen of wolframite from S. Hunan, China (69641).

WASHINGTON LOAN AND TRUST COMPANY, Washington, D. C. (See under Matilda J. Ramsey).

WASHINGTON, STATE COLLEGE OF, Pullman, Wash. (through Prof. A. L. Melander): 2 rare western crickets, and 40 flies (69431, 69639).

WATERSTON, JAMES (See under British Government, British Museum (Natural History)).

WATSON, GEORGE (through Lieut. Commander John C. Soley, U. S. Navy, Branch Hydrographic Office, New Orleans, La.): 2 samples of bauxite from the Moengo mines, Dutch Guiana (70041).

WEATHERBY, C. A., East Hartford, Conn.: 213 plants from New England (69579); plant from Ohio (68758).

WEAVER, Mrs. ERASMUS MORGAN, Washington, D. C.: A pearl shell and an ammonite (68954).

WEBER, FREDERICK, New York City (through Will Simmons): Drypoint "Portrait Group" and an etching "Wild Cherry Trees" (70029).

WEHR, E. E. (See under Nebraska, University of).

WELCH, Mrs. G. B., Washington, D. C.: 16 Tlinkit Indian baskets, Sitka, Alaska (69064).

WELLS, GABRIEL, New York City: Book of Joshua from the Gutenberg Bible (68572, loan).

WENDLER, Prof. C., Chene-Bourg, near Geneva, Switzerland: 137-gram fragment of the stony meteorite of Molina, Murcia Province, Spain (69632, exchange).

WENGER, JOSEPH, U. S. Naval Academy, Annapolis, Md.: 6 land shells from Mount Pelee, Martinique (68849).

WESEL MAUFACTURING COMPANY, F., Brooklyn, N. Y.: Wesel final block for mounting printing plates (69354).

WESTERGÅRD, Dr. A. H. (See under Sweden, Geological Survey of).

WESTERN PENNSYLVANIA SCHOOL FOR THE BLIND, Pittsburgh, Pa.: Copy of the "Illuminator," a quarterly magazine for the blind (69650).

WESTON, EDWARD, Glendale, Calif., 9 pictoral prints (69551).

WETMORE, Dr. ALEXANDER, Washington, D. C.: Long-eared owl from Virginia (69424); skeleton and 10 skulls of ducks (69566).

(See also under J. B. Stitzel.)

WHEATLEY, E. A., Chattanooga, Tenn.: Fragments of male and female Indian skeletons found in a cave in Fentress County, Tenn. (69260).

WHERRY, Dr. E. T., Bureau of Chemistry, U. S. Department of Agriculture, Washington, D. C.: 4 ferns from South Carolina, and 4 plants (68679, 68763).

WHITE, C. E., Los Angeles, Calif.: 4 bivalve shells from Mugu Bay, Ventura County, Calif. (69458).

WHITE, JOHN JAY, New York City: Mounted head of an African antelope (69093); 4 skins of monkeys from Africa (70120).

WHITE, W. H., College Park, Md.: Shrew (69192).

WHITING, Dr. P. W., State University of Iowa, Iowa City, Iowa: Approximately 500 parasites of a Braconid genus, being descendants of 1 female and reared under known conditions (69585).

WICKHAM, Prof. H. F., Iowa City, Iowa (through W. S. Fisher): 14 beetles, including 11 species, 4 of which are types (70232).

WIGGERS, Dr. AUGUST F. A., Flushing, N. Y.: Parasitic worm (69151).

WILCOX, JANE and MARCIA, Fort Humphreys, Va.: Black and white warbler from Virginia (69972).

WILCOX, Brig. Gen. TIMOTHY E., U. S. Army (ret'd.), Washington, D. C.: 3 plants (68915).

WILDE, F. L., New York City (through Dr. T. Wayland Vaughan): 126 specimens of Tertiary and Mesozoic fossils from Cuba (68531).

WILLETT, G., Craig, Alaska: 28 specimens, 9 species, of marine mollusks, and 29 specimens, 13 species, of marine mollusks, including type of a new species, all from Craig (68814, 69225).

WILLIAMS, Mrs. E. M., Northfield, Minn.: Oak cane made from one of the timbers of the U. S. S. *Lawrence*, flagship of Commodore Oliver H. Perry during the battle of Lake Erie, September 10, 1813 (68770).

WILLIAMS, N. E., Las Vegas, Nev.: Specimen of gothite from the Sproul Mesaba, near Black Canyon, on Colorado River, Nev. (69279).

WILLS, Maj. DAVIS BOWLES, Washington, D. C.: 5 ancient Mexican terracotta images and a whistle from near Vera Cruz (70228).

WILSON, C. L., Ednor, Md.: Cooper's hawk (69179).

WILSON, W. R., Washington, D. C.: American bittern (69037).

WINECOFF, Dr. THOMAS E., Evanston, Wyo.: Box elder bug (69125).

WINSLOW, Prof. E. J., Auburndale, Mass.: 711 plants, chiefly from New England (69922).

WISCONSIN SCHOOL FOR THE BLIND, Janesville, Wisc.: Copy of the "Free Press," a periodical for the blind (69698).

WITZIG, JOHN A., jr., Buffalo, N. Y.: Gentleman's hat and case of the period of the Civil War (68996).

WOLFE, WALTER G., Boston, Mass.: Antinous shutter release made about 1896 or 1898 (69235).

WOOD CONVERSION COMPANY, Cloquet, Minn.: 14 specimens showing stages in the manufacture of "Balsam-Wool" insulation and sound-deadening material (69913).

WOOD NEWSPAPER MACHINERY CORPORATION, New York City: 3 photographs of the Autoplate Stereotyping Machine (69438).

WOOD, N. R.: 168 bird skins (68647).

WOODWORTH, Prof. H. E. (See under Philippine Islands, University of the Philippines, College of Agriculture).

WORKS, WINFIELD F., Washington, D. C.: Miscellaneous bones of the codfish (69950).

WORTHY PAPER COMPANY ASSOCIATION, Mittineague, Mass.: 18 specimens of printing letter press and half tones, etc., on "Georgian paper," manufactured by the Company (69863).

WORUMBO COMPANY, New York City: Specimen of carded woolen overcoating "Montagnac" (69633).

WRIGHT, FRED E., Washington, D. C.: 4 pipes made by natives for sale to natives, and a cake of snuff from South Africa (69114); ethnological specimens from Cape Colony, Africa (70040).

(See also under De Beers Consolidated Mines, Ltd.).

WYND, F. LYLE, Eugene, Oreg.: 20 plants from Oregon (68590, 69067).

WYOMING, UNIVERSITY OF, Department of Botany, Laramie, Wyo: 5 ferns from Wyoming (69029, exchange).

YABE, Prof. H., Tohoku Imperial University, Geological Institute, Sendai, Japan: Cast of the type of a fossil ammonite (69036).

YEAKEL, C. W., Syracuse, N. Y.: Graptolite from the Clinton shales of western New York (69734).

YOUNG, J. P., Williamsport, Pa.: 3 ferns from Colorado (68874).

ZAHLBRUCKNER, Dr. A. (See under Naturhistorisches Staatsmuseum).

ZEIMET, CARLO, Washington, D. C.: 6 mosses from North Carolina (69045).

ZELEDÓN, Mrs. José C., San José, Costa Rica; Central America: 20 ferns from Costa Rica (69862).

ZELIZKO, J. V., Vienna, Austria: Pleistocene fossils consisting of jaws and limb bones of small mammals, and shells (69953); examples of moldavites from Bohemia (70083).

ZERNY, Dr. H. (See under Naturhistorisches Staats museum).

ZETEK, JAMES, Ancon, Canal Zone: About 8 shipworms from Miraflores Lake, Panama (69441); (through Dr. C. V. Piper) 10 plants from Panama (70043); 2 shipworms and 2 pieces of wood from the Panama Canal (70136).

ZINSSER AND COMPANY, Hastings-on-Hudson, N. Y.: 7 specimens of alizarine dyes and 8 skeins of dyed woolen yarn (69278).

ZOOLOGICAL INSTITUTE, Tokyo, Japan (See under Japan, Zoological Institute).

ZOOLOGICAL MUSEUM, Copenhagen, Denmark (through Dr. Th. Mortensen): 50 crinoids (69528).

ZOOLOGISCHE SAMMLUNG DES BAYERISCHEN-STAATES, Munich, Bavaria (through Dr. E. O. Engel): 9 flies, 2 new species (68768, exchange).

ZUMMACH, O. A., East Las Vegas, N. Mex.: Examples of a silicate mineral from the Rociada Mining District, N. Mex. (69073).

LIST OF PAPERS BASED ON THE NATIONAL COLLECTIONS, PUBLISHED DURING FISCAL YEAR 1922–1923.[1]

Aldrich, J. M.

A new genus of two-winged fly with mandible-like labella: Proc. Ent. Soc. Wash., vol. 24, no. 6, June, 1922, pp. 145–148.

A new genus of Helomyzidae: Bull. Brook. Ent. Soc., vol. 17, no. 4, Oct., 1922, pp. 108, 109.

The Neotropical muscoid genus Mesembrinella Giglio-tos and other testaceous muscoid flies: Proc. U. S. Nat. Mus., vol. 62, no. 2457, Dec. 9, 1922, pp. 1–24.

A new tachinid parasite of the codling moth (Dip.): Ent. News, vol. 34, no. 2, Feb., 1923, pp. 53, 54.

A new genus and species of fly reared from the hoof of the Carabao: Philippine Journ. Sci., vol. 22, no. 2, Feb., 1923, pp. 141, 142.

New genera of two-winged flies of the subfamily Leptogastrinae of the family Asilidae: Proc. U. S. Nat. Mus., vol. 62, no. 2466, Feb. 13, 1923, pp. 1–6.

A new sugarcane miner: Bull. Brook. Ent. Soc., vol. 18, no. 1, Feb. 24, 1923, pp. 22, 23.

A new parasitic fly bred from the bean beetle: Proc. Ent. Soc. Wash., vol. 25, no. 4, Apr., 1923, pp. 95, 96.

Two Asiatic muscoid flies parasitic upon the so-called Japanese Beetle: Proc. U. S. Nat. Mus., vol. 63, no. 2474, Apr. 13, 1923, pp. 1–4.

Notes on the dipterous family Hippoboscidae: Ins. Ins. Mens., vol. 11, nos. 4–6, April–June, 1923, pp. 75–79.

Allen, Glover M.

The black finless porpoise meomeris: Bull. Mus. Comp. Zool., vol. 65, no. 7, Jan., 1923, pp. 233–256, pls. 1–3.

Ames, Oakes.

Orchidaceae quaedam americanae: Schedulae Orchidianae, no. 1, Nov. 18, 1922, pp. 1–24.

Orchidaceae quaedam americanae: Schedulae Orchidianae, no. 2, Jan. 6, 1923, pp. 1–38, pl. 1.

New or noteworthy orchids: Schedulae Orchidianae, no. 3, Jan. 30, 1923, pp. 1–27.

Additions to the orchid flora of Central America with observations on noteworthy species: Schedulae Orchidianae, no. 4, May 4, 1923, pp. 1–60, pls. 2, 3.

New or noteworthy orchids from Central America and the Philippine Islands: Schedulae Orchidianae, no. 5, June 6, 1923, pp. 1–42.

Anonymous.

Jade: Its substitutes and imitations. A contribution from the mineralogical laboratory of the U. S. National Museum: The Jewelers' Circular, vol. 85, no. 27, Jan. 31, 1923, pp. 53, 55, figs. 1–4.

[1] A few papers published prior to this fiscal year are included, having been inadvertently omitted from previous reports.

Anthony, H. E.
Mammals from Mexico and South America: Amer. Mus. Novitates, no. 54, Jan. 17, 1923, pp. 1–10, figs. 1, 2.
Preliminary report on Ecuadorean mammals No. 3: Amer. Mus. Novitates, no. 55, Jan. 31, 1923, pp. 1–14, figs. 1–4.
Aschemeier, C. R.
Beds of the Gorilla and Chimpanzee: Journ. Mam., vol. 3, no. 3, Aug., 1922, pp. 176–178.
Baer, John Leonard.
A prochlorite bannerstone workshop: Amer. Anthrop., vol. 24, no. 4, Oct.–Dec., 1922, pp. 438, 439, pl. 5.
Bailey, H. H.
A new dove from Florida, Zenaidura macroura peninsulari (Florida Mourning Dove): Wilson Bull., vol. 35, No. 2, June, 1923, p. 100.
Notes on the Florida Burrowing Owl: Wilson Bull., vol. 35, No. 2, June, 1923, p. 117.
Bailey, Vernon.
Mammals of the District of Columbia: Proc. Biol. Soc. Washington, vol. 36, May 1, 1923, pp. 103–138.
Barbour, Thomas.
The crocodile in Florida: Occ. Papers, Mus. Zool. Univ. Michigan, no. 131, Feb. 10, 1923, pp. 1–6.
Bartsch, Paul.
A monograph of the American shipworms: Bull. U. S. Nat. Mus., no. 122, Aug. 4, 1922, pp. 1–51, pls. 1–37.
A visit to Midway Island: Auk (n. s.) vol. 39, no. 4, Oct., 1922, pp. 481–488.
Breeding experiments with Cerions: Carnegie Inst. of Washington, Year Book no. 21 (1922) 1923, pp. 164, 165.
Stenomorph, a new term in taxonomy: Science, vol. 57, no. 1472, Mar. 16, 1923, p. 330.
Additions to our knowledge of shipworms: Proc. Biol. Soc., Washington, vol. 36, Mar. 28, 1923, pp. 95–101.
Heredity experiments in the Tortugas: Smithsonian Misc. Colls., vol. 74, no. 5, May, 1923, pp. 45–54.
The status of Teredo beachi and Teredo navalis: Science, vol. 57, no. 1485, June 15, 1923, p. 692.
Bassler, R. S.
Systematic paleontology of Silurian deposits. Bryozoa: Maryland Geol. Surv., Silurian, 1923, pp. 405–412, pls. 13, 14.
——— (See also under Ferdinand Canu and under E. O. Ulrich.)
Bean, Barton A. (See under Henry W. Fowler.)
Belote, Theodore T.
War Medals of the United States issued by Individual States: Daughters Amer. Rev. Mag., vol. 57, No. 5, May, 1923, pp. 295–305, illustrated.
Report on the Division of History. In Annual Report U. S. Nat. Mus., 1922, Dec. 20, 1922, pp. 121–130.
Bent, Arthur Cleveland.
Life Histories of North American Petrels and Pelicans and their allies. Order Tubinares and Order Steganopodes: Bull. U. S. Nat. Mus., No. 121, Oct. 19, 1922, pp. i–xii, 1–343, pls. 1–69.
Life Histories of North American Wild Fowl. Order Anseres (Part): Bull. U. S. Nat. Mus., No. 126, May 25, 1923, pp. i–ix, 1–250, pls. 1–46.

Berry, Edward Wilber.

Additions to the flora of the Wilcox group: Prof. Paper U. S. Geol. Surv., 131–A, July 27, 1922, pp. 1–21, pls. 1–18.

Tertiary fossil plants from the Republic of Haiti: Proc. U. S. Nat. Mus., vol. 62, art. 14, no. 2460, Dec. 28, 1922, pp. 1–10, pl. 1, text figs. 1, 2.

Miocene plants from southern Mexico: Proc. U. S. Nat. Mus., vol. 62, art. 19, no. 2465, June 2, 1923, pp. 1–27, pls. 1–7, 1 map.

Blake, S. F.

Key to the genus Diplostephium, with descriptions of new species: Contr. U. S. Nat. Herb., vol. 24, pt. 3, Aug. 11, 1922, pp. 65–86, pls. 21–28.

Native names and uses of some plants of eastern Guatemala and Honduras: Contr. U. S. Nat. Herb., vol. 24, pt. 4, Aug. 18, 1922, pp. 87–100, pls. 29–33.

New plants from South and Central America collected by Wilson Popenoe: Proc. Biol. Soc. Washington, vol. 35, Oct. 17, 1922, pp. 117–123.

New Asteraceae from Utah and Nevada: Proc. Biol. Soc. Washington, vol. 35, Oct. 17, 1922, pp. 173–177.

Two new species of Moraceae from South America: Proc. Biol. Soc. Washington, vol. 35, Oct. 17, 1922, pp. 179, 180.

Two new species of letterwood (Piratinera): Journ. Washington Acad. Sci., vol. 12, no. 17, Oct. 19, 1922, pp. 391–399, 1 fig.

New South American Asteraceae collected by E. W. D. Holway: Bot. Gaz., vol. 74, no. 4, Dec., 1922, pp. 414–430, pl. 19.

[Descriptions of Polygala scabridula, P. rhynchosperma, and P. ambigens] in N. L. Britton, Studies of West Indian plants—XI: Bull. Torrey Bot. Club, vol. 50, no. 1, Jan., 1923. pp. 39–41.

Two new genera related to Narvalina: Journ. Washington Acad. Sci., vol. 13, no. 6, Mar. 19, 1923, pp. 102–105, fig. 1.

Three new composites from Bolivia: Proc. Biol. Soc. Washington, vol. 36, Mar. 28, 1923, pp. 51–54.

New composites from Salvador: Journ. Washington Acad. Sci., vol. 13, no. 8, Apr. 19, 1923, pp. 143–146.

Notes on the North American species of Limonium: Rhodora, vol. 25, no. 292, Apr., 1923, pp. 55–60.

A new Gymnocoronis from Mexico: Proc. Biol. Soc. Washington, vol. 36, May 1, 1923, pp. 179, 180.

Blanchard, Frank N.

The amphibians and reptiles of western Tennessee: Occ. Papers, Mus. Zool. Univ. Michigan, no. 117, July 6, 1922, pp. 1–18.

Boone, Pearl Lee.

New marine Tanaid and Isopod Crustacea from California: Proc. Biol. Soc. Washington, vol. 36, May 1, 1923, pp. 147–155.

Böving, Adam G.

Taxonomy and morphology of the larval stages of Scobicia declivis Lec: Bull. U. S. Dept. Agric., no. 1107, Prof. paper, Dec. 4, 1922, pp. 49–54, (Appendix)

Bridwell, J. C.

The host plant and habits of Acanthoscelides griseolus (Fall) (Coleopt.): Proc. Ent. Soc. Wash., vol. 25, no. 3, Mar., 1923, pp. 79, 80.

Britton, N. L., and J. N. **Rose**.

The two species of deerhorn cactus: Journ. Washington Acad. Sci., vol. 12, no. 14, Aug. 19, 1922, pp. 328–330, figs. 1, 2.

Two new genera of Cactaceae: Bull. Torrey Bot. Club, vol. 49, no. 8, Aug. 1922, pp. 251, 252.

Britton, N. L., and J. N. Rose—Continued.
The Cactaceae. Descriptions and illustrations of plants of the cactus family: Carnegie Inst. Washington, Publ. no. 248, vol. 3, Oct. 12, 1922, pp. i-vii, 1–255, pls. 1–24, figs. 1–250.

Britton, N. L., and Paul C. Standley.
Three new plants of the family Rubiaceae from Trinidad: Journ. Washington Acad. Sci., vol. 13, no. 6, Mar. 19, 1923, pp. 105–107.

Canu, Ferdinand, and Ray S. Bassler.
Studies on the cyclostomatous Bryozoa: Proc. U. S. Nat. Mus., vol. 61, art. 22, no. 2443, Oct. 9, 1922, pp. 1–160, pls. 1–28, text figs. 1–40.

Carriker, M. A., jr. (See under W. E. Clyde Todd.)

Caudell, A. N.
Ceuthophilus infesting a well (Orth.: Locustidae or Tettigoniidae): Ent. News, vol. 34, no. 1, Jan., 1923, p. 28.
Phorticolea boliviae, a new myrmecophilous cockroach from South America: Psyche, vol. 30, no. 1, Feb., 1923, pp. 28–30.
Steiroxys hendersoni, a new katydid from Utah: Proc. U. S. Nat. Mus., vol. 62, no. 2468, Feb. 13, 1923, pp. 1, 2.
A new species of Zoraptera from Bolivia: Proc. Ent. Soc. Wash., vol. 25, no. 3, Mar., 1923, pp. 60–62.

Chamberlin, Ralph V.
Notes on West Indian Millipeds: Proc. U. S. Nat. Mus., vol. 61, art. 10, no. 2431, July 6, 1922, pp. 1–19, pls. 1–6.

Chandler, Asa C.
Three new trematodes from Amphiuma means: Proc. U. S. Nat. Mus., vol. 63, art. 3, no. 2471, Apr. 28, 1923, pp. 1–7, pls. 1–2.

——— and Charles L. Suttles.
A new rat tapeworm, Schizotaenia sigmodontis, from North America: Journ. Parasitol., vol. 8, no. 3, Mar., 1922, pp. 123–128, pl. 13.

Chapin, Edward A.
Note on Monostomes: Journ. Paristol., vol. 9, no. 1, Sept., 1922, p. 44.
A species of round worm (Gongylonema) from domestic swine in the United States: Proc. U. S. Nat. Mus., vol. 62, art. 10, no. 2456, Dec. 8, 1922, pp. 1–3, text-figs. 1–3.

Chapin, James P.
The species and geographic races of Steganura: Amer. Mus. Novitates, No. 43, Sept. 6, 1922, pp. 1–12, figs. 1–3.

Chapman, Frank M.
The distribution of the motmots of the genus Momotus: Bull. Amer. Mus. Nat. Hist., vol. 48, Mar. 15, 1923, pp. 27–59.

Chase, Agnes.
First book of grasses. The structure of grasses explained for beginners: New York, Nov., 1922, pp. 1–121, with 94 text figures.
The Identification of Raddi's grasses: Journ. Washington Acad. Sci., vol. 13, No. 9, May 4, 1923, pp. 167–179.

Clark, Austin H.
Animal evolution: Proc. Nat. Acad. Sci., vol. 8, No. 7, July 1922, pp. 219–225.
Results of the Hudson Bay Expedition, 1920. III. The Echinoderms [with an addendum by Hubert Lyman Clark]: Contr. Canadian Biol., Studies Biol. Sta. Canada, 1922, No. 2, pp. 1–5.
The Ophiurans of the Island of Curaçao: Bijdr. tot de Dierk., vol. 22, 1922, pp. 209–213.

Clark, Austin H.—Continued.

A revision of the recent representatives of the crinoid family Pentacrinidae, with the diagnoses of two new genera: Journ. Washington Acad. Sci., vol. 13, No. 1, Jan. 1923, pp. 8–12.

The origin of the vertebrates: Journ. Washington Acad. Sci., vol. 13, No. 7, Apr. 4, 1923, pp. 129–138.

Coale, Henry K.

A new subspecies of the little black rail: Auk, vol. 40, No. 1, Jan., 1923, pp. 88–90, pl. 4.

Cochran, Doris M.

Two new species of Calamaria from Borneo: Proc. Biol. Soc. Washington, vol. 36, Mar. 28, 1923, pp. 91, 92.

A new species of Eleutherodactylus from the Dominican Republic: Proc. Biol. Soc. Washington, vol. 36, Mar. 28, 1923, pp. 93, 94.

A new frog of the genus Leptodactylus: Journ. Washington Acad. Sci., vol. 13, no. 9, May 4, 1923, pp. 184, 185.

A new lizard of the genus Sceloporus: Journ. Washington Acad. Sci., vol. 13, no. 9, May, 1923, pp. 185, 186.

A new Anolis from Haiti: Journ. Washington Acad. Sci., vol. 13, no. 11, June 4, 1923, pp. 225, 226.

Cockerell, T. D. A.

Descriptions and records of Bees.—XCVII: Ann. Mag. Nat. Hist., ser. 9, vol. 11, no. 62, Feb., 1923, pp. 263–269.

Some bees from Victoria, Mexico: Proc. U. S. Nat. Mus., vol. 63, no. 2476, Apr. 16, 1923, pp. 1–5.

A fossil cichlid fish from the Republic of Haiti: Proc. U. S. Nat. Mus., vol. 63, art. 7, no. 2475, Apr. 27, 1923, pp. 1, 2, pl. 1.

Cole, Frank R.

A revision of the North American two-winged flies of the Family Therevidae: Proc. U. S. Nat. Mus., vol. 62, art. 4, no. 2450, May 10, 1923, pp. 1–140, pls. 1–13.

Cook, O. F.

Opsiandra, a new genus of palms growing on Maya ruins in Petén, Guatemala: Journ. Washington Acad. Sci., vol. 13, no. 9, May 4, 1923, pp. 179–184.

Cooke, M. T.

The cerulean warbler at Washington, D. C.: Auk, vol. 39, no. 4, Oct., 1922, pp. 570–572.

Cram, Eloise B.

New records of horse strongyles from the United States: Journ. Parasitol., vol. 9, no. 1, Sept., 1922, p. 49.

Crassisome urosubulatum in the United States: Journ. Parastiol., vol. 9 no. 1, Sept., 1922, p. 49.

——— (See also under J. E. Shillinger).

Cushman, Joseph A.

Status of the general knowledge of the Pacific Foraminifera: Proc. First Pan-Pacific Conference, Special Pub. Bernice P. Bishop Mus. no. 7, pt. 1, 1921, pp. 284–289.

Results of the Hudson Bay Expedition, 1920. I. The Foraminifera: Contr. Canadian Biol., Studies, Biol. Sta. Canada, 1921, no. 9, pp. 135–147.

Cushman, R. A.

New Oriental and Australian Ichneumonidae: Philippine Journ. Sci., vol. 20, no. 5, May, 1922, pp. 543–597, pl. 1.

The identity of Ichneumon Coccinellae Schrank (Hym.): Proc. Ent. Soc. Wash., vol. 24, no. 9, Dec., 1922, pp. 241, 242.

A new subfamily of Braconidae (Hym.) from Termite nests: Proc. Ent. Soc. Wash., vol. 25, no. 2, Feb., 1923, pp. 54, 55, pl. 4.

Dall, William Healey.

Note on Fenella A. Adams: Nautilus, vol. 36, no. 1, July, 1922, pp. 27, 28.

Two new bivalves from Argentina: Nautilus, vol. 36, no. 2, Oct., 1922, pp. 58, 59.

Fossils of the Olympic Peninsula: Amer. Journ. Sci., vol. 4, Oct., 1922, pp. 305–314.

Baird the Man: Science, vol. 52, no. 1468, Feb. 16, 1923, pp. 194–196.

Some unrecorded names in the Muricidae: Proc. Biol. Soc. Washington, vol. 36, Mar. 28, 1923, pp. 75–77.

Additions and emendations to United States National Museum Bulletin 112: Proc. U. S. Nat. Mus., vol. 63, art. 10, no. 2478, Apr. 12, 1923, pp. 1–4.

Dunn, Emmett Reid.

New species of Hynobius from Japan: Proc. Calif. Acad. Sci., ser. 4, vol. 12, no. 2, Jan. 2, 1923, pp. 27–29.

A new salamander from Mexico: Proc. Biol. Soc. Washington, vol. 35, Mar. 20, 1922, pp. 5, 6.

Two new insular batrachoseps: Copeia, no. 109, Aug. 15, 1922, pp. 60–63.

Dwight, Jonathan.

Description of a new race of the lesser black-backed gull, from the Azores: Amer. Mus. Novitates, no. 44, Sept. 6, 1922, pp. 1, 2.

Dyar, Harrison G.

The species of Psorophora of the ciliata group (Diptera, Culicidae): Ins. Ins. Mens., vol. 10, nos. 7–9, July–Sept., 1922, pp. 113–117, pl. 4.

The American Aedes of the serratus group (Diptera, Culicidae): Ins. Ins. Mens., vol. 10, nos. 7–9, July–Sept., 1922, pp. 157–166.

New American moths (Lepidoptera): Ins. Ins. Mens., vol. 10, nos. 7–9, July–Sept., 1922, pp. 166–173.

New forms of Cerura (Lepidoptera, Notodontidae): Ins. Ins. Mens., vol. 10, nos. 7–9, July–Sept., 1922, pp. 173, 174.

Notes on Tropical American mosquitoes (Diptera, Culicidae): Ins. Ins. Mens., vol. 10, nos. 10–12, Oct.–Dec., 1922, pp. 188–196, pl. 5.

The North American short-winged Psychidae (Lepidoptera): Ins. Ins. Mens., vol. 11, nos. 1–3, Jan.–Mar., 1923, pp. 1–5, pl. 1.

Note on Cucullia alfarata (Lepidoptera, Noctuidae): Ins. Ins. Mens., vol. 11, nos. 1–3, Jan.–Mar., 1923, pp. 5–7.

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