

ANNUAL REPORT OF THE
BOARD OF REGENTS OF
THE SMITHSONIAN
INSTITUTION

SHOWING THE
OPERATIONS, EXPENDITURES, AND
CONDITION OF THE INSTITUTION
FOR THE YEAR ENDING JUNE 30

1911



WASHINGTON
GOVERNMENT PRINTING OFFICE
1912

In addition to the above, there are four pieces of real estate bequeathed to the Institution by the late R. S. Avery, some of which yield a nominal rental and all are free from taxation.

That part of the fund deposited in the Treasury of the United States bears interest at 6 per cent per annum, under the provisions of the act organizing the Institution and an act of Congress approved March 12, 1894. The rate of interest on the West Shore Railroad bonds is 4 per cent per annum.

The income of the Institution during the year, amounting to \$83,435.30, was derived as follows: Interest on the permanent foundation, \$58,375.12; contributions from various sources for specific purposes, \$14,518.43; and from other miscellaneous sources, \$10,541.75; all of which was deposited in the Treasury of the United States to the credit of the current account of the Institution.

With the balance of \$35,364.88 on July 1, 1910, the total resources for the fiscal year amounted to \$118,800.18. The disbursements, which are given in detail in the annual report of the executive committee, amounted to \$86,374.52, leaving a balance of \$32,425.66 on deposit June 30, 1911, in the United States Treasury.

The Institution was charged by Congress with the disbursement of the following appropriations for the year ending June 30, 1911:

International exchanges.....	\$32,000
American Ethnology.....	42,000
Astrophysical Observatory.....	13,000
National Museum:	
Furniture and fixtures.....	125,000
Heating and lighting.....	50,000
Preservation of collections.....	300,000
Books.....	2,000
Postage.....	500
Building repairs.....	15,000
Building.....	77,000
National Zoological Park.....	115,000
International Catalogue of Scientific Literature.....	7,500
Elevators, Smithsonian Building.....	10,000
Total.....	789,000

EXPLORATIONS AND RESEARCHES.

Various scientific explorations and researches have been carried on during the past year by the Institution as far as its limited income and the generosity of its friends would permit. There have also been important biological, ethnological, and astrophysical researches by the National Museum, the Bureau of American Ethnology, and the Astrophysical Observatory, respectively, which are discussed elsewhere in this report.

STUDIES IN CAMBRIAN GEOLOGY AND PALEONTOLOGY.

During the field season of 1910 I continued the study of the Cambrian strata of the section of the Rocky Mountains adjacent to the main line of the Canadian Pacific Railway, special attention being given to the Stephen formation. The outcrop of this formation was carefully examined for many miles along the mountain sides, with the hope of finding a locality where conditions had been favorable for the preservation of the life of the epoch. The famous trilobite locality on the slope of Mount Stephen above Field had long been known and many species of fossils collected from it, but even there the conditions had not been favorable for the presence and preservation of examples of much of the life that, from what was known of older faunas and the advanced stage of development of the Upper Cambrian fauna, must have existed in the Middle Cambrian seas. The finding, during the season of 1909, of a block of fossiliferous siliceous shale that had been brought down by a snowslide on the slope between Mount Field and Mount Wapta led us to make a thorough examination of the section above in 1910. Every layer of limestone and shale above was examined, until we finally located the fossil-bearing band. After that for 30 days we quarried the shale, slid it down the mountain side in blocks to a trail, and transported it to camp on pack horses, where the shale was split, trimmed, and packed and then taken down to the railway station at Field, 3,000 feet below.

A number of sections of the Cambrian rocks were studied and measured in the mountains north and south of Laggan, Alberta, and many beautiful panoramic photographs secured.

BIOLOGICAL SURVEY OF THE PANAMA CANAL ZONE.

At the date of my last annual report the Institution contemplated an exhaustive biological survey of the Panama Canal Zone, and it was then hoped that definite plans would soon be completed and the survey undertaken within a few months. I am glad now to report that chiefly through the generosity of friends of the Institution the necessary funds for carrying on the work became available. With the cooperation of several of the executive departments, and of the Field Museum of Natural History, a party of about 10 naturalists was accordingly sent to the zone, and the results so far accomplished have been very satisfactory. Large collections of biological material have been received, including specimens of a considerable number of genera and species new to science.

Much interest is manifest in the survey both here and in the zone. The Republic of Panama was so impressed with the importance of the work that it invited the Institution to extend the survey within

the bounds of that country, which was done with gratifying results as far as the limited means and time permitted.

As stated in my last report, it seemed to be highly important to science that such a survey of the Canal Zone be made, for, although it was known in a general way that a certain number of species of animals and plants in the fresh-water streams on the Atlantic side of the Isthmus were different from those on the Pacific side, no definite knowledge of the extent of these differences had been acquired. It also seemed important to determine exactly the geographical distribution of the various organisms inhabiting the Isthmus, which is one of the routes by which the animals and plants of South America have entered North America and vice versa. When the Panama Canal is completed the organisms of the various watersheds will be offered a ready means of mingling together, the natural distinctions as regards distribution now existing will be obliterated, and the data for a true understanding of the fauna and flora will be placed forever out of reach. Moreover, a great fresh-water lake will be created by the construction of the Gatun Dam, and the majority of the animals and plants inhabiting that locality will be driven away or drowned, and quite possibly some species may be exterminated before they become known to science.

BIOLOGICAL EXPEDITION IN CANADA.

Through the courtesy of the Canadian Government and of Dr. A. O. Wheeler, president of the Alpine Club of Canada, the Smithsonian Institution was enabled to send a small party of naturalists to accompany Dr. Wheeler on his topographical survey of the British Columbia and Alberta boundary line and the Mount Robson region. The party started in June, 1911.

The region to be surveyed includes a most rugged and broken country in the midst of the Canadian Rockies, abounding in a great variety of animals and plants, and it is expected that the expedition will result in a large and valuable collection of birds, mammals, insects, and plants to be added to the National Museum series.

RAINEY EXPEDITION IN AFRICA.

Mr. Paul J. Rainey, of New York City, having planned a hunting and collecting trip of several months' duration in Africa, offered to present to the Institution the natural history material obtained during the trip if there could be sent with him some person skilled in the preparation of specimens. Mr. Rainey generously offered to bear all the expenses of the trip. The route of travel was to be north of that of the recent Smithsonian African expedition, through the country lying between the northern portion of British East Africa and the southern part of Abyssinia. Mr. Edmund Heller, who was

completion of the final reports on the expedition being prepared by the Smithsonian members of the party.

The secretary added that the collections were being permanently arranged by the experts of the National Museum. It was intended to mount certain of the animals in groups, with accessories, so as to show their environment and habits.

On motion the secretary's report was accepted.

LANGLEY MEMORIAL TABLET.

Senator Lodge, chairman of the committee on the Langley memorial tablet, reported that the desire of the board that this tablet should commemorate the work of Mr. Langley in aerial navigation had been carried out in a design representing him as seated, engaged in a profound study of the great problem. The committee had entered into an arrangement with a New York sculptor to design a tablet 4 feet 6 inches high by 2 feet 5 inches wide. It had been expected that the model could be exhibited at this meeting, but a letter had been received from the artist stating that an accident to the model necessitated the working over of a large portion of it, and therefore it could not be submitted at this meeting.

BIOLOGICAL SURVEY OF THE PANAMA ZONE.

The secretary stated that the plan for a biological survey of the Panama Canal Zone, under the direction of the Smithsonian Institution, was described in his annual report, which had already been distributed to the Regents.

Since the preparation of the report, a letter had been written to the President outlining the plan, and asking if it would meet his approval if cooperation were asked of the Isthmian Canal Commission of the War Department, the Bureau of Fisheries of the Department of Commerce and Labor, and the Biological Survey and Bureaus of Entomology and Plant Industry of the Department of Agriculture. The President gave his approval and authorized the secretary to communicate with the departments mentioned, which was done. All have signified their desire to cooperate and have assigned experts to aid in the work. The estimated cost of the survey which would have to be met by the Institution is \$11,000, of which \$5,750 has been subscribed.

For several years American and foreign naturalists have been asking that a biological survey of the Canal Zone be undertaken, and various attempts have been made to arrange for such a work. The only plan that had materialized was one by the Field Museum of Natural History, Chicago, for the collection and study of the fishes of the Canal Zone. By agreement, this work will now be carried on in conjunction with that of the Smithsonian Expedition,

In answer to Senator Bacon's inquiry as to the scope of the work intended, the secretary said it was to cover studies of the animal and plant life of the land and waters of the Canal Zone. Such a survey is necessary before the canal is completed, as it is believed that conditions will be changed after the canal is opened to commerce and the waters of the Atlantic Ocean are joined with those of the Pacific. The organisms of the various watersheds would then be offered a ready means of mingling together, the natural barriers would be obliterated, and the data for a true understanding of the fauna and flora placed beyond reach.

THE HARRIMAN TRUST AND GIFT.

The secretary stated that he was desirous of establishing at the Institution a number of research associateships. He wished to give exceptionally strong men an opportunity to do research work without the care and burden of administrative duties, and with full knowledge that as long as their work was properly conducted it would be continued and that in the event of incapacity for active work, provision would be made for them.

As an illustration, he cited the case of Dr. C. Hart Merriam, who has been provided for through the liberality of Mrs. Edward H. Harriman. He also mentioned that the Carnegie Institution of Washington has a number of men engaged in special fields of work, but added that there would be no probability of duplication of work. The Carnegie Institution does not undertake exploratory work such as that of the African expedition or the biological survey of the Panama Canal Zone. The field for scientific investigation is extensive and there are numerous worthy projects that can not be undertaken because of lack of means.

In this connection the secretary announced that Dr. Merriam's splendid collection of American mammals had been purchased by Mrs. Harriman for \$10,000 and presented to the Institution.

HODGKINS GOLD MEDAL.

The secretary called the attention of the board to the establishment some years ago of a gold medal under the name of "The Hodgkins Medal of the Smithsonian Institution." This was in honor of Mr. Thomas George Hodgkins, the donor of the Hodgkins fund, and was to be awarded for exceptional contributions to our knowledge of the nature and properties of atmospheric air, or for original and practical applications of existing knowledge of the air to the welfare of mankind.

The first Hodgkins medal was awarded in 1898 to Prof. James Dewar for his researches on the liquefaction and solidification of

Fuller memorial meeting.—It having appeared to be the wish of the board at its annual meeting on December 8 last that a formal meeting in memory of the late Chief Justice Fuller should be held by the Regents, a resolution was then adopted inviting Justice Harlan to deliver such an address on a suitable occasion, the time of which was to be left entirely to his convenience. The secretary regrets to report that Justice Harlan has written him to say that he finds himself unable in the near future to comply with the wishes of the board.

After discussion, in which it was suggested that the proposed tribute to the late chancellor take the form of a memorial to be published in the annual report, the following resolution was adopted:

Resolved, That the secretary be requested to prepare a suitable memorial of the life and work of the late Chief Justice Melville Weston Fuller, chancellor of the Smithsonian Institution from 1888 to 1910, which memorial is hereby declared approved for inclusion in the next annual report of the Board of Regents.

Langley memorial tablet.—At the last meeting of the board it was reported that the Langley memorial tablet had met with an accident and would have to be remodeled. This work of repair has been going on, but no photograph showing the present condition of the tablet has been submitted by the sculptor.

Hodgkins gold medal of the Institution.—The committee appointed by the secretary to consider whether sufficiently important investigations into the phenomena of atmospheric air in relation to the welfare of mankind had been made to merit the award of the third Hodgkins gold medal have reported their findings with a recommendation, which report is now being considered.

Biological survey of the Panama Canal Zone.—The secretary stated that the board would recall that at the late annual meeting he had spoken of the organization of a biological survey of the Panama Canal Zone to include studies of the life of the land and waters of that region, and had explained the necessity for immediate action, as the opening of the canal would mingle the waters of the Atlantic and Pacific Oceans, which might permanently destroy the possibility of a true understanding of the fauna and flora now existing there.

Since that meeting a party of naturalists designated to carry on the work has reached the zone, and the collections resulting from their work are already arriving. Those engaged in the survey are the following:

Prof. S. E. Meek, of the Field Museum of Natural History; Prof. Henry Pittier, of the United States Bureau of Plant Industry; Mr. E. A. Goldman, of the United States Biological Survey; Mr. S. F. Hildebrand, of the United States Bureau of Fisheries; Mr. E. A. Schwarz and Mr. August Busck, of the United States Bureau of

Entomology; and Mr. William R. Maxon, of the United States National Museum.

Much interest is being manifested in this survey both here and in the zone. The Republic of Panama is so impressed with the importance of the work that it has invited the Institution to extend the survey into that country.

The Institution is indebted to the Departments of State, Agriculture, Commerce and Labor, the War Department, and the Panama Railroad & Steamship Co. for courtesies which have insured the success of the enterprise.

As previously stated, a very considerable part of the funds necessary for the survey has been received by subscription.

Appointment of an additional assistant secretary.—The secretary called attention to the large increase in the work of the Institution and its branches, brought about by the natural growth of their activities and the addition of new interests, and stated that there was need for the appointment of an additional assistant secretary.

He desired the permission of the board to appoint to that position before the close of the present fiscal year Dr. Frederick William True, who entered the service of the Institution in 1878, who was a zoologist of established reputation, and who was now head curator of the Department of Biology in the United States National Museum. After discussion, the following resolution was adopted:

Resolved, That the proposed appointment by the secretary of Dr. Frederick William True as assistant secretary of the Smithsonian Institution be approved.

Bequest of George W. Poore.—The secretary announced that since the annual meeting notice had been received that the Institution had been made the residual legatee of the late George W. Poore, of Lowell, Mass., who left an estate estimated to be \$40,000, under the condition that the income from this sum should be added to the principal until a total of \$250,000 should have been reached, and that then the income only was to be used for the purposes for which the Institution was created. The portions of the will relating to the bequest are as follows:

ITEM 7. The large and small photographs of myself I desire given to the Smithsonian Institute hereinafter mentioned; to be given a place in their Institute where they may be seen, as one of the conditions of the gift to them herein made by me.

ITEM 8. All the rest, residue, and remainder of my estate, real, personal, and mixed, of whatever name or nature and wherever found or situate, of which I shall die seized, possessed, or entitled, whether at law or in equity, I give, devise, and bequeath to the Smithsonian Institute, at Washington, D. C., but in trust nevertheless and upon the condition, in addition to the condition as to photographs of myself as above, that the fund realized from my estate and from turning the real and personal estate into money shall be held forever by said Smithsonian Institute as a fund to be called the Lucy T., and George W. Poore fund, and upon condition that the income only of said fund

The following papers of Smithsonian Miscellaneous Collections were in press at the close of the year:

2014. Cambrian Geology and Paleontology. II. No. 5: Middle Cambrian Annelids. By Charles D. Walcott. Pages 109-144, with Plates 18-23. Volume 57, No. 5.
2015. Description of a New Genus and Species of Hummingbird from Panama. By E. W. Nelson. Volume 56, No. 21.

III. SMITHSONIAN ANNUAL REPORTS.

The annual report for 1909 was published in January, 1911.

1986. Annual Report of the Board of Regents of the Smithsonian Institution, showing Operations, Expenditures, and Conditions of the Institution for the year ending June 30, 1909. Octavo. Pages x, 751, with 73 plates and 4 maps. Containing publications 1915, 1916, and 1950-1985.

Small editions of the following papers, forming the general appendix of the Annual Report of the Board of Regents for 1909, were issued in pamphlet form:

1950. The Future of Mathematics. By Henri Poincaré. Pages 123-140.
1951. What Constitutes Superiority in an Airship. By Paul Renard. Pages 141-156.
1952. Researches in Radiotelegraphy. By J. A. Fleming. Pages 157-183, with two plates.
1953. Recent Progress in Physics. By Sir J. J. Thomson. Pages 185-205.
1954. Production of Low Temperatures, and Refrigeration. By L. Marchis. Pages 207-224.
1955. The Nitrogen Question from the Military Standpoint. By Charles E. Munroe. Pages 225-236.
1956. Simon Newcomb. By Ormond Stone. Pages 237-242, with one plate.
1957. Solar-radiation Researches, by Jules César Janssen. By H. de le Baume Pluvinel. Pages 243-251, with one plate.
1958. The Return of Halley's Comet. By W. W. Campbell. Pages 253-259, with four plates.
1959. The Upper Air. By E. Gold and W. A. Harwood. Pages 261-269.
1960. The Formation, Growth, and Habit of Crystals. By Paul Gaubert. Pages 271-278.
1961. The Distribution of Elements in Igneous Rocks. By Henry S. Washington. Pages 279-304.
1962. The Mechanism of Volcanic Action. By H. J. Jonston-Lavis. Pages 305-315, with 3 plates.
1963. Conservation of Natural Resources. By James Douglas. Pages 317-329.
1964. The Antarctic Land of Victoria. By Maurice Zimmermann. Pages 331-353.
1965. Some Results of the British Antarctic Expedition, 1907-9. By E. H. Shackleton. Pages 355-368, with 6 plates and 3 maps.
1966. The Oceanography of the Sea of Greenland. By D. Damas. Pages 369-383, with 2 plates.
1967. From the Niger, by Lake Chad, to the Nile. By Lieut. Boyd Alexander. Pages 385-400, with 3 plates.
1968. Mesopotamia: Past, Present, and Future. By Sir William Willcocks. Pages 401-416, with 4 plates and 1 map.
1969. Albert Gaudry and the Evolution of the Animal Kingdom. By Ph. Glangeaud. Pages 417-429.
1970. Charles Darwin. By August Weismann. Pages 431-452.