



ANNUAL REPORT

OF

THE DIRECTOR

OF THE

MUSEUM OF COMPARATIVE ZOÖLOGY

AT HARVARD COLLEGE

TO THE

PRESIDENT OF HARVARD COLLEGE

FOR

1939-1940

CAMBRIDGE, MASS., U. S. A.

PRINTED FOR THE MUSEUM

1940

PUBLICATIONS
OF THE
MUSEUM OF COMPARATIVE ZOÖLOGY
AT HARVARD COLLEGE

There have been published of the BULLETIN, Vols. I to LXXXVII; of the Memoirs, Vol. I to LIV, No. 1, 2, 3, 4, 5 and Vol. LV.

The BULLETIN and MEMOIRS are devoted to the publication of original work by the Officers of the Museum, of investigations carried on by students and others in the different Laboratories of Natural History, and of work by specialists based upon the Museum Collection and Exploration.

These publications are issued in numbers at irregular intervals. Each number of the Bulletin and of the Memoirs is sold separately. A price list of the publications of the Museum will be sent on application to the Director of the Museum of Comparative Zoölogy, Cambridge, Massachusetts.

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Assistant Curator of Marine
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Assistant Curator of Oceanogra-
phy

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Assistant Curator of Invertebrate
Palaeontology and Librarian

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Assistant Curator of Marine Invertebrates

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Research Associate in Palaeontology and Alexander Agassiz
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HENRY SETON

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Research Assistant
Research Assistant
Research Assistant
Research Assistant
Research Assistant
Research Assistant
Research Assistant
Research Assistant
Research Assistant
Research Assistant
Research Assistant
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Assistant in the Library
Assistant in the Library
Assistant in the Library
Sturgis Hooper Professor of Geology



REPORT OF THE DIRECTOR

1939-1940

TO THE PRESIDENT OF HARVARD COLLEGE:

Sir:—

When Mr. John D. Sherman Jr. wrote his obituary notice for Dr. Fall, he spoke of him, "as our most eminent worker on North American Coleoptera." Dr. Fall was born December 25, 1862 and died November 14, 1939. Just before his death, indeed the codicil to his will was written but the day before he passed away, he decided to give his collection to this Museum. This contains something over a quarter of a million insects in an exceptionally perfect condition, and besides this there are about 100,000 more in the Charles Liebeck collection which Dr. Fall received a few years ago. He described 1484 species of North American beetles of which the types of about 1400 are in his collection. Besides the North American Coleoptera, there are many exotic beetles and some fine exotic Lepidoptera. This increment to our previously very large collection of beetles and, considering that beetles are the most abundant of all groups of insects, inclined the Faculty of the Museum to establish a Curatorship of Coleoptera and Mrs. Carl A. Richmond, the sister of Dr. Fall, has provided a sum of money to increase the salary of this Curatorship which has been named for her brother. Thus Dr. Philip J. Darlington, Jr., has become the first Fall Curator of Coleoptera, a fitting memorial to a generous benefactor and distinguished entomologist.

Another valuable collection of insects of particular usefulness in view of the vast amount of Antillean ma-

terial already in the Museum which it supplemented, was received from Dr. J. A. Ramos of the College of Agriculture and Mechanical Arts at Mayaguez.

During the last winter, accompanied by Dr. T. E. White and, part of the time, by Mr. and Mrs. W. E. Schevill and Mr. L. I. Price, I went to Coconut Grove, Florida, where, together, we installed and labelled the exhibits of the Montgomery Museum in the Fairchild Tropical Garden. This Museum, devoted to showing the uses made of parts of palms and the products of palm trees, by both primitive and civilized man in various parts of the world, bids fair to be one of the foremost and most instructive of a number of specialized museums of limited scope which have been organized in various parts of the country. We then went to Soledad for the usual winter inspection and returning to Florida Dr. White and I again visited the Thomas Farm in Gilchrist County, excavating intensely for about five weeks. We secured a much larger and much more diversified collection of Miocene mammals than have ever before been found or at least made known east of the Mississippi River. It is hard to believe that other equally rich Miocene sites may not have been, or may not yet be, discovered, in northwest Florida, but so far this site appears to be quite unique, and the land on which it is situated has been purchased for the University with the aid of a Grant from the Milton Fund.

A pleasant episode this spring was the visit of the President and Fellows and the Board of Overseers to the Museum during an inspection of the biological units of the University. They invited me and some of my senior associates to lunch with them in my offices; a most pleas-

ant, informal opportunity to discuss current events and needs of the Museum for the future.

Various other expeditions which have taken place during the course of the year and for which we have to thank our friends are mentioned in the reports of the several curators. I would like particularly to thank my friend Mr. George P. Gardiner for the generosity with which he made provisions for the Peruvian Expedition, undertaken by his son, accompanied by Mr. Oliver Pearson. The fact that they had the misfortune to lose a valuable collection when their raft was swamped by a freshet of the treacherous upper Ucayali River should not be held against them for they had already sent back most excellent material, much of it new to the Museum.

Mr. and Mrs. Griswold's expedition to Cozumel Island was a fiasco through no fault of theirs. Conditions in Mexico made it impossible for them to secure entry and collecting permits which we had been lead to believe would be forthcoming.

Previous to his marriage Mr. John A. Griswold, Jr. had made a most fruitful expedition to the Highlands of Central Peru so, between these two expeditions and the receipt of some other material, our representation from western South America has been greatly improved.

Dr. F. W. Carpenter made another trip to secure fossil insects, this time from the Lower Permian of Noble County, Oklahoma. His expenses were covered by grants from the Penrose Fund of the Geological Society of America and the Museum. He was assisted by Mr. G. A. Raasch. It is of interest to note that the 5000 specimens secured indicate a very different fauna from the collection previously made in the Elmo Limestone of Kansas which

is presumably of about the same age. Dr. Carpenter is to be congratulated on this noteworthy addition to the unique collection of fossil insects already in the Museum.

Ten years ago the Palaeontological exhibits in this Museum were comparatively insignificant. Today they are not only extensive but very attractive. The type of slab mount developed by Mr. Nelson makes the method of displaying fossil skeletons more attractive than any method that I have seen in use elsewhere. This year he mounted the first of the Dicynodonts collected by the Harvard Brazilian Expedition in 1936. This massive reptile is one of the South American representatives of a large and sterile sidebranch of the ancestors of the mammals. The example displayed represents the new form which Dr. Romer is describing as *Dinodontosaurus oliveirai*.

Also placed on exhibition this year is an uniquely perfect skull of the Labyrinthodont, *Eryops*. This skull was so perfect that it was possible to secure an excellent brain cast which is exhibited alongside the skull and is also the basis of a Memoir on the cranial anatomy which has been prepared for publication by Dr. H. J. Sawin.

The type of the Plesiosaur *Macroplata longirostris* which we found unexpectedly and obtained by exchange from the Tufts College Museum, has finally been mounted in a way that makes an attractive and instructive exhibit and, at the same time, preserves all of this fossil skeleton which had not been destroyed by pyritization before it came into our possession. I spoke in an Annual Report of several years ago, of the discovery of this type the whereabouts of which had been unknown since 1876.

During the winter Dr. White and Mr. Schevill made a most successful visit to several classic localities in the

Province of Pinar del Rio in Cuba and, while there, collected a large number of fossil fish and cephalopods. To the material which they secured has been added several other series, obtained by purchase from private individuals. Several of our Cuban friends helped most effectively in arranging details concerning these various matters. I should mention particularly Dr. Luis Howell Rivero, Dr. Guillermo Aguayo and Dr. Pedro Bermudez to all of whom our thanks are gladly extended. As usual the Harvard Agent in Havana, Mr. Norcott S. Henriquez, helped in matters connected with the shipping.

As usual Mr. Nelson secured some excellent research material in Florida last winter.

Thanks to the generosity of a number of his classmates, headed by Mr. Raymond Oveson and Robert Winsor II, of the Class of 1905, the Museum has had the benefit of the technical ability of Mr. Rudolph C. B. Bartsch as an aid in connection with the collection of Lepidoptera.

A little known resource of the Museum, but one which is beginning to be known and hence more frequently consulted, is the enormous collection of portraits of American and foreign naturalists and of their letters. The holograph material is of the greatest possible use in establishing the authenticity of original labels while the portraits are now frequently borrowed to illustrate books and historical and biographical articles. Miss Wilder, with the aid of several of the students under the Temporary Student Employment Plan, have finally worked out and organized all this material so that it is immediately accessible according to a modern system of filing. During the course of organizing this material many thousands of published and unpublished original drawings appeared. Some of these

could be tied to definite specimens, others could not be identified but in the most general way. Many of these had been lying about since Professor Louis Agassiz's time. As far as possible these have been sorted out and given to the specialists who are most likely to use them in connection with their work. In other cases they were distributed where they might be of some use in connection with the illustrating of lectures in zoology. Wellesley College received a goodly series. The original drawings by Dr. W. K. Brooks, made when he was a student here, were sent back to Johns Hopkins where they have been framed and hung up on the walls of his old laboratory. Adequate samples of the work of each individual artist, whether a member of the staff of the Museum, or one of those employed from time to time by members of the Staff, especially by Louis and Alexander Agassiz, have been placed in the files while others have been framed and hung on the walls of the exhibition rooms. Thus a difficult problem of handling an unwieldy and troublesome mass of material has finally been disposed of.

One of the most interesting manuscript gifts of the year came from a member of the Corporation, Mr. Henry James, who gave the Museum the journal which his father, Professor William James, kept while he was in Brazil with Professor Agassiz. Another most welcome gift was William Morris Hunt's portrait of Professor Agassiz, painted in the late 1860's. This was painted for Professor Agassiz's son-in-law Mr. Quincy A. Shaw and came to us from his grandson, Mr. Quincy A. Shaw II.

Much work has been done on the building during the course of the year. Not only have additional storage facilities been provided in a number of departments but

the new hide room has been finished and filled and the brickwork around the entire upper part of the structure, just along under the roof, has been entirely repointed and remortared. For some reason this part of the building was less well constructed than the rest and rain driving through between the bricks has caused numberless leaks with resulting discoloration of paint and at times even the damage of valuable material.

Our exhibits have been continually subject to depre-
dation by vandals stealing expensive framed labels and this has increased to the point where it has been necessary to close some of the exhibition rooms until changes can be made which will make these thefts more difficult. Rowdies, apparently armed with sticks, reach through, or over, the grills which surround and are intended to protect some of the large mounted fossil skeletons and break them so that difficult and tedious repairs have been repeatedly necessary. We are replacing the grills, adding some strands of barbed wire and hope that these changes may serve their purpose, but it is a tragic situation that a museum as important as our own is and serving the public the way in which it does, should not be in a financial position to employ guards for the adequate protection of our exhibits. This we cannot do. Museums in civilized countries, such as Japan, Java or India, do not face problems of this nature and can leave their exhibits unguarded and do so. This is impossible in a city like Cambridge.

REPORT ON ECHINODERMS

BY HUBERT LYMAN CLARK

As in previous years, the work of the Department of Marine Invertebrates has been diversified to a notable degree, because of the wide field we attempt to cover. The reports of Doctors Deichmann and Chase speak for themselves but the Curator is grateful for the opportunity again to thank his colleagues in the Department for their cheerful and generous cooperation. Grateful appreciation is also due to Mrs. Pattee for the high quality of her work in the divers and disconnected tasks that fall to her lot.

During the past year, with her help, all of the collections have been gone over, the alcohol replenished where necessary and the dry material protected with paradichloro-benzene. This is a time-consuming task but justifies itself in the resulting confident belief that the collections are all in first class condition. Mrs. Pattee has extended the new card catalog as far as her time has permitted but labelling, cataloging and arranging the accessions has been her major task. She has also labelled and packed for shipment the "John Murray" ophiurans but for obvious reasons these are still held for eventual return to the British Museum.

During the year the Curator prepared a report for the New York Zoological Society on the "Zaca" collection of echinoderms from the western coast of Central America, in return for which the collection was presented to us, an important addition to our eastern Pacific material. Some progress was made on the second part of my Aus-

tralian Report but this was laid aside to concentrate on an account of the "Atlantis" collection of Echinoderms from Cuba, briefly referred to in last year's report. This proved to be a major task for there were more than 6000 specimens of 200 species (one sixth of them new), to be critically studied, and it occupied the remainder of the year but is now completed.

The accessions of the year were numerous and valuable, totalling 2680 specimens and adding 64 species (besides 3 varieties) and 12 genera to our collection. The "Zaca" material from Dr. William Beebe added about 800 specimens, including a genus and 8 species new to us. The "John Murray" brittle-stars received from the British Museum yielded us 434 specimens of 76 species (36 new to the collection, 24 being paratypes) of 39 genera (6 new to the collection). For this notable addition to our already extensive series, the British Museum is most heartily thanked. Material collected by the "Atlantis" in the western Atlantic and gratefully received through Mr. W. C. Schroeder and Mr. W. E. Schevill totals nearly 800 specimens. Dr. Deichmann, added more than 100 specimens from her Pacific coast collecting in 1939, and Mr. James Miller, continuing his generous helpfulness, has given us more than 100 desirable echinoderms from off New England. Professor W. G. Hewatt gave us 75 brittlestars from southern California including a species new to the collections; these were in return for identifications made for him. Messrs. Clench and Shreve of the Museum staff have made welcome contributions to the collection. Other donors to whom our thanks are herewith extended are Drs. C. H. Edmondson, W. K. Fisher, R. T. Jackson and Th. Mortensen, C. de Villiers; Messrs.

Ralph Bucksbaum, R. W. Foster, C. E. Hoare, R. A. McLean, Melbourne Ward and the Bradley Expedition to Alaska.

As no tabulation of the collection of Echinoderms has been published since 1934, it seems desirable to present it now, as of August 1, 1940.

	Genera	Species	Varieties	Specimens
Crinoids	97	201	3	3845
Asteroids	191	726	40	19622
Ophiurans	196	1095	34	36123
Echini	168	549	28	28787
Holothurians	91	482	17	8384
Totals	<u>743</u>	<u>3053</u>	<u>122</u>	<u>96761</u>

These statistics reveal a healthy growth, showing an increase in six years of 13 per cent in number of genera, 23 per cent in species and varieties and 30 per cent in specimens.

REPORT ON OCEANOGRAPHY

BY HENRY B. BIGELOW

On January first I was succeeded as Director of the Woods Hole Oceanographic Institution by Mr. C. O'D. Iselin but have retained connection with the Institution as President of the Board of Trustees. Since then more of my time has been free for research than for the past ten years. The paper on the Medusae of the "Zaca" Expedition, mentioned in last year's report, is now in proof; an account of the Phytoplankton of the Gulf of Maine was completed, in collaboration with Dr. Mary

Sears and Miss Lois Lillick, and has been accepted for publication by the American Philosophical Society; and a discussion of the American sharks of the genus *Mustelus*, based largely on the Museum's collections, has been completed, in collaboration with Mr. Schroeder. Meantime the sorting of the "Dana" collection of Siphonophores has reached a point where Dr. Sears and I can shortly commence their taxonomic study.

REPORT ON PHYSICAL OCEANOGRAPHY

BY COLUMBUS O'DONNELL ISELIN

During the past year the "Atlantis" completed the first phase of the field work on a study of long-period variations in the transport of the Gulf Stream. The oceanographic data, covering a period of two and a half years, has been analyzed and a comprehensive report will be published within a month.

Beginning in March frequent surveys of Georges Banks were made so as to study the current system influencing the survival of young haddock during their pelagic stage. It has become quite clear that the ordinary oceanographic technique is not capable of showing up biologically significant variations in such a shallow current system. Thus new approaches to the problem are being explored.

During recent months it has become evident that physical oceanography can make important contributions to a number of naval problems. It is therefore likely that during the next year or two a large percentage of oceanographic research will be conducted in close cooperation with the Navy Department.

REPORT ON ENTOMOLOGY

BY NATHAN BANKS

The past year was one of the most notable in that we received, by bequest, the insect collection of H. C. Fall. This collection is largely Coleoptera, and is reported upon by Mr. Darlington, but it contained also 7,500 Lepidoptera and 2,000 Diptera and Hymenoptera, all in good condition and including much desirable material.

Other accessions for the year were of more than usual value.

The widow of the late Dr. A. Jacot presented the Museum with the main part of his collection, mostly mites of the family Oribatidae, in which group Dr. Jacot was the leading authority. Our part contains his early collecting, his foreign specimens, and especially the material from Regensburg, Germany, the birthplace of Acarology. There are over 3,000 slides, which add hundreds of species and nearly 100 types to our already valuable collection of Acarina.

Last year we recorded the bequest by Professor Danforth of his collection of Antillean Coleoptera; now a student and friend of his, Mr. J. A. Ramos, has given the Museum 3,000 more insects (including 1,100 beetles recorded by Mr. Darlington) collected by Prof. Danforth several years ago in Puerto Rico and the Lesser Antilles. This is a most timely help to our especially good collection of Antillean insects.

Last year we recorded the sending of about 15,000 duplicate Chrysomelidae to the National Museum; we have now received the exchange, 2240 specimens, 1066

species, including types of 80 species of moths of the families Pyralidae and Tineidae, and also 100 Schmitt boxes. The Pyralidae have been incorporated in the regular collection, and more than double the number of species; the Tineidae have been partly placed, but will not add more than one-third, since we had a better collection in this group.

Mr. C. T. Parsons, during a trip to Cuba, collected fully 5000 insects, half Coleoptera, half other orders. Many small and delicate species were pinned in the field, and so are in excellent condition. There are numerous species, particularly among the smaller forms, that are new to the collection. Mr. J. L. Sperry brought us, on his visit, paratypes of five species of Geometridae. Since then he has sent 150 named species of western Noctuidae, and several hundred specimens of Neuropteroid insects, some new to our unrivalled collection; in exchange we sent twenty-four species of Geometridae.

By purchase we obtained about 1400 Neuroptera, Diptera, Hemiptera, and Hymenoptera from Paraguay; 1300 Neuroptera and Hymenoptera from Santa Catarina, Brazil; 400 Neuroptera and Hymenoptera from South India; about 600 Lepidoptera and Odonata from the Sudan; 1200 Mexican insects, of which 700 are moths, and several hundred spiders; from Manchuria, 200 Neuroptera, and 100 Diptera; from North Australia, Prince of Wales Island, and Borneo three lots of spiders and about 200 insects; Neuroptera and some spiders from Costa Rica.

Of the smaller gifts several are of particular interest. Professor T. D. A. Cockerell has given us more than a hundred species of exotic, and about thirty native bees, including paratypes of thirty species new to us.

Mr. A. E. Brower gave 70 species of moths, 31 new to us, and over 100 Neuroptera from Maine and Missouri. Dr. M. T. James sent 60 species of Dolichopodidae, one type and ten species new to the collection. Mr. G. Fairchild presented various Neotropical insects. Doctor J. Bequaert gave several lots of Hymenoptera, mostly foreign, Mr. H. F. Loomis some Myriopods including types from American caves. Mr. C. A. Frost brought various insects and spiders taken in Florida. Mrs. E. Clarke sent 100 mixed insects and some spiders from British Columbia. From various smaller gifts and exchanges we have obtained fully 1000 insects, native and exotic. The Curator has added over 1000 local insects.

In working over material sent for study the Museum has retained desirable duplicates from widely separated localities, Guam, Solomon Islands, Dutch Guiana, Malay Peninsula, Puerto Rico and various States of the Union.

The 36 boxes added last year were mostly used for Lepidoptera, so little change has been made in arrangement. Mrs. Lever has arranged part of the Oriental Papilionidae, Mr. Bartsch has transferred part of the Fall Lepidoptera to the main collection; Mr. Bartsch has spread many Lepidoptera. The boxes emptied from the Fall Lepidoptera, and those obtained from the U. S. National Museum, together with some relined will give a good start to arrange exotic insects, now much crowded. Two students have helped with mounting, labelling, transferring, fumigating, filing cards, and filling vials where necessary.

The Curator no longer endeavors to keep track of the number of specimens pinned, spread, or the species labels written and placed on specimens, but it is not less than usual. Types of insects now catalogued number 25441.

But few loans were made, and a number were returned, often with some types; the Chironomidae from Dr. Townes, and the Mutillidae from Dr. Mickel were especially valuable in this regard. However there are still a number of collections on loan, some out for several years.

Miss Bryant's Cuban paper is published; she is now studying and describing Attidae from Hispaniola.

The Curator has prepared various papers on Neuroptera and Hymenoptera, and is at work on Neuroptera from Australia, Malay Peninsula, and South America. The collections recently obtained from Paraguay and Brazil are very rich both in new species and species new to the collection, while there are many new species in the Oriental Neuroptera awaiting description.

Doctor Bequaert used some of our material in his recently published papers, and Mr. Parsons described our West Indian Conopidae.

Visitors have been more frequent than usual. Dr. T. H. Frison (Perlidae), R. R. Driesbach (Hymenoptera), J. Erichson (Braconidae), J. E. Hardy (Pipunculidae), C. P. Kimball (Nantucket moths), L. M. Bartlett (Ephemeriidae), M. Wing (Formicidae), A. E. Brower (moths), H. Spieth (Ephemeriidae), E. Pritchard (Asilidae), H. E. Telford (Syrphidae), J. L. Sperry (Geometridae), C. Estable (Spheciidae), N. A. Weber (Formicidae), J. A. G. Rehn and son (Orthoptera), V. S. L. Pate (Spheciidae), J. H. Hawkins (Noctuidae).

To study spiders came Dr. B. J. Kaston (two visits), Prof. A. Chickering, and Mrs. H. E. Frizell. Messrs. Chickering and Weber remained for several weeks and Prof. Chickering is now a perennial visitor, doing practically all his work on Panamanian spiders here.

REPORT ON COLEOPTERA

BY P. J. DARLINGTON, JR.

During the past year we have received, as a bequest from the late Henry Clinton Fall, his great collection of Coleoptera, totaling nearly a quarter of a million specimens. The main Fall North American Collection, upon which Dr. Fall did his work, contains well over one hundred thousand specimens, and includes type material of 1,385 Fall species and of several hundred species of other authors. The Charles Liebeck series, part of the Fall bequest, contains nearly one hundred thousand additional specimens of North American beetles, and Dr. Fall left us also more than 50 Schmitt boxes full of exotic beetles. All parts of the collection are in first-class condition, and have been safely transferred to the museum.

In recognition of Dr. Fall's work and of the importance of his collection, the title of "Fall Curator of Coleoptera" has been established at the museum. I have had the good fortune to become the first Fall Curator, and most of my work during the year has been on the Fall Collection. Dr. Fall's main North American series has been installed in what used to be the Leconte Room, which has been enlarged and renamed the Leconte-Fall Room. The collection is to be kept in the original Schmitt boxes, as nearly as practicable just as Dr. Fall left it. A card catalogue of species described by Fall has been made, and an annotated list of the species has been prepared for reference. The types have been numbered and entered in the M.C.Z. type catalogue, and a list of Fall species

of which the principal types are *not* in the Fall Collection is being prepared for publication. Most of the exotic material has been sorted and distributed.

Besides his collection, Dr. Fall left us a set of 59 bound volumes of papers on taxonomy of North American Coleoptera. The volumes contain more than 1,300 papers. They have been carded and indexed and placed on shelves in the Leconte-Fall Room, and give us a far better reference library in the department than we had before. Many of the papers have been annotated by Dr. Fall, and together with his notebooks and correspondence (which are part of the bequest) will be most useful to students of the Fall Collection. We are greatly indebted to Mrs. Carl A. Richmond, Dr. Fall's sister, for her interest and assistance in caring for the Fall Collection and in arranging his correspondence and papers.

Other acquisitions for the year include, as gifts, fine lots of about 2,500 Cuban beetles from Mr. C. T. Parsons and about 1,100 Puerto Rican and Lesser Antillean beetles from Sr. J. A. Ramos. Mr. Graham Fairchild has given a number of good Neotropical Coleoptera. Smaller but welcome lots were given also by the following: Dr. J. Bequaert, Mr. J. Carabia, Mr. O. L. Cartwright (paratypes of three Scarabaeidae), Dr. M. A. Cazier (rare western Carabidae), Mr. W. J. Clench, Mr. H. R. Dodge (two Nitidulidae, one a paratype), Dr. R. Dow, Mr. Ed. Folk (beetles from the La Selle Range, Haiti), Mr. C. A. Frost, Mr. J. W. Green, Mr. H. B. Leech (paratypes of Dytiscidae), Mr. A. Loveridge, Mr. A. S. Nicolay, Mr. C. T. Parsons, Mr. Wm. Procter (specimens of a rare Bembidion from Mt. Desert), Mr. E. D. Quirsfeld, Mr. J. Schuh, Mr. M. W. Wing, and Mr. Frank Young.

Through exchanges and from material identified we received from Hno. Apolinar-Maria, 41 Carabidae from the interior of Colombia; Mr. R. H. Baker, several *Platypsyllus* (beaver parasites) and 13 Mexican Carabidae; M. Banninger, a box of authoritatively identified Carabidae chiefly from the Old World tropics; through Mrs. D. H. Blake from the United States National Museum, several paratypes of West Indian Chrysomelidae; from Mr. Ira La Rivers, about 40 Carabidae from Nevada; Sr. C. B. Pieltain, 2 rare Mexican Carabidae; Mr. Wm. Spector, small lots of Japanese and other Carabidae; Mr. J. L. Sperry, about 100 western Coleoptera; S. L. Straneo, a box of exotic Carabidae, chiefly African Pterostichini; and from Mr. E. C. Williams Jr., a few Carabidae from Barro Colorado Island. In addition we made 8 purchases of beetles, totaling about 940 specimens, mostly exotic Carabidae.

Only ten loans were made during the year—loans were greatly curtailed by the war. Some loans were returned, but others were carried over from the preceding year. In all, 16 persons had Coleoptera on loan from us on August 1, 1940. Two large lots, of about a thousand specimens each, are at the Paris and British Museums.

Besides the work on the Fall Collection, I have arranged in trays some North American Dytiscidae, part of the West Indian accessions, and all our West Indian Cerambycidae and Buprestidae, which have been completely worked up by Mr. W. S. Fisher. The usual routine jobs have been attended to, and I have had a little time left for zoögeographical studies. Mr. Fred Solana and Mr. Beckert have been employed part time and have done excellent work preparing specimens and on other

routine tasks, and Mr. Solana has arranged some parts of the North American Coleoptera.

Visitors have included Mr. J. J. du Bois (Pedilidae), Mr. C. A. Frost (various), Mr. W. S. Fisher (Buprestidae), Mr. J. W. Green (Cantharidae), Mr. E. D. Quirsfeld (Elateridae), Mr. H. F. Schoof (Curculionidae), Mr. R. E. Blackwelder (Staphylinidae), and Mr. L. L. Buchanan (Curculionidae). Mr. Parsons has used the collections constantly, and Miss E. W. Mank has consulted them frequently.

REPORT ON MAMMALS

BY GLOVER M. ALLEN

An encouraging evidence of the value of the collection of mammals is the continuing interest taken in it by the younger men, including both students in college and those otherwise engaged. While the number of such persons may not show a regular yearly increase, yet there seems to be a steady stream of those seeking information on various subjects, those who are making special studies and need comparative material or identifications, and others still whose interest in travel or in exploration takes them to out of the way places from which they are glad to bring back a contribution of specimens. Outstanding among these last has been this year the expedition undertaken by Mr. George Peabody Gardner, Jr., who, accompanied by Mr. Oliver P. Pearson, a graduate student in biology, spent the winter in the Peruvian Andes, whence, after making a collection of mammals at high altitudes, they returned in May, by way of the Amazon River. Sev-

eral important genera and a number of species new to the collection were added as a result of their work. Their collection as well as one from Ecuador purchased by the Director, beautifully supplement that made in the previous winter by Mr. J. A. Griswold, Jr., in another part of Peru and received early in this year. Since our representation of South American mammals is still rather limited, these additions are especially welcome. Mrs. Schevill has undertaken the study of this material. Another important collection was that resulting from Mr. Arthur Loveridge's expedition to Uganda and Tanganyika, consisting of over 300 specimens of the smaller species. A further lot of South African species, from Captain Shortridge, also added some important material for comparative study. Most of these new accessions have been catalogued, including over 1320 entries.

Another outstanding event is the much needed enlargement of the housing space for the collections. Five new units have been added to the cases for larger made-up skins, and a new room on the same floor with the other collections has been made ready for the storage of large tanned hides. The latter have already taxed for some time the capacity of the room next the roof, so that the additional space now available is most welcome. The general supervision of the fittings and of the removal of the skins from the old room to the new has been carefully carried out by Mr. Coolidge. Here, too, should be acknowledged the splendid help given by Mr. William H. Drury, Jr., who in addition to active assistance in the rearrangement has also prepared neatly lettered labels to go with each species. Sixty-one larger skins have been tanned during the year.

During part of the year the Curator has been engaged in the preparation of an account of the American mammals exterminated or threatened with extinction during the historic period for the American Committee on International Wildlife Protection. Mr. Coolidge has continued his studies of the primates brought back by his expedition to Siam and Borneo, as well as of the Pygmy Chimpanzee material secured in the Congo by the Hodgson Expedition. He has also taken advantage of the opportunity offered by the receipt of a nearly complete skeleton and skin of the Indo-Chinese Forest Ox or Kouprey, to prepare a monograph on its history and characters. The specimen, received through the generosity of Mr. J. C. Greenway, Jr., is a fine adult male of a species only made known to science a very few years ago.

During the year there have been twenty loans of material for study, in addition to much use of specimens in the Museum by those engaged in teaching or in research. Mr. Coolidge has carried out two exchanges adding to our representation of mammalian genera.

Grateful acknowledgment is again made of the volunteer assistance of Mrs. Frederic S. Goodwin, who has regularly during the winter given freely of her time in various helpful ways, particularly in the repair of fragile or torn hides and in building up the file of pictures of mammals. The efficient help of Miss Frances Wilder at odd times has also been greatly appreciated, for she has succeeded in bringing up to date the entry of specimens on the card catalogue so far as they have been identified.

Through the generous interest of Dr. Barbour, several important small collections have been purchased.

For other donations grateful acknowledgments are due

the following: Dr. J. Bequaert (South American bats, chipmunk); Stanley H. Boggs (bones of *Isolobodon*); Montgomery W. Bradley (bear skull); Dean Bumpus (porpoise skull); Dr. R. T. Carr (mammals from Panama); F. N. Chasen (bat skin); Elton Clark (Gray Fox from Vermont); H. J. Coolidge, Jr.; Miss Julia Coolidge (muntjak skull); Dr. Walter W. Dalquest (mammals from Washington State); Mr. C. Van H. Engert (Persian wild-ass skin); Dr. A. G. B. Fairchild (raccoons from Panama); E. G. Folk (bats from Cuba and Haiti); James C. Greenway, Jr. (raccoons from So. Carolina; two skins from Indo-China); D. R. Griffin (specimens of *Myotis*); Mrs. J. A. Griswold, Jr. (skulls of New York mammals); Dr. Marshall Hertig (Peruvian mice in alcohol); A. B. Howell (Chinese rat); Henry Loomis (bear skull); Charles P. Lyman (New York weasel); J. G. Meyers (dormouse); Pedro de Mesa (Philippine bats); George Nelson (skulls from Florida); G. R. Oesch (*Tarsius* from Philippines); Charles Owen (erythristic woodchuck); R. H. W. Pakenham (bats and shrews from Zanzibar); Harry C. Parker (Gray Fox skull); Philadelphia Academy of Natural Sciences (specimen of *Bassaricyon pauli*); Mrs. John C. Phillips (record heads and horns from the collection of the late Dr. Phillips); Dr. G. M. Phelps (raccoon skull); Dr. Alton S. Pope (skins of red squirrels); Dr. Enerique Sabinio (rodents from Argentina); Dr. J. H. Sandground (rats from Celebes); Dr. Wm. Duncan Strong (bones from Indian sites in No. Dakota); Dr. E. E. Tyzzer (otter skull); Dr. Neal Weber (skull of a duikerbok); Dr. George Wislocki (skull of Barbary Sheep).

REPORT ON THE BIRDS

BY JAMES L. PETERS

As often the case, a year of large accessions is followed by a lean year. Thus 1938-39 was an unusually heavy one; the present one shows a decided drop. I am not at all sure that such a tendency is not a good thing; it gives the staff an opportunity to catch up on identification and distribution of collections, arrangement, cataloging, carding and many other details of curatorial work.

The total accessions numbered 1018 skins; of these 317 were acquired by purchase, 172 by exchange, 41 by gift and 488 were the result of museum expeditions.

The largest single purchase was 256 skins of birds from Celebes which nicely supplements the collections from Peling and Taliabu mentioned in last year's report. Unfortunately, the collector had to cease operations when Holland was attacked. Mr. Loveridge's African birds amounted to 475 in addition to those mentioned in last year's report. The Gardner Peruvian Expedition sent in 12 birds from the highlands of Peru. The efforts of the several joint expeditions in which the Museum has participated with the Museu Paulista at least bore fruit in the rediscovery of *Oxytelia cyanopsis*, a rare and little known species that has eluded collectors for many years. One specimen was taken and this was sent in, in advance of the balance of the general collection made at the same time. Col. R. Meinertzhagen, Dr. Thomas Barbour, Mr. James C. Greenway, Jr. and the Academy of Natural Sciences of Philadelphia have presented specimens for which we are most grateful.

The construction of sixteen sections of our standard "small bird" wall case has permitted the rearrangement, expansion and incorporation of all the Woodpeckers, Barbets, Kingfishers, Tracheophones and Tyrannides. The Pigeons have been expanded and transferred to cases in Room 505.

REPORTS ON THE MOLLUSKS

BY W. J. CLENCH

Expeditions: No expeditions were in the field during the past year by department members, though the collecting done by various persons connected with the Fish and Game Department of New Hampshire may well be considered here. All the mollusks collected during their survey of the Connecticut River watershed were submitted to us for determination. The results of this study have been published in their report which appeared during March 1940.

Collections: No large collections were received during the year though gifts of small series and material received in exchange were exceedingly numerous. A total of 5456 lots were obtained from these sources which is a substantial growth considering the lack of any large, single accession. The interest taken by a host of friends of the department, responsible for this growth, is a source of continued stimulation to those of us responsible for the care and maintenance of the collection. We are grateful to Doctor R. W. Miner, of the American Museum of Natural History, for the loan of a very fine series of Melaniidae and Neritidae, collected by the Whitney

South Sea Expedition in the Solomon Islands. These two families we are working up for publication. A duplicate set is to be retained.

General: Mrs. C. V. MacCoy was part time cataloguer from October to May and then resigned. Mrs. H. R. Norton joined the staff in May as cataloguer and has continued this very essential work. Our thanks are due Miss H. M. Robinson for finishing a complete card index of the genera contained in our collection. This now enables anyone to find immediately the location in our cabinets of any genus. Much credit is due Robert Broge, our student assistant, for his painstaking work in doing all the numbering and handling the exchange material throughout the year.

As in past years, much of our continued growth, particularly in the conditioning of our material, is due to several young men who act as volunteer workers in the department. This year, Mr. A. C. Crocker and Mr. R. I. Johnson have spent nearly every Saturday doing many tasks of labelling, sorting and distributing material in the collection. Mr. Alden Cheever and Mr. Richard Foster have, as in past years, given very freely of their time to aid in the routine tasks that are necessary in maintaining a large collection. To these young men I am exceedingly grateful for their interest and for their willingness to do the tasks set before them.

Mr. H. D. Russell received his Ph. D. in June from Boston University, having completed his studies on the Western Atlantic Neritidae. I had been appointed as Second Reader on his thesis committee inasmuch as his work had been done under our supervision and direction.

My thanks are due to Mr. Gilbert Banks for his vol-

unteer work on the revision of our North American land shells which is now being based upon Pilsbry's new work on this subject. Our collection of North American land shells is now second in size and importance in the world, exceeded only by that of the Academy of Natural Sciences, Philadelphia.

Mr. John H. Huntington continued the geographic card index throughout the year, keeping pace with the large amount of material set aside for him to enter. Nearly one-half of the collection has been cross-indexed and this work is now far enough along to give us a clear picture of both the strong and weak portions of our collection. It is a source of information that could not be had in any other way as it brings together data that would be nearly impossible to obtain under any other system. We have been able to supply such data to several institutions and individuals that we could not have supplied a few years ago.

Mr. R. T. Abbott has proved a very able assistant, relieving me of many curatorial tasks which has given time this year for the much needed revisional work on the collection. Doctor Bequaert has completely revised the family Melaniidae, a most complex family of fresh water gastropods of world wide distribution. This is in line with our endeavor to revise all of our tropical fresh water snails that are in any way associated as hosts of the many parasites which, in turn, affect man and domesticated animals. Doctor Bequaert has interested many parasitologists scattered throughout the world, to submit to us their mollusk material for identification. In this way we are building up a very strong collection of these economically important organisms.

A resumé of the collection follows:

Number of accessions for the year	5456
Catalogued entries in the collection	127229
Number of species in the collection	26156

REPORT OF THE RESEARCH CURATOR OF ZOOLOGY

BY LUDLOW GRISCOM

The Museum's financial year was quite uneventful, barring a slight increase in fixed charges and a slight decrease in income, over which we had no control. Increasingly disturbed conditions abroad are, however, beginning to have their effects in curtailing various activities of the Museum and automatically reducing expenditure, though the results will not be obvious until next year. In spite of the great decrease in orders from foreign countries, our receipts from the sale of publications have been most gratifying, and included a complete set of our bulletins, the first in several years.

My editorial work was again doubled, thanks to a continuation of Mr. Agassiz's gift. One whole Bulletin volume was published, and two Memoirs completed another volume in that series. One lengthy manuscript required five months of constant editorial work.

The claims which editorial work made on my time detracted from scientific work. The rewriting of the Lower Amazon report was completed. In preparation for a work on the birds of outer Cape Cod, all records in the literature and those of all living observers have been compiled. A similar compilation has been made for the Sudbury

and Concord River valleys, just west of Mr. Brewster's "Cambridge Region", to serve for another possible local avifaunal report.

Active local field work continued. The Shore-birds received special attention once more. I still write the Bird-Lore Season reports for Massachusetts and the nation-wide summary every two months. Much time is devoted annually to various local organizations, and various Harvard College activities outside the Museum. Since early July, I have been active in the Harvard Group, American Defense, and have greatly appreciated the cooperation of several Museum colleagues.

REPORT ON BIRDS' EGGS AND NESTS

BY RICHARD C. HARLOW

The work during the year was of a routine nature and was handicapped by the illness of the curator. The collections have been worked over to insure the freedom from mould and insect pests.

The department has worked in conjunction with Mr. A. C. Bent in the measurement of many eggs for the data in his current Life Histories. It is hoped that a surplus of the rare Mexican collections made by W. W. Brown may be disposed of in exchange, and some surplus damaged material may be given for study purposes to schools.

The collection is one of the finest in the world of North American species and contains many type sets, but much remains to be done for further expansion in study material from South America, Europe, Asia, and Africa.

REPORT ON REPTILES AND AMPHIBIANS

BY ARTHUR LOVERIDGE

The first six months of the year was spent in registering, cataloguing, and dealing with various matters requiring attention which had accumulated during my year's absence. In the two-year period a total of 176 species or races have been added to the collection as against 104 for the last complete year (1937-1938). In all 2,400 reptiles and amphibians were catalogued, the entries transferred to the card-indices, the specimens tagged, labeled, and incorporated in the collection.

The most important collection identified during the year—it was mentioned as received in the last report—was one from Madagascar presented by a friend of the Department. It comprised more than 200 specimens of 37 species very many of which were new to the Museum, and one—*Platypelis barbouri* Noble—new to science. From the same donor came a series of smaller items totaling 230 individuals. Mr. G.C. Wood, who will be working as a graduate student in herpetology here next fall, presented fifty specimens from Ecuador and the Canal Zone; among them an albino sea snake (*Pelamis platurus*), and two teiids (*Euspondylus manicatus*) new to the Museum.

Other donors to whom the Department is indebted for material, are: Prof. C. T. Brues, J. R. Carabia, A. F. Carr Jr., E. P. Chace, J. A. Cheever, W. J. Clench, C. Coon, Cornell University, E. R. Dunn, D. V. Fitzgerald, G. E. Folk Jr., G. P. Gardner, J. G. Greenway, C. E. Hoare, H. L. Kleinholz, A. Loveridge, Miss B. Lutz, J. Moffitt, J. G. Myers, G. Nelson, Miss M. Porter,

J. A. Presley, W. Rowan, J. H. Sandground, G. Schwab, S. Springer, W. Stevens, and from the National Park Service a fine *Crotalus viridis abyssus* collected by Louis Shellback, this form of rattlesnake being new to the Museum.

Events abroad largely restricted exchanges to half-a-dozen institutions and three individuals in this country, the exceptions were small exchanges with the British and South African Museums and a larger one from Stellenbosch University. Of the 163 specimens received from the latter, several supplied long-felt wants from Cape Province. Both Field Museum and the Museum of Comparative Zoölogy were mutually enriched by an exchange which brought a score of species or races which were new to both institutions, in addition to many others from regions whence we had little material.

Only eighteen loans were made to twelve persons, representing as many museums. As usual, however, several of these loans consisted of large series of specimens or entire genera.

My principal preoccupation during the past six months has been reporting on the reptiles obtained during the last visit to Africa. I am once again indebted to Mr. Benjamin Schreve for identifying all incoming new world material and for friendly aid in many other ways. During Mr. Schreve's absence this summer, Dr. and Mrs. A. F. Carr Jr. visited Cambridge and together we completed the rearrangement of the snake collection in accordance with the generic changes of the past few years, an undertaking I had begun when we had a student aid earlier in the year. Then they replenished the jars with alcohol after which the lizard collection was attended to in the same way.

Owing to my absence abroad, no census of the collections was published last year so that the gains shown below are for a two-year period.

	<i>Genera</i>	<i>Species and Subspecies</i>	<i>Gain Genera</i>	<i>Gain Species</i>
Rhynchocephalia	1	1	0	0
Crocodilia	8	24	0	0
Chelonia	61	222	0	8
Lacertilia	289	2257	0	66
Ophidia	305	1593	0	40
Amphibia	228	1671	6	62
Totals	892	5768	6	176

REPORT ON INVERTEBRATE PALAEONTOLOGY

BY PERCY E. RAYMOND

I was occupied for a large part of the winter in working on the collections made last summer in southwestern Pennsylvania. As a result of the study of the fossils and the enclosing sediments, a series of cycles of sedimentation were worked out, and possible explanation of the cycles of events deduced. This resulted in a new theory of the origin of coals and their underclays.

Some time was also devoted to finishing an article on Carboniferous and Permian Xiphosura. This work makes it possible for the first time to give a natural classification of these animals and determine the probable lineages.

Mr. W. E. Schevill accompanied Doctor Barbour and Doctor White to Cuba, where they collected from the Mesozoic strata in the vicinity of Soledad, near Cienfuegos

and in the Valley of Viñales. A large collection of cephalopods was made from the Upper Jurassic of the last mentioned region. Among them were representatives of nautiloids and diabranchiates new to the region. This supplements the excellent collection made by Mr. Carl Parsons at Pinar del Rio and presented by him during the year.

Several persons visited the Museum to study the collections and at least one article has been published, by Doctor H. B. Whittington, entirely on our material.

The accessions received by donation were from: R. Bedford, Kyancutta, Australia, 99 specimens of archaeocyathids and other sponges; F. S. Marden, two drawers of Tertiary fossils from New Zealand; W. E. Schevill, 13 lots of Carboniferous crinoids from Oklahoma; E. E. Halvorsen, 6 boxes of Tertiary fossils from Coalinga, California; C. E. Cross, 3 lots of Cretaceous fossils from New Jersey; G. O. Raasch, 12 crustaceans from the Permian of Oklahoma; Carl Parsons, 3 Mid-Cambrian trilobites from south of Jasper, Alberta. Eight specimens of barnacles and xiphosurans were purchased from Ward's Natural Science Establishment.

REPORT ON VERTEBRATE PALAEOLOGY

BY A. S. ROMER

Several field expeditions during the past year have resulted in substantial increases to our collections of fossil vertebrates. During the winter Dr. T. E. White and Mr. W. E. Schevill secured a fine suite of specimens of

Jurassic fishes from the beds at Pinar del Rio, Cuba. We wish to express our thanks to Doctors Pedro Bermuda and Louis Howell Rivero of the University of Havana and to Doctor R. H. Palmer for their assistance in obtaining this material. Later in the winter the Director and Doctor White spent a month collecting at the Miocene locality in Gilchrist County, Florida, mentioned in the last report. A surprisingly fine array of material was obtained including a number of skulls, in strong contrast with the fragmentary nature of most previous material from the Florida Tertiary. Preparation of this material is being actively carried on, and Doctor White has published a preliminary description of several new forms. The Gilchrist fauna is of great interest, due to its geographical position, since other contemporary faunas are from the west. We are grateful to the Florida Geological Survey for their cooperation in this project. During the present summer a party headed by Assistant Preparator R. V. Witter is collecting in the Upper Uinta Eocene beds of eastern Utah.

A number of additions have been made to the exhibition series. The type skeleton of the Whitby plesiosaur *Macroplata longirostris* has been mounted by Mr. Nelson. It is exhibited alongside of the giant *Kronosaurus* skull, the two together demonstrating well the nature of the plesiosaurs. Mr. Nelson has just completed a fine mount of a large dicynodont, about 6 feet in length, the first skeleton to be exhibited of our collections from the Brazilian Triassic. Work of these collections is proceeding actively; the dicynodonts are being studied by Mr. L. I. Price and the Curator, while Doctor White is working on the cynodont material.

Additional exhibition specimens include a skull of one of the Florida horses, found crushed and painstakingly reassembled by Mr. R. Olsen, and a splendid skull of *Eryops* which has been studied in detail by Dr. H. J. Sawin.

Among other additions to the collections may be noted a number of specimens of Scaumenac Bay fishes which include an apparently new *Cephalaspis*. During the year Doctor White has made great progress in cataloguing and rearranging the fish collection, particularly the teleosts. Extra cases have improved the jammed condition of the reptilian and mammalian storage collections.

Mr. L. I. Price, Research Assistant since 1934, has gone to Brazil, under the auspices of the Carnegie Institution of Washington and at the request of the Brazilian Geological Survey, to aid in the development of vertebrate palaeontology in that country. Dr. Tilly Edinger, formerly in charge of fossil vertebrates in the Senckenberg Museum of Frankfurt, has joined the Staff as Research Associate.

REPORT ON FOSSIL INSECTS

BY F. M. CARPENTER

Accessions: More than five thousand Permian insects were collected by the curator in Noble County, Oklahoma, during June and July of this year. The collecting trip was financed in part by a grant from the Geological Society of America; field assistance was given by Mr. G. O. Raasch, of the Milwaukee Public Museum. Seventy specimens from the same deposit, the first collected there,

were obtained by purchase from Ward's Natural Science Establishment. The department of entomology, Kansas State College, has donated several unusual insects from the Lower Permian of Kansas; included is a wing of *Megatypus schucherti* Till., this being the largest complete wing (seven and a half inches long) yet found in Permian strata.

Research: Nearly half of the year was spent in finishing the illustrations for a revision of several families of Neuroptera; this paper, which has been in preparation for three years, will be published within the next two months. Two other revisions are in their last stages of completion. One of these is a monograph of the insects of the Carboniferous beds at Commeny, France; the other is a similar treatise on all North American Carboniferous insects, exclusive of the roaches. Part 9 of my series of papers on the Lower Permian insects of Kansas has also been finished; this deals with the Neuroptera, Caloneuroidea, and additions to the Megasecoptera and Protodonata.

During the year I have been assisted by Mr. G. G. Thiem, a junior in the College, who has examined another third of the collection of Manitoban amber and separated the fossiliferous pieces from the rest. This preliminary sorting will be completed in another year.

Professor C. T. Brues has studied and published on several families contained in the Haren Collection of Baltic amber insects.

REPORT ON THE FISHES

BY W. C. SCHROEDER

The collection now contains 122 families, 550 genera and 1885 species that have been recatalogued and sorted. The year's gain in this respect more than equals the previous three years', thanks largely to able assistance given by Miss Helene M. Robinson and Mr. Robert Sceery.

The following material was received: Mr. R. Tucker Abbott, a collection of small reef fishes from Bermuda; Dr. J. E. Bequaert, Panama; Mr. Cameron Bradley, a nice collection from the Alaskan coast; Dr. Elisabeth Deichmann, British Columbia; Mr. J. W. Lowes, Massachusetts Bay; Mr. A. Kidder, II, Peru; Mr. Arthur Loveridge, Africa; Dr. Luis Howell Rivero, a series of *Mustelus canis* from Havana, Cuba; Mr. George Nelson, Florida; Mr. W. E. Schevill, a collection of deep sea fishes from the North Atlantic, including some rare species, taken the summer of 1939 by "Atlantis" in depths down to 2100 fathoms; Mr. William Sallston, a shark, and a flying fish with an interesting parasitic copepod to which barnacles are attached; Mr. W. C. Schroeder, a collection taken off Penascola, Florida, in 1931; Mr. Stewart Springer, several specimens of *Mustelus norrisi*, including a paratype, and an embryo of *Sphyaena tudes*; Dr. Theodore White, "Atlantis" deep sea fishes taken off our Middle Atlantic coast in August, 1940. In addition a friend of the Department purchased small collections from Mexico, Australia and the Cameroons, and two rare sharks from Japan.

The deep sea fishes collected by "Atlantis" around

Cuba in 1938 and 1939 were sorted and part of them identified. One half of this collection, divided quantitatively, is in the possession of the Museum and one half remains temporarily with the University of Havana. I have worked up the Elasmobranchs at hand and find that out of twelve species of skates of the genus *Raia* no less than ten are new to science. Possibly a few more new species may be added when the remainder of the collection is received from Havana. Previous deep sea expeditions in the West Indies had yielded very few sharks and skates. A paper has been presented for publication covering the deep sea fishes obtained by Mr. Schevill, together with other miscellaneous specimens taken by "Atlantis" in the North Atlantic.

In the general collection a considerable amount of worthless material was discarded, much of it very old, in poor condition, or represented by many duplicates of common species. This resulted in a much needed gain in space and in valuable glass containers. A substantial number of ground glass stoppered jars was given to us by the New England Museum of Natural History, through the kindness of Mr. Bradford Washburn. One large collection of miscellaneous unidentified fishes was segregated geographically. Among these was found a number of 'lost' catalogued specimens, including one type. The Elasmobranchs, which occupied the east side of the basement, were transferred to the west side thus relinquishing space to the crustacean department.

Several loans were made, together with a number of identifications and comparisons of species for investigators in distant localities. A collection of fish from Siam was sent to Dr. Hugh M. Smith, U. S. National Museum,

for identification. Workers who used the collection for study include Mr. William Gosline, Mr. R. Tucker Abbott and Dr. Sidney Hsiao.

REPORT ON THE COELENTERATES AND SPONGES

ELISABETH DEICHMANN

During most of the autumn, after my return from the West on September 2, my time has been chiefly given over to sorting out and arranging of the material which had accumulated during my absence. The bulk of this material consisted of the rich hauls secured by the "Atlantis" on its second cruise around Cuba during the spring; besides there were the smaller collections which I had made during my visit to California, Oregon and Vancouver, British Columbia. During this winter and spring additional material has been coming in from the shorter "Atlantis" cruises along the Atlantic coast of the United States. Sponges, stony corals, horny corals, black corals and holothurians are all well represented in the "Atlantis" dredgings and most of the material is in such excellent condition that it is well suited for exhibition and exchange as well as for scientific study. Although there are few new species in the groups mentioned, the "Atlantis" material represents a very valuable addition to the collections already existing in the M. C. Z.

The worms from the "Atlantis" collections have been picked out from the various stations and there are about 25 jars which will be shipped to Miss Olga Hartman in Los Angeles, since many of the older descriptions are so

inadequate that it undoubtedly will be of some importance to have this new material treated by a thoroughly modern and competent worker.

Regarding the sponges the fauna of true deep sea forms is rather small in the West Indian waters. Apparently the greater part of the species collected by O. Schmidt have been brought back but in much larger quantities so that it now seems possible to delimit a number of species which he was forced to leave "half described" because of insufficient material.

The collections have now been permanently stored in the hall on the fourth floor. Around Christmas eighteen metal cases were obtained from the Bird department and thanks to this addition of storage space it has been possible properly to house the entire dry collection. After careful weeding out and re-arranging there is actually room to spare for future expansions. As far as the time-consuming work of preparing the card catalogue, great progress has been made, thanks to the help received by Mr. R. W. Levine, the student aid assigned to this department during the whole academic year. He re-wrote the temporary catalogue of worms which Miss Hartman had prepared some years ago and after he had learned the principles of cataloguing he undertook to bring the temporary catalogue of the dry sponges into permanent form and arrange the collections in the new cases. It was a pleasure to have a student who took so great an interest in the work to which he has set. He quickly learned to use the literature, check up on inconsistencies in spelling, etc. His efficiency gave me considerable time free to spend on other work.

The removal of the sponges from the coral room,

where some of them temporarily had been stored, has relieved the congestion in that room and as the collections of stony corals and black corals from the "Atlantis" cruises gradually are sorted out and distributed it seems that there will be space for future expansion.

The report on the "Atlantis" holothurians was finished in March and is expected to go to press soon. The reports on the alcyonarians and on the antipatharians are in preparation. The former will make a welcome supplement to the "Blake" account, published some years ago, as it is now possible to amplify the rather scanty descriptions which had to be given in that paper. More interesting, however, are the antipatharians as no comprehensive account has been given of the West Indian members of that group for more than fifty years and only one new species has been added (in 1916) since Pourtalès and Brook described the material in the M. C. Z. and the British Museum. The two "Atlantis" cruises have brought back a considerable number of these rare forms, and by combining this new material with what remains of Pourtalès' types and other specimens it has been possible to gain a rather complete picture of the composition of the fauna and fill the complete gap in our knowledge of the geographic distribution of these animals which all students of antipatharians have bewailed. One of the most striking species, a meter-high, feather-shaped form has now been rediscovered, almost 120 years after it was first described by Lamouroux.

Besides the preliminary work done on the "Atlantis" alcyonarians, a short report has been finished, dealing with those collected by Waldo L. Schmitt during the Presidential cruise to the Caribbean Sea and the Western

coast of Tropical Americas. The monograph on the dendrochirote holothurians from the Panamic region has been completed and the proofs are expected any day.

During the summer months I have begun to catch up on the various collections of holothurians which have accumulated during recent years, viz., the "Albatross" holothurians from the Philippines and the "Snellius" holothurians from the Dutch East Indies (submitted by Dr. H. Boschma of Leyden). Most recently a very interesting collection was received from Stockholm, mostly material from the Marshall and Gilbert Islands, a part of the Pacific Ocean from which very little material exists in this country. This series was brought safely through the war zone by Miss Olga Hartman when she returned from Sweden around Christmas. Dr. W. G. Hewatt, Texas, and Mr. F. E. Ricketts, California, have also sent in some interesting material respectively from Southern California and the Gulf of California.

During the spring Miss Olga Hartman visited the Museum for a few days and studied some of the worm types. In July Dr. M. W. de Laubenfels from Pasadena payed a short visit to Boston and spent considerable time in the library, making use of some of the more inaccessible papers on sponges. He also looked over some of Hyatt's types.

In spite of the war there has been the usual correspondence with the British Museum and Cambridge, England, although actual exchange of material has been postponed.

From the U. S. National Museum a number of alcyonarians and antipharrians have been received as a gift, species which hitherto were not represented in the M.C.Z. ; Mr. F. E. Ricketts, Pacific Grove, California, has donated

various seafans and seapens which he collected on a recent trip to the Gulf of Lower California. From the same region he has also donated a series of 21 species of holothurians, mostly aspidochirote forms, a valuable addition to what the museum already possesses from that little explored part of the world and a most useful supplement to the material secured by the "Velero" expeditions which now is being worked up.

REPORT ON CRUSTACEA AND WORMS

BY FENNER A. CHACE, JR.

Crustacea: Due to the increasing number of accessions during the past few years, the crustacean collection has been rapidly outgrowing the basement space allotted to it; it was therefore a definite relief to be able to take advantage of the concentration now being made in the fish collection and expand into the former elasmobranch room in the southeast corner of the basement. The original crustacean room now contains only the Brachyura and Anomura, all other groups having been transferred to cabinets in the adjoining room. As this expansion progressed, it was found necessary to redistribute the Brachyura and to employ a somewhat different method of labeling the trays. As the report on the extensive collection of brachyuran crabs from the Harvard-Havana Expeditions was being written at this time, these two projects were carried on simultaneously so that the "Atlantis" material could be incorporated in the collection as the revision advanced. This collection is now completely re-labeled and catalogued and arranged so as to allow for

the addition of a normal influx of accessions for many years to come with a minimum amount of inconvenience. With the assistance of a student aid, the brachyuran and anomuran collections were replenished with alcohol; the remaining groups received such attention recently and did not require refilling this year.

The system of revising the older collections at the same time that the reports on the Cuban deep-sea material were drawn up, proved so efficacious when tried out on the Brachyura that it is planned to use this method for the remaining groups. The "Atlantis" material forms such a large addition to the collections that the arrangement of the trays would require changing for its reception anyway, and there is little doubt that the reports will benefit from the review of the entire collection in the Museum at the time that they are written.

There has been an expected lull in the volume of accessions during the past year after the huge numbers brought in during the two preceding years by the Cuban deep-sea expeditions. It is a satisfaction, however, to note that this was not due to any diminution in the number of donors; in fact, the sources of new material were more numerous during the past year than in any other year since the department has been in my care. The largest collection received was a fine lot collected at Pacific Grove, California, and Nanaimo, British Columbia, by Dr. E. Deichmann. Other donors, to whom thanks are also extended, are: Dr. C. G. Aguayo, Dr. T. Barbour, Miss E. B. Bryant, W. J. Clench, H. J. Coolidge, Jr., J. C. Greenway, Jr., J. A. Griswold, Jr., H. Hurst, P. de Mesa, C. T. Parsons, Mrs. K. M. Pattee, Mrs. Nelson R. Perry, W. E. Schevill, W. C. Schroeder, R.

I. Smith and Dr. W. G. Van Name. Sizable and valuable collections were also received from two expeditions, the Bradley Expedition to Alaska and a brief trip of "Atlantis" to a point east of St. Augustine, Florida, where a few deep-sea hauls were made. In addition to the donors above listed, lots have been received in exchange for publications from Dr. A. G. Humes of the Biological Station at Grand Isle, Louisiana, and Dr. R. Rhoades. There has been but one direct exchange during the year, that with the American Museum of Natural History through which we gained valuable series of African Crustacea from the Lang and Chapin and the Vernay Angola Expeditions.

The catalogued accessions from these sources include 810 specimens contained in 147 lots. Also accessioned this year were 477 specimens in 27 lots from the Bermuda Oceanographic Expeditions of the Department of Tropical Research of the New York Zoological Society, and 559 specimens in 343 lots which represent our share of the Brachyura collected by the Harvard-Havana Expeditions.

Worms: Dr. Deichmann kindly arranged for a student aid to transfer to permanent cards the catalogue of the polychaete worms which was compiled by Miss Olga Hartman in 1937-1938, and this task has now been most commendably accomplished. The polychaete worms collected by the Harvard-Havana Expeditions have been sorted out preparatory to being sent to Miss Hartman for identification. The only accessions during the past year are a few lots collected by Dr. Deichmann at Pacific Grove, California, and Nanaimo, British Columbia.

REPORT ON THE LIBRARY

BY W. E. SCHEVILL

Increasing financial stringency continues to threaten our binding program, so that the prospect for the coming year is much gloomier than the last. Last year the timely sale of some duplicates and the fortunate availability of accumulations from the Whitney funds made it possible to bind, in all, 3086 items at a cost of \$4668.10. It is feared that next year will see a considerable reduction in these figures.

Through the helpful interest of Mr. Metcalf, an arrangement was made at the end of September whereby an assistant from the Harvard College Library, Miss Jane Gold, was added to our payroll to attend to our contributions to the new edition of the Wilson Union List of Serials. Apart from the important primary purpose of this work, it is of great use to us in providing an accurate check of our shelves in a way we have for a long while contemplated without having the time to accomplish.

Miss Hamilton left us December 31, after twelve years of dutiful attendance in the library. Her place was taken late in January by Miss Alice M. Egan. An illness and later a collecting trip in Florida and Cuba with Dr. Barbour involved my absence for some three months in the course of the winter; Miss Harding was left in charge during these intervals. A good deal of Mrs. Frazier's time has been given to organizing our accumulation of duplicates so that lists could be sent out to interested libraries.

From July 1, 1939 to June 30, 1940 the net increase

in volumes was 1072 and in pamphlets 2116, giving a presumed total of 81487 volumes and 102640 pamphlets. Our total recorded circulation for this period, including 222 loans outside the University, was 6250; although we have never kept account of the use of books in the reading rooms, a conservative guess would make it at least 3000 for the past year.

REPORT ON THE GEOLOGICAL MUSEUM

BY EDWARD C. CABOT

I am attempting this year to assemble data concerning the expeditions which have been or are being sponsored by the Geological Department. Most of these have been supported by grants from the income of the Shaler Memorial Fund.

The list of those who have been aided from this Fund is composed of many eminent scientists and their work has resulted in several text books at present widely used. I may mention D. W. Johnson's New England-Acadian Shore Line, W. M. Davis' The Coral Reef Problem and E. Antev's The Last Glaciation.

This Fund was established in 1906 to the memory of one of the most revered and best beloved teachers that Harvard has ever had. Shaler's student, J. B. Woodworth, received the first grant which made possible his journey to Brazil and Chile to study glaciation.

By 1938 eleven expeditions had been made by different men visiting these countries: Russia, Scandinavia, Ascension and St. Helena Islands, South Africa, the Canadian Rockies, and various portions of the United

States. We have hung a map, indicating the routes of these eleven expeditions, in the Geologic Museum beside the new aluminum case, together with a list of publications. Many of the early reports are contained in the publications of the Museum of Comparative Zoölogy.

Another fund available to the department is the Sayles Fund which has sponsored the Harvard Geological Field School in New Mexico in the years 1931 and 1932. This was the beginning of Professor Kirk Bryan's campaign in the southwest. Of nineteen projects initiated in 1932 the field work of 17 has been completed and the work of 13 has been published or is in the press.

The exhibit in the new aluminum case will be changed from time to time to show these projects in the Rio Grande Valley.

A new paper on the Boston Basin has been published by Professor Marland P. Billings Carboniferous Topography in the vicinity of Boston. The geologic maps and cross sections made for this project at Nantasket and Hingham are on view at the Museum.

We are much indebted to Professor K. L. Mather, L. R. Theismayer, and R. P. Goldthwaite for a fine collection of ventifacts gathered on Cape Cod last summer while they were working for the United States Geological Survey. We should also like to thank Mr. E. D. Adair of the Pennsylvania Coal Co. of Scranton, Pennsylvania, for an unusual specimen of brecciated coal.

PUBLICATIONS FOR THE YEAR 1939-1940

(1 August, 1939—31 July, 1940)

Museum of Comparative Zoölogy

Publications:—The following have been printed during the year.

BULLETIN :—

Vol. LXXXV

- No. 4. The Lepidoptera of Barro Colorado Island, Panama. By William T. M. Forbes. viii, 228 pp. 8 pls. August, 1939.
- No. 5. Osteology of *Seymouria baylorensis* Broili. By T. E. White. 87 pp. 3 pls. August, 1939.
- No. 6. Fossil Phoridae in Baltic Amber. By Charles T. Brues. 25 pp. September, 1939.
- No. 7. New genera and species of Neuropteroid Insects. By Nathan Banks. 67 pp. 9 pls. September, 1939.

Vol. LXXXVI

- No. 1. Snakes from the Uplands of the Canal Zone and of Darien. By E. R. Dunn and Joseph R. Bailey. 22 pp. October, 1939.
- No. 2. Collections from the Philippine Islands. Introduction by Thomas Barbour. Mammals by Barbara Lawrence. Birds by James L. Peters. 104 pp. November, 1939.
- No. 3. Revision of the African snakes of the genera *Mehelya* and *Gonionotophis*. By Arthur Loveridge. 34 pp. 2 text figs. December, 1939.
- No. 4. The Millipeds collected in Appalachian Caves by Mr. Kenneth Dearoff. By H. F. Loomis. 31 pp. December, 1939.
- No. 5. Some Chazyan Sponges. By Percy E. Raymond and Vladimir J. Okulitch. 17 pp. 7 pls. January, 1940.
- No. 6. Migrations of New England Bats. By Donald R. Griffin. 30 pp. 5 pls. January, 1940.
- No. 7. Cuban Spiders in the Museum of Comparative Zoölogy. By Elizabeth B. Bryant. 286 pp. 22 pls. June, 1940.

MEMOIRS:—

Vol. LIV

No. 5. Antillean Terrapins. By T. Barbour and A. F. Carr, Jr. 37 pp. 9 pls. April, 1940.

Publications by the Museum Staff

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- Review: 'Publications of the British Trust for Ornithology, Volume I.' *Auk*, **57**, no. 3, pp. 428. July, 1940.
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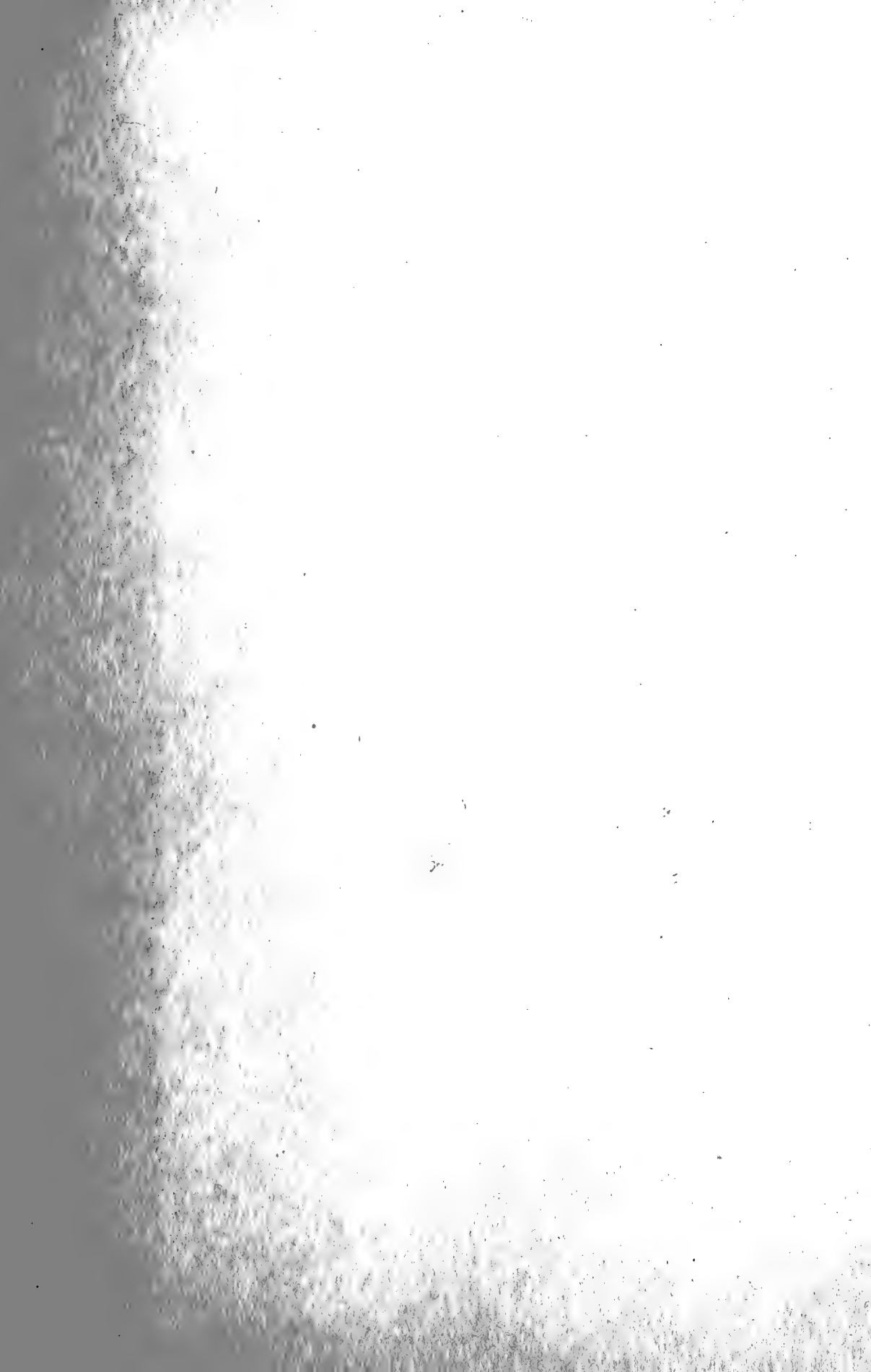
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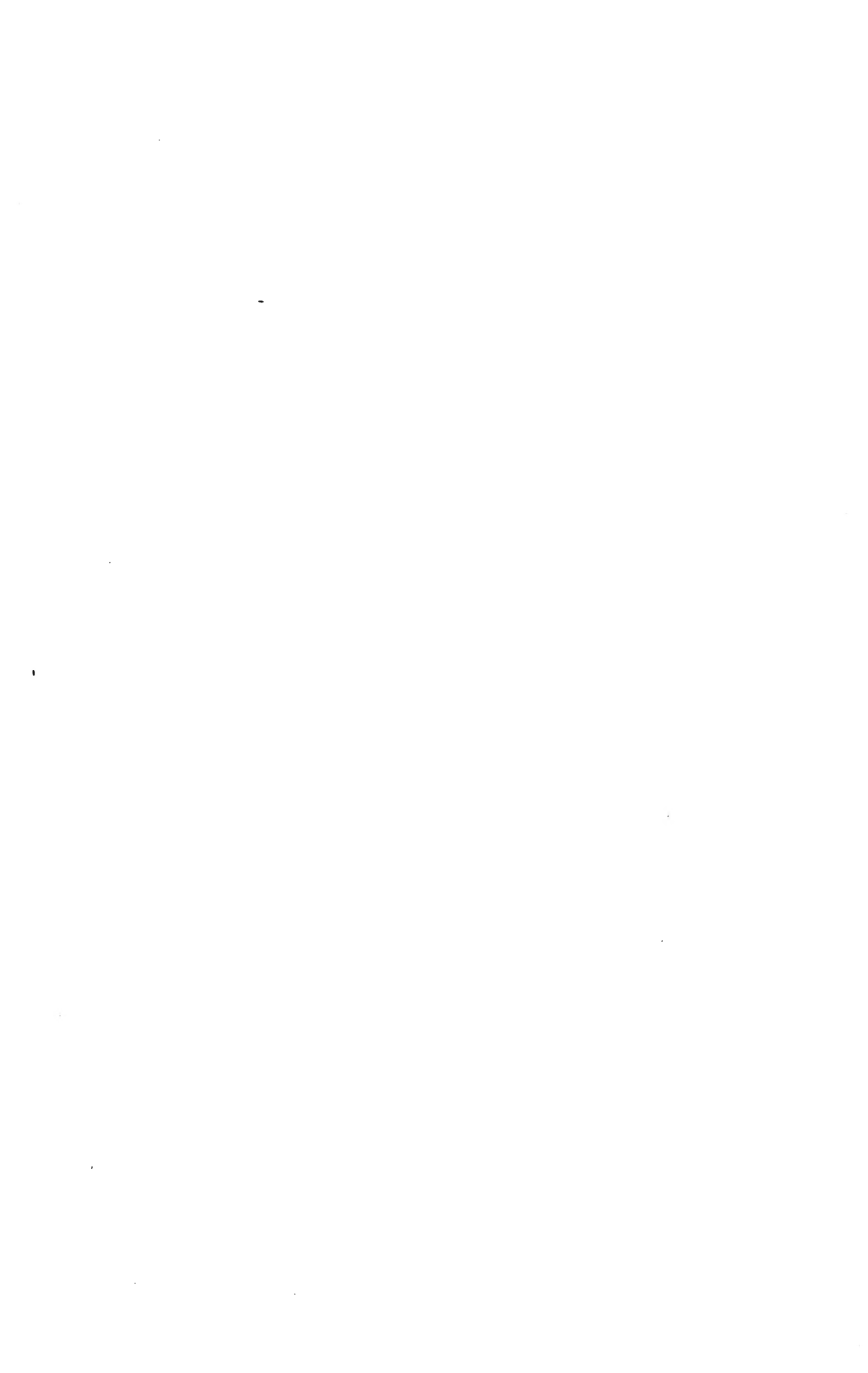
ogist and one-quarter "at the discretion of the Director of the Museum for the increase of the collection by purchase, or for the renewal or repair of the cases, or for the publication of matter contained in my manuscripts."

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