





**ANNUAL REPORT**  
**OF**  
**THE DIRECTOR**  
**OF THE**  
**MUSEUM OF COMPARATIVE ZOÖLOGY**  
**AT HARVARD COLLEGE**  
**TO THE**  
**PRESIDENT OF HARVARD COLLEGE**  
**FOR**  
**1938-1939**

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**CAMBRIDGE, U. S. A.**  
**PRINTED FOR THE MUSEUM**

**1939**

PUBLICATIONS  
OF THE  
MUSEUM OF COMPARATIVE ZOÖLOGY  
AT HARVARD COLLEGE

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There have been published of the BULLETIN, Vols. I to LXXXV, No. 1, 2 and 3; of the Memoirs, Vol. I to LIV, No. 1, 2, 3 & 4, 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 Collections 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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# ERRATUM

By an extraordinary and inexplicable metathesis the name of the President of Harvard College appears at the beginning of the Annual Report of the Museum of Comparative Zoology for 1938-1939 incorrectly. The President's name is James Bryant Conant.

Please paste this at the head of page 4 of the Report.

## Officers

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HENRY BRYANT BIGELOW . . . . .	<i>Curator of Oceanography</i>
PERCY EDWARD RAYMOND . . . . .	<i>Curator of Invertebrate Palaeontology</i>
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ALFRED SHERWOOD ROMER . . . . .	<i>Curator of Vertebrate Palaeontology</i>



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THOMAS TONKIN McCABE . . . . *Associate in Ornithology*

EDWARD CLARKE CABOT . . . . *Curator of Geological Museum*

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ELIZABETH BANGS BRYANT . . . . *Assistant Curator of Insects*

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BENJAMIN SHREVE . . . . . *Research Assistant*

JOHN AUGUSTUS GRISWOLD, JR. . . *Research Assistant*

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MARGARET DEWAR PORTER . . . . *Research Assistant*

LEE McKEAN MARSHALL . . . . . *Research Assistant*

NELDA EMELYN WRIGHT . . . . . *Research Assistant*

DOROTHY POWNING . . . . . *Research Assistant*

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ROBERT VERN WITTER . . . . . *Assistant Preparator*

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FRANCES MARY WILDER . . . . . *Secretary in Charge of Files*

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VIOLET LORRAINE HAMILTON . . . *Assistant in the Library*

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REGINALD ALDWORTH DALY . . . . *Sturgis Hooper Professor of Geology*



## REPORT OF THE DIRECTOR

1938-1939

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TO THE PRESIDENT OF HARVARD COLLEGE :

*Sir:*—

On the fourteenth of November, 1938, Dr. John C. Phillips died suddenly while shooting in the woods near Durham, New Hampshire, and the Museum lost one of the most gifted and versatile members of its staff, while the Director lost one of his two or three most intimate friends. A biographical sketch of Dr. Phillips has been prepared and privately printed.

It became possible this year to do something which has long been needed in the way of redistributing collections within the house. The Massachusetts Fish and Game Association, which for many years has had rooms in the Museum, consented to move to Boston and while we were very sorry to see them go, as they brought interested and interesting visitors to the Museum, nevertheless, their departure allowed us to do several things. We have moved the collection of fossil fishes, which was formerly stored in space earmarked for the Department of Mammals, into part of the room which the Association occupied, and by the building of some additional cases we have also moved the collection of fossil crinoids from the space earmarked for the Department of Mollusks. In a way these two moves are of a temporary nature for both the fossil fish and the fossil crinoids should in time be stored adjacent to the other palaeontological collections. This will be possible when we relocate the library. The change, however, has made possible the turning over of additional space to mammals and mollusks which will take care of the needs of these departments for very many years to come. Some new cases are being built now for the Division of Birds which will likewise help out the over crowded condition which has existed there for several years. These changes are steps in line with the general plan for the distribution of space in the Museum which has been prepared for presentation to the President of the University.

Dr. Robert Tracy Jackson, after assisting and approving of the relocation of fossil crinoids, has presented his resignation,

full of years and honors and beloved by us all. I cannot record this fact without a surge of deep emotion inasmuch as Dr. Jackson was my Adviser during my Freshman year and was the only person then on the Faculty offering instruction in the type of work in which I was already deeply interested.

Last winter I visited Cuba as usual and a report on the history of the forty years existence of the Botanical Garden and the first fifteen years of existence of the laboratory at Harvard House at Soledad have been prepared in outline. A résumé will be found in Professor Merrill's report of the Arnold Arboretum.

On my return from Cuba I was joined by Mr. and Mrs. William E. Schevill, of the Museum Staff, who very kindly consented to assist me in opening up a deposit in Gilchrist County, Florida, which appeared to indicate the existence of a surprising Miocene fauna of extinct mammals probably considerably more varied than the explorations hitherto made have indicated. The opportunity was taken to begin the accumulation of a very large collection of skins and skulls of raccoons preparatory to a study of the conditions which have apparently induced an elaborate speciation in limited areas in southern Florida, quite at variance with the conditions observed in the distribution of raccoons in other portions of their range. I plan to continue both of these projects during the coming winter.

On May 15th a noteworthy celebration was held by the Staff of the Museum in recognition of the fact that three important volumes had appeared from Dr. Allen's pen during the course of the year. These were "Bats," a complete treatise regarding these animals from a consideration of the folk lore concerning them to their palaeontological history, a "Checklist of African Mammals," and a ponderous tome giving the results of his study of the "Mammals of China and Mongolia." The Faculty and Staff were joined by friends of Dr. Allen's. Mr. George R. Agassiz presided gracefully over the meeting. Addresses were made by Dr. Hisaw, representing the Division of Biology; Mr. Harold J. Coolidge, Jr., representing the Staff of the Museum; Mr. Sherwood Washburn, representing Dr. Allen's students; while I allowed myself to reminisce for a short while concerning

my memories of Dr. Allen's early post-graduate days. After the meeting the company adjourned for biscuits and wine. At the end of the ceremony the Director handed Mr. Lowell a silver bowl suitably inscribed and copied from one of Paul Revere's in the Museum of Fine Arts, which Mr. Lowell in turn handed to Dr. Allen. Mr. Conant who had planned to be present was detained by an unexpectedly prolonged Corporation Meeting.

Professor Percy E. Raymond, during the course of the year, also finished and published a book which we have long urged him to complete and the success of his "Prehistoric Life," which appeared under the imprint of the Harvard University Press, has been a source of deep gratification.

Details concerning the "Atlantis" second expedition to Cuban waters, under the joint auspices of Havana University and Harvard are given in Mr. Schroeder's report, while other reports give in more detail than I have space for here the results of Mr. Greenway's long journey in Indo-China and his magnificent collections; of Mr. Duncan Hodgson and Mr. Coultas's trip to the Belgian Congo; the latter travelling on salary from Mr. Greenway; of Mr. Loveridge's journey to Africa, of which more details will appear next year since he returned after the Museum year was over; and of Mr. John A. Griswold's successful expedition to Peru. Dr. Elisabeth Deichmann was invited to give the summer courses in marine zoology at the Hopkins Marine Station, Pacific Grove, California, as she has done in the past with conspicuous success. As usual she seized the opportunity to secure for us some splendid and very welcome material.

As I have reported year after year Mr. Nelson has continued to make the Museum grateful for his superb skill in mounting the beautiful vertebrate fossils which our explorations have uncovered. First this year came the Coryphodon, a skeleton pieced together with almost uncanny insight; then another lovely Dimetrodon and last the giant Kronosaurus cranium which has created more interested publicity in the public prints than any specimen which we have previously placed on exhibition. Dr. D. M. S. Watson, of University College, London, said to me a few weeks ago that he considered this the most extraordinary

and "most wholly unbelievable" object in the Museum's possession.

During the year Mr. Richard McLean left the Museum to take a position in the Academy of Natural Sciences at Philadelphia. This is in line with our endeavor constantly to be training young men to be curators in other Museums. In this case our loss was very definitely the Academy's gain and we are happy to record this fact.

Miss Agnes Osborne and Mr. Tucker Abbott have been added to the Staff as Research Assistants, both having proved their usefulness during a considerable period of probation.

During the summer Dr. Archie F. Carr, of the University of Florida, Gainesville, who has been kind enough to assist me in several researches in the past, again returned to Cambridge and together we completed a treatise on the fresh water terrapins of the West Indies. This has been beautifully illustrated by colored plates done by Mr. E. N. Fischer and Miss Jessie Sawyer, and will appear in the Memoirs of the Museum.

It is a great pleasure again to thank Mr. George R. Agassiz for the support which he is giving to our publication program. Without his help we should be swamped. As it is we are cutting into our back accumulation of manuscripts awaiting printing, with the aid of Mr. Griscom's hard work in connection with our editing.

The Museum has benefited greatly by the work of fourteen young men who worked for us in various capacities under the Temporary Student Employment Plan. Miss Wilder of this office has charged herself with the task of keeping the records of the work done by these young men, which prove the very great services that they have rendered. When we learn of the institutions which have had to content themselves with W. P. A. talent we realize how fortunate we are. We had several W. P. A. workers here gathering data for a neighboring library but their slovenly ways, extraordinary sloth and the general aura of incompetence and disregard for all our rules made it a pleasure to insist on their prompt disappearance.

As usual I have pleasure in recording the extreme friendliness

and the generous spirit of cooperation which has been displayed by every single member of the Staff. It is this notable *esprit du corps* which makes it possible to care for these great collections so effectively and to produce so many publications based on their study, with probably less money than is budgeted by any other museum of similar scope. In exploration, as well as research, we are accomplishing results which are most gratifying when we compare our expenditures with those, granted for similar work, in many other institutions. When I come to my office Saturday afternoons, Sundays and at all sorts of unexpected hours I have never failed to find a large proportion of the Staff here and hard at work. This makes being the Director of this Museum a privilege which cannot be expressed in words and which makes one's highest endeavors seem but puny efforts.

## REPORT ON ECHINODERMS

BY HUBERT LYMAN CLARK

The Museum year just completed has seen a considerable variety of tasks undertaken both in the care and development of the collections and in research. The Curator is glad of this annual opportunity to express his great obligation and sincere thanks to Doctor Deichmann, Doctor Chace and Mrs. Pattee for their cordial cooperation in the work of the Department of Marine Invertebrates. Their unfailing readiness to undertake cheerfully whatever may be asked of them is beyond praise. Doctor Deichmann's assistance in the care of the holothurians and in research on that group is particularly appreciated. Progress by Mrs. Pattee on the new card catalogue of the echinoderms continues as rapidly as other more important tasks permits; that of the brittle-stars is nearing completion.

After finishing the report on the "John Murray" ophiurans, to which reference was made in last year's report, the Curator's attention was given to several minor collections which had been awaiting study for some time. Chief among these was a considerable amount of material, mostly from the U. S. National Museum, of "key-hole urchins" of the genus *Mellita*. Several undescribed forms being represented, a revision of the genus was prepared which will be published by the National Museum. For the opportunity of doing this work, thanks are due to Doctor Wetmore and to Mr. Austin Hobart Clark. Assistance given in the identification of some puzzling brittle-stars for the National Museum and for the Hancock Foundation, University of Southern California, occupied no little time but resulted in the definition of a number of new species of which type material will be given, in most cases, to us.

Some progress has been made on the second part of my Australian Report but this work was interrupted by a visit to Bermuda in April, which resulted in the addition of several species of echinoderms to the known fauna of the islands, and yielded



considerable material for our collections. The weeks following my return were devoted to preparing a report on the Echinoderm Fauna of Bermuda, which has been placed in the hands of Doctor Wheeler, Director of the Bermuda Biological Station, who is now arranging for its publication. It is a pleasure to acknowledge here Doctor Wheeler's many courtesies and to express my hearty appreciation of the privilege of living and working at the Station.

Towards the end of the year the extensive collections of Echinoderms made by the "Atlantis" during the spring in deep water around Cuba were received at the Museum and the work of identifying and tabulating them is now under way. They contain a very large amount of valuable material and add greatly to our knowledge of the West Indian fauna.

Exchanges were completed during the year with the Indian Museum, Calcutta, the University Museum, Copenhagen, and the British Museum. The two latter are among the largest and most important that we have ever made and added 20 genera and 127 species to the collection. The material sent out by us was nearly all from our Australian duplicates. From the Riks Museum, Stockholm, a few holothurians were received in return for identifications. The total accessions (not including any "Atlantis" or other as yet uncatalogued material) were 1699 specimens, 152 species and 23 genera. Gifts were received from an exceptionally large number of friends and thanks are herewith extended to the following donors: Mr. James Miller, who has continued his frequent, valuable gifts of New England Echinoderms; Mr. Melbourne Ward, who sent an important small collection from northern Australia; Mrs. H. C. Russell and the Misses Eleanor Robson and Mabel Tidball; Doctors William Beebe, P. J. Bermudez, R. T. Jackson, Th. Mortensen and Benj. Shreve; Messrs. John Armstrong, W. J. Clench, E. M. Davis, A. G. B. Fairchild, Steve A. Glassell, Harry Hurst, H. Ikeda, G. F. Lunz, Jr., G. E. MacGinitie, R. A. McLean, W. E. Schevill, W. C. Schroeder and Roy Veatch.

## REPORT ON OCEANOGRAPHY

BY HENRY B. BIGELOW

Mr. Stetson on a cruise of "Atlantis," in August, obtained 19 more cores of the sea bottom on the continental slope out to a depth of 2000 fathoms. With these, the first stage in the field work has been completed, in his study of Pleistocene history of the continental shelf and neighboring ocean basin. Most of the laboratory work on the material at hand has also been completed. Dr. F. B. Phleger, Jr., has prepared the first part of his report on the Pleistocene and Recent Foraminifera, while Dr. Cushman and Miss Parker are studying the collections of this group from the continental shelf.

Mr. Stetson has prepared chapters on the sediments of the continental shelf for a symposium volume by the Committee on Sedimentation of the National Research Council, and on the history of submarine geology for the anniversary volume of the Geological Society of America; likewise a report on the continental shelf for the coastal plain symposium held in connection with the winter meeting of the American Association for the Advancement of Science. Papers were also prepared, and published, by Miss Jean Todd and Dr. J. A. Young, Jr., on cores from shallow and deep water near Bermuda.

Mr. Schevill accompanied the "Atlantis" cruise mentioned above, during which considerable collections of invertebrates and fishes were trawled in deep water.

Eight hydrographic profiles between Bermuda and Montauk were run during the year by "Atlantis" under Mr. Iselin's direction in connection with the investigations of the Gulf Stream that are being carried out jointly by the Woods Hole Oceanographic Institution, the Royal Society of London and the Bermuda Biological Laboratory. This study has now reached a point where it is possible to say that changes in mean sea level, along the American Coast, deducible from the tide gauge observations give good indications of variations in the strength of the

current, which in turn appear significantly to influence the spring and summer weather of the New England coast line, and perhaps to affect the survival of young fishes on the offshore banks.

Lt. William P. Hawley, who has succeeded Lt. Graves as ice observation officer on the International Ice Patrol, studied in the Museum during the winter. He sailed for the Grand Banks in early March, and was continuously on duty there until August 25th, as this was the longest ice season yet recorded.

During March, April and early May, "Atlantis," in charge of Mr. Schroeder, was again engaged in trawling for deep sea fishes and invertebrates around Cuba. The extensive collections that were obtained are to be divided between the Museum, the University of Havana and the Bermuda Aquarium.

Dr. Mary Sears' and my paper on the Volumetric Distribution of Animal Plankton over the Continental Shelf, Cape Cod to Chesapeake Bay, based on the collections discussed in my last report was finished, and has been published as a Memoir of the Museum. In collaboration with Mr. Schroeder, a paper was prepared and published on the Fauna above Mud Bottom in the Gulf of Maine. A report on Medusae collected by Mr. William Beebe on the "Zaca" Expedition, in the Gulf of California and off the west coast of Central America is well advanced. Dr. Sears has commenced a study of seasonal and annual variations in the plankton of the continental shelf and offshore waters, off southern New England, the materials for which are being collected on "Atlantis" cruises. And work continues on the "Dana" collection of siphonophores, a collection so extensive that preparation of the report will require several years. Most of my own time, however, was absorbed by the affairs of the Woods Hole Oceanographic Institution.

## REPORT ON ENTOMOLOGY

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BY NATHAN BANKS

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Although no single large collection was received during the year the various smaller ones from a variety of localities have added much of value. The largest was that which Doctor Darlington made in the West Indies, chiefly in the mountains of San Domingo. It contained fully 12,000 specimens, largely of Coleoptera, and many are new to the collection. About 5,000 more beetles, mostly West Indian, came as the bequest of the late Stuart T. Danforth, who for some years lived in Puerto Rico.

Professor C. T. Brues presented over 1,000 specimens gathered on his East Indian trip; he also gave about 600 miscellaneous insects from the western United States. From Mr. Loveridge we have received, so far, about 1,000 specimens from East Africa and the Mediterranean region. Doctor J. Bequaert has continued to present numerous exotic Hymenoptera; through him Mr. G. E. Englehart sent 100 Hymenoptera from the southwest. Mr. H. E. Hurst gave 500 beetles from San Domingo. Mr. H. B. Leech 500 North American Carabidae. From the McGill Congo Expedition (Hodgson and Coultas) we received about 200 specimens, many new to us. Messrs. Shreve and McLean brought back about 300 insects from the Bahamas. Mr. H. G. Hinton gave nearly 200 named Scarabaeidae, including some paratypes; Mr. C. A. Frost about 200 Florida insects and spiders; Thomas D. Cabot some beetles from the mountains of Santa Marta, Colombia; Messrs. G. N. Wolcott and J. A. Ramos some valuable Puerto Rican Carabidae; Dr. D. M. Bates 200 flies from the United States and Central America; Prof. J. G. Needham 50 West Indian Odonata; Mr. Graham Fairchild 300 insects from Virginia and North Carolina. Prof. Cockerell gave various Hymenoptera, mostly from the Californian Islands; Mr. A. E. Brower seventeen species of moths new to the collection; Mr. H. F. Loomis types of nine species of Myriopoda. Mrs. H. Lloyd sent twenty vials of desirable spiders; Miss Sarah Jones about

100 Illinois spiders; and Mr. Phil Rau spiders from Missouri and Mexico; and Mr. W. K. Wallace desirable Lycosid spiders. The Curator obtained over 1,000 on a trip in Maine. About a dozen others gave us a few specimens, often very desirable.

*Purchases.* About 1,500 beetles of the Virgin Islands were bought from H. A. Beatty; 600 Mexican Carabidae from L. J. Lipovsky; 340 Carabidae, 200 Hymenoptera, and 200 Neuroptera of Manchuria from M. A. Weymarn. From F. Schade of Paraguay we secured over 1,000 Coleoptera, Hymenoptera and Neuroptera; 130 Carabidae of Arkansas from C. Willton; from L. H. Synder several hundred Korean butterflies and beetles; 400 Vespidae of Madagascar from Mr. K. V. Krombein; 140 Neuroptera and several hundred spiders from North Queensland from Mr. Wild; 100 Neuroptera from Costa Rica Mr. D. Rounds; 180 Neuroptera and spiders from H. A. Parish; 100 Hymenoptera from Cyprus; several hundred of Ecuadorian spiders and 100 Neuroptera from Wm. Clarke McIntyre; 100 Mexican spiders from Harry Hoogstraal; and about 100 from Miss Wilton of Arkansas.

*Exchanges.* From the late Dr. Walther Horn we received 417 exotic Carabidae, and some Australian Carabidae from Mr. C. Deane; from the Rev. E. Guedet 80 species of western Noctuidae; from Dr. H. H. Ross paratypes of 29 species of Trichoptera; from O. Monte about 100 specimens of named Brazilian Tingidae; from Prof. E. H. Strickland 23 named species of Canadian Psyllidae; from Mr. M. Mosely of the British Museum about 20 Trichoptera (some paratypes) and from Mr. D. Kimmins of the same institution a further lot of Neuroptera; from Prof. G. F. Knowlton 50 vials of Perlidae and Trichoptera, also some Dolichopodid flies from Utah; and from the American Museum of Natural History five species of spiders new to the collection.

About 15,000 duplicate Chrysomelidae of the Bowditch collection were sent to the U. S. National Museum; they are to send in exchange duplicate Lepidoptera and Schmitt insect boxes.

*Collections identified.* From the following collections sent for identifications desirable duplicates were retained for the Museum. Neuroptera from the University of British Columbia, from the

Ohio State Museum, University of Colorado Museum, Utah Agricultural Experimental Station, Academy of Natural Sciences of Philadelphia, U. S. National Museum, Cornell University, Myrmeleonidae of Baja California from the University of California and California Academy of Sciences. Psammocharidae from Washington State College, Utah Agricultural Experiment Station, Colorado State Museum and Madagascar material from K. V. Krombein.

Doctor F. M. Carpenter obtained Hemerobiidae from numerous institutions for making a revision of the family, and retained for the collection a number of species new to us.

From material sent for naming Miss Bryant has also retained some duplicates.

*Arrangement.* Eighty-five standard boxes were delivered during the year. In the Coleoptera Doctor Darlington has arranged in trays the Cicindelidae and Carabidae and parts of other families. Mr. Solana has helped him in mounting, labelling, and assorting so that now there are fewer unmounted beetles than for several years.

In the Lepidoptera the extra boxes permitted the clearing up of the Cassino Geometrids and his boxes were then remade into our standard size. Doctor Forbes returned named another large lot of Barro Colorado moths. Doctor Bates, here for a time, mounted and studied some West Indian butterflies, but otherwise the great amount of unspread Lepidoptera remains untouched.

In the main room several families of Diptera and Hemiptera were expanded until stopped by the lack of shelving space.

Much as we need assistants, the greater need is for more cabinets and boxes. The collection is growing much faster than the equipment, which, for several years, has been inadequate.

The Schmitt boxes, expected from the National Museum, and those emptied in the Coleoptera room, will help during the coming year. Many thousands of miscellaneous ants in pasteboard boxes were transferred to Schmitt-type boxes. Students have helped in the fumigation of the collection, and in filling vials in the alcoholic collection.

The Curator has mounted over 10,000 specimens labelled and assorted them, and, as usual, has written and attached species labels to several thousand specimens.

The two and a half million specimens in the Department are in as good condition as at any time during the past twenty years.

About 8,000 beetles were loaned by Doctor Darlington and over 1,000 in other groups. A number of loans were returned during the year, in many cases with type material. Types of insects now catalogued number 23,724.

*Research.* Doctor Darlington studied his last year's West Indian material and described 28 new species. He has also made studies in geographic distribution.

Miss Bryant has rewritten her large paper on Cuban spiders; nearly 100 new species.

Mr. Gaines Liu, having finished mounting, labelling, and assorting his Chinese collection, studied all of the Oriental Hemiptera, and prepared a paper on Oriental Cicadidae. He is now returning to China.

Doctor Carpenter has spent much of the year on a revision of the native Hemerobiidae, and the paper is almost ready for publication.

Doctor Creighton was here for nearly four months examining the Wheeler ants in preparation of a book; incidentally he has helped in the identification of various species and separated some for exchange.

Doctor Bequaert continued his work on the Vespidae and Tabanidae, preparing several papers.

The Curator has prepared several papers on Neuroptera and Psammocharidae, and began work on others.

Visitors were not as numerous as in some years; two, however, Doctor W. S. Creighton and Professor A. M. Chickering were here for about four months. Others include Dr. J. B. Kaston; Mr. J. A. G. Rehn and son; Prof. W. T. M. Forbes, Mr. A. E. Brower, Dr. J. G. Needham, Mr. P. N. Musgrave, Mr. J. Hanson, Prof. T. H. Hubbell, Dr. J. Speed Rodgers; and Mr. C. L. Kimball.

## REPORT ON MAMMALS

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BY G. M. ALLEN

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Judged by the number and value of the specimens received during the past twelve months, this has been a remarkably successful year. Through the interest of the Director, several important collections were obtained, including particularly three more lots of South African small mammals; a collection from the Cameroons, chiefly primate skeletons; and smaller lots from Ecuador, Japan, and Manchuria; during his stay in Florida last winter, and assisted by Mr. and Mrs. Schevill, he secured an important series of raccoons, representing several local or island races, not previously well represented in the collection. Several rare dolphins from Virginia Beach were received which had been injured by passing ships but which were in perfect fresh condition. One, *Prodelphinus euphrosyne* was the first to come to the Museum. It was found by Mr. and Mrs. Thomas Barbour. Later specimens of *Kogia breviceps* were found at the same locality by Mr. Barbour and Mr. and Mrs. Schevill. Mr. James C. Greenway presented a very interesting lot of about 170 mammals secured during his recent expedition to French Indo-China, that nicely supplements the Siamese collections brought back the previous year by the Harvard Primate Expedition; it includes among other rare species a fine specimen of the little-known wild ox, or "Kou-prey," the status of which is still somewhat puzzling. Another very welcome collection was presented by Mr. J. C. Greenway and Mr. Duncan M. Hodgson, consisting of some 140 large and small mammals from the eastern Congo, a region hitherto barely represented in our series. Among other rarities he secured several specimens of the Pygmy Chimpanzee. The hides of these and a number of other mammals were skillfully prepared in the field by Mr. Coultas, at Mr. Greenway's expense. Mr. Hodgson has very generously borne the expense of tanning. Mr. Loveridge, in the course of his season's work in eastern Africa has obtained a fine series of small mammals,



of which two lots have already come in. The Director of the Natal Museum has sent a splendid pair of the Cape Hartebeest from the New Hanover herd, a species now nearly extinct in the Cape Region. Mr. and Mrs. Schevill in addition to their work in Florida, last winter, also made a small collection in Mexico. Finally, as the official year closes, Mr. John A. Griswold, Jr., has returned from a collecting expedition to the Peruvian highlands, bringing a fine series of well-prepared specimens, which include a number of species not previously represented in the collection. To all these persons, grateful thanks are due, as well as to the following:—David L. Arenberg, Dr. J. Bequaert, Dr. W. A. Collier (for a collection of Javan bats), Dr. David E. Davis, Garrett Eddy (for two small mammals from Alaska), A. G. B. Fairchild (for a skull of True's beaked whale and other specimens), Samuel Fales, Edward Folk (for a small collection of native mammals), G. Grandidier (for a specimen of *Geogale*), Donald R. Griffin (for a collection of New England and other mammals), Dr. G. W. D. Hamlett (for additional collections of edentates and monkeys from Brazil), Dr. G. Hawley (Liberian specimens), John K. Howard (for skulls of the Newfoundland Caribou), A. P. Jacot, R. McLean and Benjamin Shreve (for bats collected on Great Inagua), Charles P. Lyman, Dr. Loye H. Miller (for a skull of an Indian dog), George Nelson, David G. Nichols (for specimens of *Myotis* from California), Dr. and Mrs. Gouverneur M. Phelps (for skulls of African carnivores), Sir D. L. Reid, bart., (for excellent skins of the Scottish wild cat), D. H. Robinson (for seal skulls), Quentin Roosevelt (for two skins of the Chinese Golden Monkey, a genus hitherto lacking in our collection), Nelson Slater (for a mounted albino baboon), Mrs. E. Sharrock, Dr. Duncan Strong, Sherwood L. Washburn (for a lemur skull) and Major H. M. Whittell.

Exchanges have been carried out with thirteen institutions or private collectors. Most of this has devolved upon Mr. Coolidge who has undertaken a systematic effort to increase our representation of mammalian genera through a series of exchanges. In this he has been highly successful, having reduced the list of some 362 genera unrepresented by adequate specimens in De-

ember 1937, by no less than seventy-nine, while at the same time adding many desirable species of genera already in the collection. Of our original list there are still some 283 genera of recent mammals lacking.

The cataloguing, labelling, preparing, and organizing of all this new material is a time-consuming process, but continues steadily. Some 1,300 specimens have been entered during the year by Mrs. Schevill and myself, and nearly 500 more by Miss Agnes Osborne, Research Assistant, who during the winter has most generously given of her time and effort to this work as well as to the preparation of skeletal material, and to whom the grateful thanks of the department are due. Thanks to the efforts of Mr. Sherwood L. Washburn and Dr. Adolph H. Schultz, with the assistance of Gabriel W. Lasker and Mrs. Russell W. Hendee, four hundred primate skeletons, brought back by the expedition to Siam and Borneo under Mr. Coolidge's leadership in a previous year, have now been carefully macerated and put in condition for study. A joint report by the Curator and Mr. Coolidge on the species secured by this expedition has been prepared, while Mr. Washburn has devoted much time to a particular study of some of the skeletal material mentioned.

Of larger specimens, nearly ninety hides have been tanned during the year and thus made available for study. In the storage of such material, our "Hide Room" is rapidly approaching its capacity, so that to allow for future growth an additional storage room has now been equipped by the Director. This should take care of future additions for a long time to come. Elsewhere, too, a good deal of shifting has been required to space out and to make room for new accessions. In this, Mr. Coolidge and Mrs. Schevill have done efficient work. With the addition of two storage cases moved from the new "hide room," it has been possible to concentrate all the skeletal material of primates in the southeast corner room, which in time may become a special laboratory for the study of simian osteology. Already this series has been much used, particularly this year by Mr. Coolidge; by Mr. Washburn in his study of the Bornean species; and by Dr. Senyürek, in his studies of simian taurodontism.

As these collections increase in size and importance they are more useful and are much consulted.

Special acknowledgments are due Mrs. Frederick S. Goodwin, for her help and interest this winter in generously giving several forenoons a week to work on the better protection of the larger skulls that now hang on the walls of the storage rooms, and to boxing and making typewritten labels for many of smaller species. When this work is eventually finished, the material will be in much better condition for storage and for future handling.

Specimens have been loaned for outside study to eleven different persons or institutions and considerable use of the collection has been made by visiting investigators and by research students at the University. In addition, Mrs. Schevill and the Curator have been able to aid several archaeological investigations through identifying mammalian bones found in the course of excavations, to mutual advantage. The former has also completed a thorough study of the Philippine collections made by her in 1937 and has prepared an account for publication.

Mr. Coolidge, in addition to devoting much time and effort to organizing our exchanges, with a view particularly to increasing our representation of genera, has continued his studies of the primate material brought back from Siam and Borneo in 1937, by the Harvard Primate Expedition under his charge, and has given a number of popular lectures on the work of this expedition, especially on the field study of the gibbon, as well as lectures on the great apes in a new graduate course under the Division of Anthropology. As chairman of the Pan-American Committee of the American Committee for International Wild Life Protection, he has promoted a convention between the American republics to further international cooperation for the protection of fauna and flora, under the auspices of the Pan-American Union.

## REPORT ON THE BIRDS

BY JAMES L. PETERS

The year August 1, 1938 to July 31, 1939 has been one in which accessions were above the average; the total of 6,642 falling just under the 1936-37 figure. On the other hand the five year average 1933-34 to 1937-38 inclusive is 4,358.

Late in September Mr. Greenway left for Indo-China on an expedition which he planned and financed jointly with Monsieur Jean Delacour of Clères, France. He returned early in May with his share of the collection which through his generosity becomes the property of the Museum of Comparative Zoölogy. The novelties have already been described in the Bulletin of the British Ornithologists' Club, in joint authorship with Monsieur Delacour, and a report on the entire collection is in progress.

Mr. Greenway also made it possible for Mr. W. F. Coultas to accompany Mr. Duncan M. Hodgson, representing McGill University, to the Belgian Congo. Mr. Coultas' principal assignment was to secure specimens of the recently discovered *Afropavo congensis*; in this he was successful, bringing back a fine pair as part of a collection of 326 birds.

Through the interest of Doctor Barbour, Mr. Griswold was enabled to visit Peru where he devoted his time to general zoölogical collecting in the humid temperate zone near Maraynioc; the Bird Department's share of his collection amounts to 313 beautifully prepared skins. He left in January and returned the end of July.

From the series of expeditions conducted jointly by the Museum of Comparative Zoölogy and the Museu Paulista we received 378 specimens of birds from western São Paulo.

Through an agreement with Professor Oscar Neumann, of Berlin, we were enabled to purchase two pairs, as well as all types and uniques, of the species of birds collected by J. J. Menden on the islands of Peling and Taliabu; the latter island has never been collected before ornithologically and the collection

was rich in novelties and rarities; 429 skins have so far been acquired.

Mr. Barbour's interest also permitted the acquisition of a most important collection of birds from the Micronesian islands under Japanese mandate, 274 skins in all; a collection of 727 birds made in the hills of northern Burma, and 495 from the mountains of Ecuador.

Mr. Loveridge, has sent back two lots of birds from the mountains of Equatorial Africa, amounting to 334 birds; and additional and final shipments are in transit. It is expected that a report on the entire collection will be prepared after Mr. Loveridge's return.

Mr. McCabe sent in 33 skins during the year as an addition to the Elizabeth Quincy Bolles Memorial Collection.

A final collection of 268 skins from Honduras was acquired by purchase, as well as a rather interesting lot of 108 from the Philippines and Sunda Islands, and 105 from South Africa.

Most of the exchanges conducted during the year were of a specific nature, thus but 110 birds were acquired in this way. Sixty-one specimens were purchased from dealers. Single specimens or small lots were presented by the Reading Public Museum, California Academy of Sciences, and Messrs. Garrett Eddy, Walter Koelz, Allan Brooks and W. J. Clench; a beautiful adult pair of *Accipiter gundlachi* was the gift of Dr. Barbour.

The total number of loans made to other museums, or ornithologists, was 25 involving 346 specimens.

Including vacations and Messrs. Greenway's and Griswold's field trips, the department operated under a reduced personnel during the greater part of the year. Nevertheless the force present has managed to keep pretty well abreast of the usual routine and curatorial work. The consolidation and rearrangement of the Falconiformes is well under way and that of the Columbiformes begun. The Coraciiform birds and the Corvidae in the general collection were expanded, though some of the arrangement is temporary.

Before leaving for Indo-China Mr. Greenway completed his report on the Siamese birds from the Harvard Primate Expedi-

tion. During the year I prepared the accounts of Miss Lawrence's Philippine birds and the Bornean birds from the Harvard Primate Expedition. The manuscript of the fourth volume of my Check List was turned over to the Harvard University Press early in April and work has been actively pushed on the fifth volume.

During the year 5,673 birds were added to the card catalogue. All the families contained in the first three volumes of Sharps Hand-list have now been carded, plus the Corvidae from volume 5; the Timeliidae, the first family in volume 4 are now being made ready for carding.

A new and up-to-date list of generic desiderata has been prepared. This list shows that of the 2,500 (plus or minus) genera of birds currently recognized, 103 are lacking in the Museum's collections. Some of these genera are founded on such slender characters that they will probably not survive a critical revision. Of the remainder some of them rank among the greatest ornithological rarities; some thirteen are probably extinct, and this number of genera we are unlikely ever to possess. Seventy-two of the list of our specific desiderata were erased during the year.

The generally crowded condition of the collection is so well known to the Director that no special report on this condition is required.

The faithfulness and industry of Miss Porter and Miss Powning has contributed in great measure to keeping the routine work of the department up-to-date.

In late years Dr. Phillips' numerous other activities had precluded his taking an active part in the affairs of the Bird Department, but he maintained his interest always, and in his death on November fourteen we all feel the loss, not only of a colleague, but of a friend.

## REPORT ON BIRDS EGGS AND NESTS

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BY RICHARD C. HARLOW

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The most notable acquisition to the Oölogical collections during the past year was the gift by Cleveland Bent and Charles Day of their collection of eggs of the Raptores of New England. It is especially valuable from the number of local series it contains. These are in the process of being sorted and the various types will be added to the Thayer as well as the general collections.

The collection has been checked against pests and diseases which break out at various times in practically all large collections.

The curator greatly regrets that illness and other demands made it impossible for him to spend more time with the collections during the past year.

A great deal of the material in the collections is being used by Mr. Bent in his current "Life Histories" published by the government, and much time was spent in measuring the various series for his use.

## REPORT ON MOLLUSKS

BY W. J. CLENCH

*Expeditions:* The results obtained by the second Havana-Harvard Expedition in Cuban waters were far more significant than expected, considering that the same general territory was covered during the previous trip. Only a preliminary study has been made of this year's material, and only a small portion has so far been sorted, but a cursory examination indicates several new forms in addition to many additional specimens of species described from the results of the first expedition.

Dr. Darlington's trip to Hispaniola yielded a very fine and important series of mollusks from the interior of this island. No mollusks had heretofore been collected from most of the territory that he covered in the central mountain range.

*Collections:* Through the great kindness of the late Reverend Oliver P. Emerson,<sup>1</sup> his collection of Hawaiian Achatinellidae was bequeathed to this institution. The collection comprises approximately 1,000 lots, mainly in long and well localized series. The value of this material lies in the fact that most of the specimens were lowland forms from northern Oahu, a region nearly completely despoiled of its original forest cover where these arboreal snails lived. As a consequence, most of the localities have been destroyed and the majority of the forms and color races that comprise this collection are now extinct or near to extinction.

Mr. A. F. Gray of Watertown, Mass., has very generously given to us a collection of American land shells brought together by W. G. Binney and Thomas Bland. This collection comprises about 500 lots, many of which are the specimens upon which original descriptions were based and others that were used for their work on the distribution of North American species. This collection supplements very satisfactorily the other collections that we are fortunate to possess made by both Binney and Bland.

<sup>1</sup>Born Lahainaluna, Maui Island, Hawaiian Islands: 27, July 1845. Williams A.B. 1868, Andover Theological Seminary, 1871. Died, Intervale, New Hampshire, August 24, 1938.



Miss Angeline Hutchinson of Milton, Mass., gave to us a small collection, mainly of New England species originally brought together by her sister. Most of the localities represented by this collection are new to the collection.

A small collection of exotic species was presented by Mr. I. C. Robinson of Malden, Mass., a collection formed by Mrs. Robinson and comprising many fine selected specimens.

Through the kindness of the late Earl E. Hoover, of the New Hampshire Fish and Game Department, the freshwater mollusks collected by members of the survey crew were presented to us to report upon. The collection, though small, is exceedingly important, as so little is known about the shells of this state.

*General:* Mr. R. A. McLean, who had been a Research Assistant in the Department since 1935, left during April to become Assistant Curator of Mollusks in the Academy of Natural Sciences, Philadelphia. His work on the marine bivalves during the few years that he was on our staff brought this portion of our collection up-to-date in most of the families. This was all in addition to the very many routine tasks of the department that he carried on as well. Mr. R. Tucker Abbott has been appointed Research Assistant in the Department, to fill the vacancy caused by Mr. McLean's new appointment.

The removal of the collection of fossil echini to the fifth floor has made available very much needed space. Dr. Jackson's former room now contains our series of land shells and freshwater pulmonates. The space thus released in the main range has allowed a complete reorganization of the marine gastropods and the systematic sequence brought up-to-date on the basis of Thiele's classification. Expansion is now possible for many years to come and a permanence of each genus in its present cabinet has been made probable. As a consequence, a card catalogue has been made of all genera in the collection with a room and cabinet number indicated. This will enable the ready location of any group by those not familiar with the arrangement or during any time that the staff members may be absent.

Dr. J. Bequaert has continued his studies, not only of African species, but of many other non-African groups, and in addition aiding in many ways with the routine curatorial tasks.

Mr. H. D. Russell has continued his studies during the past year on the Western Atlantic Neritinae.

Mr. Alden Cheever has again rendered much valuable work, both with routine tasks as well as many other departmental duties.

The Department is deeply indebted to Miss Ethel R. Lang for much volunteer work.

The exchange material has been completely revised and duplicate labels typed for all of the series. Nearly 2,000 lots a year are added to our accessions through exchanging with institutions and individuals. Our New Zealand collection, for example, is now one of the finest and most complete in the world outside of New Zealand, and this has been built up entirely by the exchange of our duplicate material.

Our student assistants, Messrs. L. Demeter, E. L. Durham, J. H. Huntington, rendered very satisfactory work during the past year.

The collection proper has had excellent growth during the past season. A résumé follows:

Number of accessions for the year .....	5,809
Catalogued entries in the collection .....	121,486
Number of species in the collection .....	25,640

## REPORT OF THE RESEARCH CURATOR OF ZOOLOGY

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BY LUDLOW GRISCOM

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The finances of the current year were as stereotyped as possible, but we were again enabled to stay well within the allowed deficit. In March, however, the new budget had to reckon with a decrease in income of over \$2,500. In addition to this, wage increases and pensions automatically increased our expenses by over \$2,000. For an institution already operating on a deficit, this state of affairs merely increases the deficit, just when we are asked to reduce it. Mere figure juggling served to increase the operating deficit by \$2,300 only, but I must emphasize here the fundamental unsoundness of our financial structure. The facts are that the unrestricted income of the Museum is not sufficient to pay the total charges of salaries, services and wages, and caretaking. It follows that as long as the Museum is open and running, the expenses of doing so and caring for the safety of our priceless collections automatically involve a deficit, and if our income declines still further, the deficit will increase. No amount of competent and careful management can possibly prevent it.

Mr. Agassiz's gift of \$5,000 for publications once more doubled our usual output; and also doubled the amount of my time given to editorial work. Our major undertakings in this field were a fat volume on the ciliates by Kofoid and Campbell, another big volume devoted to Professor Allen's "Checklist of African Mammals," and we provided also some financial support towards the publication by the Harvard University Press of Allen's semi-popular book on "Bats." You asked me to assist Professor Allen in securing a publisher. I entered into negotiations with Houghton, Mifflin & Co., and had conferences with two of the editors. These were far from satisfactory, and I regarded their estimates as unnecessarily high. Armed with these, however, I approached Dr. Dumas Malone, suggesting that he reexamine the whole proposition himself, feeling confident that the Press

could handle the book far more economically. Dr. Malone lost no time in discovering he could, and a thoroughly equitable arrangement was easily reached, properly protecting the interests of publisher and author, while the Museum put up a reasonable sum in the form of a subvention so as to appear on the title page and share whatever credit the book earned. Its instant success should be a gratification to all concerned.

The amount of time for scientific work was a little less than any other year since the reorganization. Since completing the systematic portion of the joint report with Mr. Greenway on the birds of Lower Amazonia, over a year ago, an important series of papers by Mr. Zimmer had appeared, containing monographic studies of the most critical families of Neotropical birds. Also the first volume of Pinto's Catalogue of the Birds of Brazil was published, listing all specimens in the São Paulo Museum, including unreported collections by Olalla in the same region, made subsequently to those purchased by us. It seemed well worth while to include all this new material, and the rewriting of this report so as to incorporate this information is about half completed. My studies of New England Shore-birds were continued, as well as active local field work.

A reorganization of the Board of Freshman Advisers considerably increased my obligations in this direction, and an appreciable amount of time was devoted to the New England Museum of Natural History, as a trustee. During the year I accepted the secretaryship of the next International Ornithological Congress, and declined an informal tender of the editorship of *Bird-Lore*, although agreeing to prepare a nationwide summary of the Season reports every two months.

I attended the American Ornithologists' Union meeting at Berkeley, California in June with most profitable results, meeting all my Pacific coast colleagues, and visiting the principal museums. Several weeks' vacation were devoted to field work in many parts of the west, visiting many State and Federal refuges to see their spectacular bird-life.

## REPORT ON REPTILES AND AMPHIBIANS

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BY ARTHUR LOVERIDGE

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The Curator having returned only recently from a year's absence in East Africa, the annual census of the collection is omitted from this report. A great deal of material was received during the year. This was handled by my colleague Mr. Benjamin Shreve to whom I am greatly indebted for the care he has bestowed on the collections, undertaken in addition to his own investigations on New World herpetofauna.

Mr. Shreve's collection from the Southern Bahamas, and those of Mr. Barbour and Mr. and Mrs. Schevill from the southern United States; and that of J. A. Griswold, Jr., from the high altitudes in Peru, are the principal items resulting from Museum expeditions during the year.

Among donations from a friend of the Department is the most northerly record of a Cotton-mouth Moccasin, taken near the mouth of Chesapeake Bay; a collection made by G. Heinrich on Mount Victoria, Burma; some amphibia of especial interest from Japan and Korea; a portion of the V. FitzSimons collection from Mount Silinda, southern Rhodesia, received from the Transvaal Museum; a noteworthy Malagasy collection; and a third of the material gathered by Major Chapman Grant during his recent visits to Jamaica and the Caymans. The types remain in the Museum of Comparative Zoölogy, a third of the collection goes to the United States National Museum, and a third to the Museum of Zoölogy of the University of Michigan.

Among other gifts, that of the type of the new subterranean salamander *Haideotriton wallacei*, presented by its describer Dr. A. F. Carr, merits special mention; we are again indebted to Dr. J. Acuña, of Cuba; H. A. Beatty, of St. Croix; C. T. Brues, for further East Indian material; Dr. H. C. Clark, for more ophiological specimens from the Gorgas Memorial Institute, Panama; Dr. R. B. Cowles, for reptiles from the southwest; Duncan M. Hodgson, for amphibia from the Congo; L. M.

Klauber, for an extensive exchange of California reptiles; George Nelson, for an interesting *Pituophis*; Stewart Springer, for Cuban toads; and the United States National Park Service for rattlesnakes, including a race new to the collection.

Twenty-four loans were made to fourteen persons, representing twelve institutions. Many of these have not been returned as yet, and it is earnestly hoped that borrowers will endeavour to do so now.

The student-aid went over the entire lizard collection filling with alcohol those jars where evaporation had taken place.

## REPORT ON INVERTEBRATE PALAEOLOGY

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BY PERCY E. RAYMOND

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Mr. William E. Schevill spent two months in the Sierra Madre Oriental near Monterrey, Mexico, in the study of Jurassic and Cretaceous deposits and brought back a collection of ammonites. This work was made possible by a Carnegie Grant-in-Aid through the American Association of Museums. Mr. John A. Young, Jr., with the assistance of a grant from the Bache Fund of the National Academy of Sciences spent the summer of 1938 in New Mexico, and collected a large suite of Upper Carboniferous fossils, most of which he was able to identify during the winter. He is describing a considerable number of new species from this material.

The Curator was occupied with the correction of proof-sheets and the making of an index for "Prehistoric Life" until the middle of the winter. Thereafter he prepared a history of the progress of Invertebrate Palaeontology for the past fifty years, to be published in the Anniversary Volume of the Geological Society of America. Two months of the summer of 1939 were spent in southwestern Pennsylvania, continuing a study of the Carboniferous strata in an attempt to reconstruct a history of the region from the nature of the sediments. Many fossils were collected from the various marine beds in the Conemaugh series, and some from limestones and shales of fresh-water origin. Considerable information was obtained on changes of faunas with change of facies of the strata, and the principal periods of uplift, erosions, and resubmergence determined. This work was supported by a grant from the Shaler Fund. Thanks are also due for assistance from the Geological Survey of Pennsylvania, which facilitated the work by appointing the Curator to the office of Consulting Geologist and to Doctor Arthur Cleaves, Chief Geologist to the Pennsylvania Turnpike Commission, through whose assistance I was able to study the numerous new cuttings and tunnels from the Allegheny Front to Irwin. Some of the

best fossils, notably a new ophiuroid, were found in these new exposures.

Two weeks were spent with Mr. Robert Wheeler who is studying the Beekmantown and Upper Cambrian formations of western Vermont, with the help of a grant from the Bache Fund of the National Academy of Sciences. This work has yielded a large collection of fossils from measured sections and to some extent from zones which were not previously known to be fossiliferous.

An important gift from a former student, Dr. R. W. Harris, contains the types of 119 species of ostracods which he is describing from the Ordovician of the Arbuckle Mountains, Oklahoma. The annual donation from Doctor Joseph A. Cushman is a collection of foraminifera in which 79 genera, 275 species, and 438 localities are represented. Dr. Barbour and Mr. Schevill collected Tertiary sea-urchins from the Miocene of Florida, and Dr. J. Fred Smith presented a drawer of named forms from the Cretaceous of Hudspeth Co., Texas. With his usual generosity, Mr. J. O. Thompson presented a collection of Upper Carboniferous fossils from Winterset, Iowa. Dr. Louis C. Ray gave Ordovician and Mississippian brachiopods from near St. Louis, Missouri, and Ordovician and Cambrian fossils from Wyoming and Utah were presented by Dr. C. H. Burgess. Professor Esper Larsen, Jr., donated Triassic and Cretaceous fossils from California, and Professor Charles Schuchert sent a drawer of brachiopods from the Middle Productus limestone of the Salt Range, India as an exchange. A crustacean and a chilopod from Mazon Creek were purchased from Wards Natural Science Establishment.



## REPORT ON VERTEBRATE PALAEOLOGY

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BY A. S. ROMER

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During the past year much has been accomplished in both field and laboratory. During the summer of 1938, Dr. T. E. White and Mr. R. V. Witter explored a Triassic fossil locality previously discovered by the latter. The site proved to be an exceedingly rich one, the fossils consisting almost exclusively of the tightly packed remains of a horde of individuals of large amphibians of the *Buettneria* type. Before the quarry was exhausted blocks were removed containing nearly half a hundred skulls and large amounts of postcranial bones. One slab, 6 x 8 feet in dimensions, containing a dozen skulls and many other bones, was removed intact. This has been prepared by Mr. Witter and forms a striking addition to our exhibits.

During the winter the Director and Mr. W. E. Schevill explored the Miocene fossil beds in Gilchrist County, Florida, and secured a large series of remains which are being studied by Mr. Henry Seton and Dr. T. E. White.

There has been noted in earlier reports the collection by Mr. W. E. Schevill of materials of the gigantic Australian plesiosaur *Kronosaurus* and the cleaning of the skull remains by Dr. White. It was realized that the skull of a giant reptile of this sort would make an interesting exhibit; unfortunately, while most of the internal portions of the skull were well preserved, much of the surface had been eroded and preparation would involve a considerable amount of restoration. After much discussion, the restoration was decided upon and has been skillfully accomplished by Mr. George Nelson, the missing dermal areas being modelled on the basis of comparison with parts of a smaller individual of the same species. The result is highly satisfactory, the large orbital and temporal openings allowing the visitor full sight of the braincase and internal structures which demonstrate the authenticity of the restoration of the surface.

As in previous years much of the work of the department has centered on the fauna of the Texas redbeds. Dr. White has published the results of his studies on *Seymouria*, and Dr. Dunkle has published an account of a new palaeoniscid fish in our collections. Mr. L. I. Price is continuing his studies of the captorhinid cotylosaurs, and the Curator has at long last completed his review of the pelycosaurs. During the year Mr. Nelson has made a splendid mount of the unusually complete skeleton of the type of *Dimetrodon milleri*, and skulls of *Dimetrodon*, and the curious long-snouted dimetrodont *Secodontosaurus* has been placed on exhibition. Preparation by Mr. Witter of the skull of the recently discovered amphibian *Edops* is far advanced.

A collecting trip to the Wichita beds of Texas was undertaken during the present summer, Amherst College cooperating in the enterprise. The Harvard contingent included besides the Curator, Messrs. L. I. Price, H. J. Sawin, C. G. Wood, and R. M. White; Dr. F. B. Phleger of Amherst joined us in the field with two students, Edward Hastings and W. S. Putnam. The trip was highly successful, owing particularly to the discovery of a rich extension of the Geraldine quarry, previously thought exhausted. This yielded some 28 blocks of fossils requiring the work of the entire party for a solid month. In addition to much good materials of *Edaphosaurus* and *Eryops*, there were discovered numerous remains of the rare and primitive amphibian *Cricotus*.

Much further progress has been made in the difficult task of preparation of the South American Triassic material. A considerable quantity of dicynodont material has been prepared by Messrs. R. Olson and G. Stucker and several skulls placed on exhibition, and Mr. Witter is at work on the skeletons of two interesting archosaurs. Unfortunately the Milton Fund Grant under which this work was being done has been exhausted and future progress will be slower. Mr. Stucker has left the staff to take a position elsewhere, but Mr. Olson is continuing work on a part time basis.

Two useful additions to our exhibits of dinosaurs are the skulls of *Anchiceratops* and *Corythosaurus*, previously received

in exchange and prepared by Dr. White. Mammalian skulls newly placed on exhibition include those of *Nesodon* and *Trigonias*, received in exchange from the Field and Denver Museums, respectively, and prepared by Mr. Witter. Other exchange materials received include a splendid *Homoeosaurus* skeleton from Munich, amphibian specimens from the USSR Academy of Sciences, Jurassic fishes from Tübingen, Devonian fishes from Cambridge, and a posteranial skeleton of *Plesippus* from the U. S. National Museum.

A study of our mounted skeleton of *Coryphodon* by Assistant Curator Bryan Patterson of the Field Museum has been published in the Proceedings of the New England Zoölogical Club. A set of serial sections of a Cretaceous teleost from Brazil in our collections formed the basis for the doctorate thesis of D. H. Dunkle. Dr. Dunkle has accepted a position with the Cleveland Museum of Natural History, involving research on that Museum's splendid collection of Cleveland shale fishes.

As usual we have enjoyed visits from a number of our palaeontological colleagues, including Barnum Brown, C. W. Gilmore, G. E. Lewis, W. B. Scott, George Sternberg, D. M. S. Watson, and Walter Granger. During the present summer Dr. R. S. Lull has been the guest of the museum while giving instruction in palaeontology and evolution in the University's summer session.

## REPORT ON THE FOSSIL ECHINODERMS

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BY ROBERT T. JACKSON

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As in previous years much time was spent in labelling and cataloguing the collections of fossil echini.

An important change was made in the removal of the whole collection of fossil echinoderms from the room which it has occupied for the past ten years, on the fourth floor of the Museum, to a room on the fifth floor. This change of location was necessitated in order to give additional quarters for the collection of recent mollusca, which was very cramped for space. The actual transfer of the fossil echinoderms to the new quarters was made in the absence of the Curator, under the guidance of Mr. W. J. Clench, Curator of Mollusca. He made the transfer with painstaking care and skill, so that the whole collection of fossil echinoderms is now available in its new location.

A choice lot of twenty-two specimens of fossil echini from the Fiji Islands was received from the Rochester University Museum through Dr. Harry S. Ladd. These specimens are all holotypes or paratypes described in a report by Dr. H. L. Clark to be published by the Bishop Museum.

A very fine specimen of the relatively gigantic *Trisalenia loveni*, from the Senonian of Scania, Sweden, was received in exchange from the Zoölogical Museum of Copenhagen.

## REPORT ON FOSSIL INSECTS

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BY F. M. CARPENTER

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Although only a few accessions were made during the past year, all are unusually interesting. One of these, a new Carboniferous Palaeodictyopteron, obtained by purchase, is the finest insect ever found in the Mazon Creek nodules.

I was assisted during part of the year by Mr. G. G. Thiem, an undergraduate in the College, who examined about a third of the collection of Manitoban amber and separated the fossiliferous pieces from the rest. His preliminary study of the amber will probably be completed in another two years. The Baltic amber insects contained in the Haren collection were sorted into families, with the kind assistance of Professor C. T. Brues, who examined fully half of the entire collection.

The greater part of my time was spent in completing a revision of the Nearctic species of the neuropterous families Hemerobiidae, Berothidae, Sisyridae, Polystoechotidae and Dilaridae. A similar study of the Baltic amber and other Tertiary Neuroptera and Mecoptera has been nearly finished. Considerable headway has been made in the preparation of part 9 of the series on the Lower Permian Insects of Kansas. In connection with my work on the Carboniferous insects of certain European formations, I found it necessary to study in detail the types of Carboniferous insects in the United States National Museum and the Yale University Museum. This investigation, aided by a grant from the National Academy of Sciences, was made during June and part of July of the present year.

## REPORT ON FISHES

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BY W. C. SCHROEDER

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The recatalogued part of the collection now includes 54 families, 211 genera and 743 species of ganoids and teleosts. In addition nearly all of those elasmobranchs stored in bottles were worked over during the past winter.

A nice collection of deep sea fishes collected by "Atlantis" several years ago, comprising 69 lots, was received from the Woods Hole Oceanographic Institution. Three types were received from Mr. Talbot Waterman and small lots of fishes from other sources, as follows: Messrs. R. McLean and B. Shreve; Bahamas; Mr. P. Darlington, Dominican Republic; Mr. J. A. Griswold, Peru; Mr. John Armstrong, Philippine Islands; Mr. G. B. Fairchild, Nova Scotia; Mr. R. V. Witter, Vermont; Mr. George Nelson, Florida; Mr. W. C. Schroeder, western Atlantic. Twenty-six lots of fish received many years ago were catalogued.

During March, April and May I was in charge, accompanied by Dr. Luis Howell Rivero of the University of Havana, of the second Harvard-Havana University deep sea expedition around the island of Cuba, made by the research vessel "Atlantis" of the Woods Hole Oceanographic Institution. In 173 hauls on bottom, down to a depth of 1,440 fathoms, several hundred species of fish were caught besides a large and varied collection of invertebrates. New species, additional to those taken in 1938, were obtained, as well as many rarities. Mr. Jay Holmes contributed generously toward the 1939 cruise for the Bermuda Government Aquarium which will receive a representative series of specimens for its display collection.

A general revision of the marine and brackish water fishes of the western Atlantic, from Hudson Bay to the Amazon is now in progress as a result of a meeting held in the New York Aquarium last November. This work will be prepared by various specialists and editors. I have been honored with an editorship and have elected to work up, along with Dr. H. B. Bigelow, the

elasmobranchs and the family Gadidae. During the past winter Dr. Bigelow and I made progress on a paper dealing with a revision of the genus *Mustelus*. To complete this it may be necessary to study material now in New York, Philadelphia and Washington.

Mr. R. T. Abbott worked from time to time identifying the M. C. Z. collection of sea horses.

## REPORT ON WORMS, COELENTERATES AND SPONGES

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BY ELISABETH DEICHMANN

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The fall and winter months were largely devoted to routine. Special attention was paid to the sponge collections and in addition to the list of sponge genera, a list of synonyms was compiled and the now recognized genera arranged according to Mr. M. de Laubenfels' system as it is given in his large report, published by the Carnegie Corporation in 1936. Much time was spent on the sorting out and identification of the "Atlantis" material of Coelenterates and Holothurians. Work was continued on the report on the Dendrochirote Holothurians from the Panamic region, the first installment of the "Hancock Holothurians." Also the sealing up of the jars in the Exhibition rooms with Paragon wax was completed during the winter.

The months of April and May were spent in California, where I was invited to give the regular course in Marine Invertebrates in the absence of Dr. T. Skogsberg. At the same time I was able to do some shore collecting, although for some unknown reason surprisingly many forms were absent, and to continue my work on the Hancock Holothurians. At the end of the quarter I was asked, and received permission, to stay on during the summer quarter and teach the course and also supervise the work of a graduate student. The time between the two courses was almost a month and I was therefore able to visit some localities on the coast of Oregon, and made a more extended visit to the Pacific Biological Station, at Nanaimo, British Columbia, Canada, an exceptionally rich collecting ground and one from which the M. C. Z. has very little material. The director, Dr. W. A. Clemens, and his staff, made every effort to assist me in my work. The visit was timed to coincide with an extra low tide and I was, moreover, thanks to Dr. Clemens, able to visit False Narrows, a narrow shallow strait with swift running tidewater and exceedingly rich in marine invertebrates. Also I was given facilities to do some dredging at about 14-17 fathoms depth, assisted by Captain F. Groth, who has had about twenty years' experience



in the waters around Nanaimo. The results of the collecting were therefore in every way extremely satisfactory and the material has now arrived in Cambridge, as well as that collected in Pacific Grove.

*Corals.* The collections of stony corals have again this year received an important addition inasmuch as Dr. Stanley Gardiner has donated about fifty corals from the Indian Ocean, mostly forms which are described or discussed in his recent papers dealing with the results of the "Murray Expedition." Most of the species—chiefly solitary deep water forms—are represented by several specimens, almost a necessity in this difficult group where one, as Dr. Gardiner says, cannot speak of a single type but must consider a whole series. A large number of stony corals has also been secured by the "Atlantis" cruise this spring.

*Sponges.* The sponge collection has unexpectedly received a valuable increase in the return of all the unidentified material from the Indo-West Pacific which some years ago was taken over from the Boston Society of Natural History and turned over to Mr. Maurice Burton, British Museum. It was assumed that this dry old material probably was rather worthless and most likely contained only common forms. It was found that several species were new to Science and descriptions are expectedly to be published very soon by Mr. Burton. The "Atlantis" cruise, likewise, brought a number of West Indian species back, mostly of the same species as those secured last year.

*Bryozoa.* Among the smaller groups of marine invertebrates the moss-animals have been extremely poorly represented in the M. C. Z., mostly by unidentified specimens. It is therefore a great satisfaction to have received, partly as a gift, partly as an exchange, a set of more than fifty identified species from the coast of California. The material is collected and identified by Miss Elizabeth Blagg, of California, one of the few students of this group in this country.

Two shorter visits have been made to the U. S. National Museum, in Washington, D. C., in connection with the work on horny corals and Holothurians. Three smaller papers have been published on Holothurians. A set of horny corals from the West Indies has been donated to the British Museum with which institution the division has been in constant touch.

## REPORT ON CRUSTACEA AND WORMS

BY FENNER A. CHACE, JR.

*Crustacea.* The number of catalogued accessions for the year would indicate a tremendous drop below the figures for the previous year, but such is hardly the case. It has been impossible to keep pace with the incoming material and the two largest collections received have not as yet been catalogued. One of these is a portion of a large collection of Bermudian bathypelagic prawns upon which a report is now in preparation for Dr. William Beebe, and the other is the huge collection made by the second Harvard-Havana Expedition from off the coasts of Cuba. Since the latter is very much larger than the collection made the year before and the Bermudian collection is far from small, there is a good possibility that, in the final analysis, accessions for the past year will surpass even the impressive totals of the previous one.

Although little time could be given to the arrangement of the older collections in the Museum, the crayfish have been entirely rearranged to make that collection more readily accessible to the several persons who consult it yearly, all of the identified Natantia have been arranged in families instead of being scattered under the heading of various expeditions as was so often the case under the previous scheme and two of these families, the Pasiphaeidae and Acanthephyridae have been relabeled and carded. It is hoped that, under this arrangement, each family may be incorporated in the card catalogue as the curator happens to be working on that particular group. Mr. J. C. Armstrong is still busy with a revision of the American species of snapping shrimps or Crangonidae and it is hoped that eventually, due to this revision and Mr. Armstrong's zeal for obtaining additional material, this collection will be of outstanding importance.

Of the smaller collections received during the year, special mention should be made of the material collected by Messrs. R. A. McLean and B. Shreve at Great Inagua Island, Bahamas. Other

very welcome additions to the collection have been received from: Dr. T. Barbour, Dr. H. B. Bigelow, Mr. T. Burch, Mr. W. J. Clench, Dr. P. J. Darlington, Jr., Mr. S. A. Glassell, Mr. J. C. Greenway, Jr., Mr. H. H. Hobbs, Jr., Dr. S. Kemp, Mr. A. Loveridge, Mr. G. Robert Lunz, Jr., Mr. J. V. Malone, Mrs. Nelson R. Perry, Mr. L. I. Price, Mr. W. E. Schevill, Mr. R. Smith and Dr. T. E. White. An additional small exchange of fresh water prawns has been made with the Naturhistorisches Museum at Basel.

The catalogued accessions from these sources amount to 491 specimens contained in 106 lots.

*Worms.* The collection of worms was left in such good order by Dr. Deichmann that it has required and received no attention during the past year.

## REPORT ON THE LIBRARY

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BY W. E. SCHEVILL

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In February 1937 we were fortunate in obtaining permission and funds to set about binding the immense accumulation of unbound material, almost entirely serials, in the library. In March of this year we were informed that the well was dry. By that time we had had bound and repaired some 6,000 items, at an expenditure of \$9,966.90. An estimate made this summer indicates that we still need the better part of \$10,000 to complete this task. It goes almost without saying that there is no real economy in postponing binding, as unbound material deteriorates so fast on the shelves, even when not actively used, that delayed binding is sure to cost more because of necessary repairs. Largely on this account I am inclined to feel, in general, that a volume worth keeping is worth binding—and that as soon as possible.

A fortunate sale of duplicates in the early summer has given us a small proportion of the needed sum, and this, with our reduced budgetary allotment, should enable us to carry on to some degree during the coming year.

For the rest, we have, in addition to the ordinary routine of circulation and accessions, tried to continue the extended cataloguing. This work, done by Miss Harding and also Mrs. Frazier, tends not only to facilitate the immediate use of the library, but is gradually bringing up to date our representation in the union catalogue at Widener.

Coöperation in preparing the new edition of the Wilson Union List of Serials has eaten seriously into Miss Harding's time. This is extremely important work, of which we are more than anxious to do our share, but it is difficult to see how we can do it and carry on even a minimum routine without extra hands. It is to be hoped that this problem can be solved without the neglect of other necessary work.

Miss Hamilton returned in September. I was away in the field during the latter part of the winter.

From July 1, 1938 to June 30, 1939 the net increase in volumes was 1,117 and of pamphlets 1,793, giving a presumed total of 80,415 volumes and 100,524 pamphlets. Our total circulation for this period was 5,178, of which 134 represent loans to other libraries. The expanded messenger service has been of great use in interdepartmental circulation.

As in the past, we are grateful to the staff of the College Library for constant and close coöperation and help.

## REPORT ON THE GEOLOGICAL MUSEUM

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BY EDWARD C. CABOT

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This year the Division of Geological Sciences appropriated from the Robert W. Sayles Fund \$1,426.30 for use in the Geological Museum. With this money, the cases in the center of the floor were cut down to give a view of the Boston Model from the entrance door. Cases around the Kilauea model were cut up and placed along the windows. The large square cases that were along by the windows were shipped to Florida. This was kindly arranged by Professor T. Barbour. The long wall case has been stored and replaced by an aluminum case, made by Remington Rand Company. This case was made to order and has proved to be a success. A new type of lighting has been installed and greatly improves the appearance of the room.

The exhibits have been changed so that the wall case near the Kilauea model contains a fine exhibit of volcanic products and a series of photographs of the eruption at Martinique lends force to this display. The cases by the windows near the Boston Model illustrate the important geologic features in and near Boston. The aluminum case which is to show current projects of the Division of geology has on display for the summer the geologic mapping in part of New Hampshire under the direction of Professor Marland P. Billings. The floor cases give a series of exhibits—the common rocks of the earth—a type section of the oldest rocks on earth—mountain building with its effect on rocks—a type section of the Paleozoic rocks, the destructive forces and the breaking of rock in soils—and the effects of wind and sand in cutting of rocks, which were collected last summer in California—and the earth's past glaciations as proved by the fine collection obtained by R. W. Sayles. In other words an exhibit of the broader principles of dynamic and historical geology. Last summer I continued my investigations of the fault pattern of the Sangre de Cristo mountains and have nearly completed mapping in detail the Picuris formation around the Picuris Prong. This new formation was first described in my paper of last year.

Mr. R. W. Sayles has donated a beautiful picture of land erosion taken in Peru and a cedar tree stump dredged from the harbor at Harwichport, Massachusetts. Professor Palache has kindly contributed to our economic collection an exhibit of glass wool made by the Owens-Illinois Glass Company. Through the help of Professor T. Barbour we received \$200 for four of the old cases. A card index was made this winter and now contains 3,000 specimens now stored in the Geological Museum. The index will be completed next winter, and an index for the economic collection made.

## PUBLICATIONS FOR THE YEAR 1938-1939

(1 August, 1938—31 July, 1939)

Museum of Comparative Zoölogy

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

## BULLETIN:—

## Vol. LXXXII

- No. 4. Contribution to the knowledge of the genus *Sminthurides* Börner.  
By J. W. Folsom and H. B. Mills. 45 pp. 9 pls. September, 1938.
- No. 5. The Fulgorina of Barro Colorado and other parts of Panama.  
By Z. P. Metcalf. 150 pp. 23 pls. October, 1938.
- No. 6. New and noteworthy millipeds from Cuba, collected by Dr. P. J. Darlington in 1936. By H. F. Loomis. 56 pp. October, 1938.

## Vol. LXXXIII

- A checklist of African mammals. By Glover M. Allen. 763 pp. February, 1939.

## Vol. LXXXIV

- Reports on the scientific results of the expedition to the eastern tropical Pacific, in charge of Alexander Agassiz, by the U. S. Fish Commission Steamer "Albatross," from October, 1904, to March, 1905, Lieut.-Commander L. M. Garrett, U. S. N. Commanding. XXXVII. The Ciliata: The Tintinnoinea. By Charles Atwood Kofoid and Arthur Shackleton Campbell. 473 pp. 36 pls. April, 1939.

## Vol. LXXXV

- No. 1. Annotated list of the types of polychaetous annelids in the Museum of Comparative Zoölogy. By Olga Hartman. 31 pp. 3 pls. November, 1938.
- No. 2. Some parasitic worms in the helminthological collection of the Museum of Comparative Zoölogy. By J. H. Sandground. 61 pp. December, 1938.
- No. 3. Studies of deep-sea angler-fishes (*Ceratioidea*). By Talbot Howe Waterman. 31 pp. June, 1939.



## MEMOIRS:—

## Vol. LIV

- No. 4. Studies of the waters of the Continental Shelf, Cape Cod to Chesapeake Bay. III. A volumetric study of the zoöplankton. By Henry B. Bigelow and Mary Sears. 200 pp. July, 1939.

*Publications by the Museum Staff*

## ALLEN, G. M.

The Mammals of China and Mongolia. Vol. 11, pt. 1, of Natural History of Central Asia. Amer. Mus. Nat. Hist., 4 to., pp. xxiii+620, 9 pls., 23 text figs. September 2, 1938.

Review: Darling's "Bird flocks and the breeding cycle." Auk, 55, no. 4, pp. 684-685. October, 1938.

Review: Priestley's "Book of Birds." Auk, 55, no. 4, pp. 685-686. October, 1938.

Review: Brook's Bibliography of West Virginian Ornithology. Auk, 55, no. 4, p. 686. October, 1938.

Review: Gladstone on "Thomas Watling, limner of Dumfries." Auk, 55, no. 4, pp. 686-687. October, 1938.

Review: Menegaux's "Oiseaux de France." Auk, 55, no. 4, p. 688. October, 1939.

A new pygmy fruit bat from Borneo. Journ. Mamm., 19, no. 4, pp. 496-498. November, 1938.

Review: Anker on "Bird Books and Bird Art." Auk, 56, no. 1, pp. 92-94. January, 1939.

Review: Bent's "Life Histories of the Birds of Prey," Part 2. Auk, 56, no. 1, pp. 94-95. January, 1939.

Review: Chapman's "Life in an Air Castle." Auk, 56, no. 1, pp. 95-96. January, 1939.

Review: Horton-Smith's "Flight of Birds." Auk, 56, no. 1, pp. 96-97. January, 1939.

Review: Allee's "Social Life of Animals." Auk, 56, no. 1, p. 97. January, 1939.

Review: Commons's "Log of Tanager Hill." Auk, 56, no. 1, pp. 97-98. January, 1939.

Zoölogical results of the second Dolan Expedition to western China and eastern Tibet, 1934-1936. Part III. Mammals. Proc. Acad. Nat. Sci. Phila., 90, pp. 261-294, pls. 21-24, map. February 3, 1939.

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- Review: Ritter's "California Woodpecker and I." *Auk*, 56, no. 2, pp. 197-198. April, 1939.
- Review: Hoffmann's "Birds of the Pacific States." *Auk*, 56, no. 2, pp. 198. April, 1939.
- Review: McAtee's "Wildfowl Food Plants." *Auk*, 56, no. 2, pp. 198-199. April, 1939.
- Review: Wallace on Bicknell's Thrush. *Auk*, 56, no. 2, pp. 199-200. April, 1939.
- True's Beaked Whale in Nova Scotia. *Journ. Mamm.*, 20, no. 2, pp. 259-260. May, 1939.
- Bats. 8 vo., Harvard Univ. Press, pp. x+368, ills. May, 1939.
- In Memoriam: John Charles Phillips, M.D. *Auk*, 56, no. 3, pp. 221-226. July, 1939.
- Review: Allen's "Golden Plover and other Birds." *Auk*, 56, no. 3, pp. 346-347. July, 1939.
- Review: Prince Taka-Tsukasa's "Birds of Nippon." *Auk*, 56, no. 3, p. 347. July, 1939.
- Review: Mrs. Nice's "Watcher at the Nest." *Auk*, 56, no. 3, pp. 347-348. July, 1939.
- Review: Peterson's "Field Guide." *Auk*, 56, no. 3, pp. 348-349. July, 1939.
- Review: Menegaux's "Birds of France." *Auk*, 56, no. 3, pp. 349-350. July, 1939.
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- Review: "Conservation in the United States." *Auk*, 56, no. 3, pp. 350-351. July, 1939.
- Review: "Zoölogical Record: Aves." *Auk*, 56, no. 3, pp. 351-352. July, 1939.

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- Some Psammocharidae from Singapore. *Proc. Ent. Soc. Wash.*, 40, no. 8, pp. 236-249. November, 1938.
- Notes on native Myrmeleonidae. *Ann. Ent. Soc. Amer.*, 31, no. 4, pp. 413-420. December, 1938.
- New West Indian Neuropteroid Insects. *Rev. de Entomologia*, 9, fasc. 3-4, pp. 285-304. December, 1938.
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- El Atlantis en Aguas Cubanas. Bol. Union Panamericana, 72, no. 9, pp. 534-535. September, 1938.
- Notes on "Nectophryne." Proc. Biol. Soc. Wash., 51, pp. 191-196, 1 text fig. November 3, 1938.
- Doctor John C. Phillips. Boston Transcript, p. 9. November, 1938.
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Studies of the waters of the Continental Shelf, Cape Cod to Chesapeake Bay. III. A volumetric study of the zoöplankton. Mem. Mus. Comp. Zoöl., **54**, no. 4, pp. 183-378, 42 text figs. July, 1939. (With Mary Sears.)

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## INVESTED FUNDS OF THE MUSEUM

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June 30, 1939

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The income of the Gray Fund can be applied to the purchase and maintenance of collections, but not for salaries.

The income of the Humboldt Fund (about \$500) is to be applied for the benefit of one or more students of Natural History for special work, out of course, in the Museum.

The income of the Virginia Barret Gibbs Scholarship Fund, of the value of \$400, is assigned annually with the approval of the Faculty of the Museum, on the recommendation of the Professors of Zoölogy and of Comparative Anatomy in Harvard University "in supporting or assisting to support one or more students who may have shown decided talents in Zoölogy and preferably in the direction of Marine Zoölogy."

The income of the Whitney Fund can be applied for the care (binding) and increase of the Whitney Library.

The Alexander Agassiz Expedition Fund was bequeathed by Alexander Agassiz for the publication of reports on collections brought together by the expeditions with which he was connected. These have now all been published.

The income of the Louis Cabot Fund can be applied to the purchase of books on travel, sport and natural history.

The income of the William and Adelaide Barbour Fund is "expended wholly at the discretion of the Director of the Museum of Comparative Zoölogy \* \* \* to increase the collections of the Museum either by exploration or the purchase of desirable material."

Three-quarters of the income of the William Brewster Fund can be used for the salary of a competent ornithologist 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."

The income of the Alexander Agassiz Fellowship in Oceanography Fund is awarded each year by the Faculty of the Museum to some person, or persons, working at the Museum in the field of Oceanography.

The income of Anonymous No. 7 Fund is devoted to increasing the salaries of such of the curators as the Faculty of the Museum may select.

Applications for facilities to work either at the Harvard Biological Laboratory and Botanic Garden of the Atkins Institute of the Arnold Arboretum at Soledad, Cuba, or at the Barro Colorado Island laboratory in the Panama Canal Zone may be ad-

dressed to the Director. A limited number of Fellowships are available for workers at Soledad. Details concerning the concessions allowed to workers at the Canal Zone may be had upon application to the Director. This laboratory is administered by the Executive Committee of the Institute for Research in Tropical America. Harvard is one of the several institutions supporting the institution and the Director of the Museum at present is Chairman of the Executive Committee.

Application for the tables reserved for advanced students at the Woods Hole Station of the United States Bureau of Fisheries, should be made to the Faculty of the Museum before the first of May. Applicants should state their qualifications and indicate the course of study they intend to pursue.



