ANNUAL REPORT
OF
THE DIRECTOR
OF THE
MUSEUM OF COMPARATIVE ZOOLOGY
AT HARVARD COLLEGE
TO THE
PRESIDENT OF HARVARD COLLEGE
FOR
1931-1932.

CAMBRIDGE, U. S. A.:
PRINTED FOR THE MUSEUM
1932.
There have been published of the Bulletin Vols. I to LXV, LXVII-LXXIV, of the Memoirs Vols. I to LI.

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 may be 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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REGINALD ALDWORTH DALY ... Sturgis Hooper Professor of Geology
REPORT OF THE DIRECTOR
1931–1932

TO THE PRESIDENT OF HARVARD COLLEGE:

Sir:—

The last year has been one of the most eventful in the long history of the Museum. Great progress has been made in providing new and instructive labels for the exhibits. Many persons have contributed willingly of their knowledge to prepare explanatory text in connection with the exhibits so that the result will be satisfactory for a long time to come.

Thanks to the generosity of Mr. George Agassiz and other friends it has been possible to replace more of the old glass, which was in small panes, by large sheets of plate glass of first-rate quality. Only one room remains to be reglazed.

Much progress has been made in improving the appearance of the individual cases by placing the objects on wall brackets and eliminating the shelves, thus making far more room for the descriptive labels. Within the next two or three years it should be possible to have all the exhibits in such condition that their care will not occupy any appreciable amount of the Staff’s time, which will then be devoted to the more productive and congenial work of investigation.

The much appreciated generosity of the President and Fellows in allocating some of the Wyeth income to the use of Museum has greatly improved the salaries of a number of the Curators which are, however, still far below what they should be.

The work of installing automatic sprinklers in the hitherto unsprinkled portions of the building is proceeding with reasonable speed.

The great and outstanding events of the year have been the generosity of anonymous friends which made possible the Australian Expedition which is discussed at some length in the reports of several of the Curators. Suffice it to say here that in establishing friendly relations with colleagues in Australia, as well as in securing
important material for many lines of research, the Expedition was probably the most productive which has ever been sent forth from this Museum since the Thayer Expedition of 1863.

In November Mr. John E. Thayer announced his desire to turn over to the Museum his great study collection of Birds, Birds’ eggs and nests. The moving, undertaken by Messrs. Brooks and Peters, was most skillfully and expeditiously carried out. The receipt of this collection gives this Museum a wholly satisfactory representation of the Birds of North America and releases a vast amount of material which can be used for foreign exchanges. Mr. Thayer supplemented his gift later in the year by sending the Museum three mounted birds, belonging to extinct species of great rarity, and the splendid oil painting of Black Game by Audubon. Upon reaching the Museum this picture was found to be in very bad condition. It has been most skillfully and satisfactorily restored, however, at the Fogg Art Museum by Mr. Lyons and now shows a richness of color and a spacious landscape background which before was completely obscured.

On December 7 Mr. Andrew Gray Weeks died and bequeathed to the Museum his magnificent collection of Diurnal Lepidoptera. This collection is world wide in its scope and is of enormous importance to anyone wishing to conduct systematic or economic studies concerning this group of insects. With the consent of all persons at interest the collection was moved immediately to Cambridge to insure proper safeguarding against the invasion of insect pests and the collection is now held intact and in trust until the settlement of Mr. Weeks’ estate. Our thanks are due especially to Mrs. Weeks who was of great assistance to Messrs. Banks, Bates and Fairchild who undertook the delicate task of moving the collection from Marion to Cambridge. This was accomplished with the destruction of scarcely a single specimen.

Mr. Gerrit S. Miller, Jr., of the United States National Museum gave us Audubon’s famous portrait of the American Ruffed Grouse. It will be recalled that there was an argument between Audubon and Alexander Wilson as to who first depicted this bird. Wilson’s picture hangs on our wall, received by bequest from Dr. Walter Faxon. The Audubon portrait, strikingly similar, hangs directly below it. It bears the date of “June, 1805.” Upon holding the
painting to the light (it is framed with glass on both sides) the watermark on the paper on which the watercolor is laid, is seen to be "1810." The sketch is brilliant in color and beautifully preserved.

Dr. John C. Phillips contributed a watercolor painting of American Redstarts by the well-known Charlestonian artist, E. von S. Dingle.

By far the most beautiful and decorative of all the artistic treasures of the Museum is the magnificent panel of a group of American Egrets rising from a dark pool in a cypress swamp. This is striking in both color and composition and is a most welcome acquisition indeed. It came to us as a gift from the artist, Mr. Frank W. Benson.

Miss E. M. Wise of Richmond, Virginia, contributed a welcome photograph of the celebrated St. Memin portrait of William Dan-dridge Peck, first Professor of Natural History in Harvard College. It is greatly to be desired that some day this portrait may pass into the possession of the Museum.

There have been an unusual number of young people working as volunteers for all or part of their time in the Museum and it is obvious that a return to Louis Agassiz's original plan that the Curators in the Museum should receive a few students interested in their specialties is working extremely well. At present Mr. Banks of our Staff is Associate Professor of Entomology in the Faculty of Arts and Sciences, while Professors Wheeler, Bequaert, and Brues are Associate Curators in the Museum. Because of the fact that insects are of all organisms most important to human interests for good or bad and because, also, there are more species of insects than of all other groups of animals and plants combined, interest in Entomology is naturally widespread and a number of most promising young men now work constantly with the Museum collections.

During the course of the year I have made two trips to the tropics, visiting the laboratories in Soledad and the Canal Zone. Time did not permit me to do much more than the required administrative work at each place. I have, however, found some time for my own work and have revised and brought down to date the second edition of the Checklist of North American Reptiles.
and Amphibians, prepared some years ago by Dr. Stejneger and myself. The first and second editions, published by the Harvard University Press, are now out of print and a third edition will appear, I hope, within the next few months. Professor Wheeler has very generously allowed me to be associated with him in editing the several manuscripts by Lamarck which have been, for some years, in the Museum's possession and this work is now ready for the press. I have continued my studies of the bewildering genus Anolis as fast as relevant material could be secured and I have had time for other work of my own as well. This happy situation has come about through the continued devotion and assistance of every member of the Staff and I repeat again my indebtedness to Mr. Griscom for his able assistance in matters financial and editorial.

In Mr. Stetson's report he speaks of the beautiful work Mr. Nelson has done in preparing fossil vertebrates. I cannot let the opportunity pass to add a word to what he has said, as our exhibition of vertebrate fossils is a valuable teaching tool and its rapid expansion is due very largely to the extraordinary skill which Mr. Nelson has developed in preparing and mounting objects which, fragile in themselves, are often inbedded in a matrix of most refractory rock.

Robert Gilbert, aided by several young men, has done excellent work in rearranging some of the exhibition halls.

Our thanks are due to the many volunteers who have worked in the several departments and who are mentioned in the Curators' reports.

It may be well to recall at this time the complete re-installation of a large part of the geological exhibition collection which has been under the competent charge of Mr. Charles Regan Williams.

I read, a few days ago, a short historical survey of the Annals and Magazine of Natural History which has been published since 1828. In the course of this excellent little account by Mr. John Stephenson of England the following paragraph is to be found. I quote it here, since it epitomizes most excellently the work the Museum is trying to do.

"The value of Systematic Zoology is generally understood, though perhaps still occasionally liable to depreciation. The first
requisite in zoological work of any kind—morphological, economic, or any other—is to know what one is dealing with; before we can so much as begin on any other problem, we must know what our animals are—must have them described, named, and classified; and Systematic Zoology, which does this, is thus the bed-rock on which all other zoological research ultimately rests. Such work stands for all time; the first adequate description of a new animal is something which can never be duplicated, never repeated; it is there, once for all, as something to be appealed to, something that cannot, by the rules under which the systematist works, be superseded. It may seem to be of little interest at the moment; it may not be recalled for years; but it will be required, and will come into its own when much work in other branches has become obsolete through change of fashion or improved technique, or has been shown to be useless for any further advance."

These lines have been at once a consolation and an inspiration. I believe strongly that every graduate student, in whatsoever branch of zoology, would be the better man if he spent even a few months of his time studying a systematic collection of some group of animals. The Museum Curator is usually a helpful teacher although he is, perforce, a dangerous companion, being inevitably an avaricious person, anxious always to pass material from an unappreciative to an appreciative possessor which, of course, means to his beloved collection. And while, of course, no collection is ever really complete, a constant steady growth, such as our Museum is able to record, is indeed a source of the most profound satisfaction.

Respectfully submitted,

T. Barbour, Director.
The past year has been the most fruitful one since 1919, (when the Brewster Collection was received) the total accessions numbering over 36,000 skins, Colonel John E. Thayer's fine collection accounted for nearly 28,000 of this number. This magnificent collection of North American birds was presented to the Museum by Colonel Thayer in November, 1931. Far from duplicating material already in the collection it has brought in series of the rarer and more desirable species previously but weakly if at all represented in the Museum. The transfer of Colonel Thayer's collection from Lancaster to Cambridge was made without incident. The skins remained in their cases, the trays being packed with newspaper and tissue to prevent the birds shaking about.

Besides the Thayer collection, 8,201 specimens have been received. These include a number of genera not previously represented and 195 of the species in Sharpe's Handlist that were desiderata. The Harvard Australian Expedition returned with 221 skins collected by G. M. Allen and Ralph Ellis; more birds from the expedition are still to come and for this reason no attempt has been made to work up the collection until it all reaches Cambridge. The second of the expeditions in Brazil under the leadership of Senhor Jose Lima and conducted jointly by the Museu Paulista and the Museum of Comparative Zoology secured 306 birds from Sao Paulo and eastern Matto Grosso. Mr. Donald S. Wees returned from Paraguay with 66 skins which he has presented to the Museum. From the Field Museum we have received 92 skins from Indo-China, duplicates from the Kelley-Roosevelt Expedition, received in return for preparing the report on the collection. Mr. Greenway has presented 19 birds chiefly collected by himself on Cumberland Island, Georgia. The New England Ruffed Grouse Investigation donated 18 Grouse from localities in New England and Wisconsin. C. R. Simpkins presented 12 skins of Hummingbirds from Ecuador. Single specimens or small lots have been
donated by Dr. Oliver L. Austin, Jr., Mrs. J. E. Bready, Miss Katherine Donahue, Mr. Ruthven Deane, Mr. E. H. Herrikin, Dr. J. C. Phillips, Mr. Seth Low, Mrs. Annie Robertson and the American Museum of Natural History.

1,071 specimens were received in exchange.

The largest collection purchased was that recently made in the rugged region of northwestern Yunnan by Dr. Joseph F. Rock. Dr. Rock has so far sent in 1,730 skins, a few more skins of large birds are on the way and will complete the collection. A report by Mr. Greenway is in preparation. Dr. Rock's collection is a most valuable addition to our Chinese material.

W. W. Brown continues collecting in Guerrero; during the year he has sent in 1,519 skins. A report on this collection will be prepared by Mr. Griscom when Brown's work is completed.

By an arrangement with C. F. Underwood now living in Tegucigalpa, Honduras, purchase has been made of 2,047 skins collected by him in the highlands of that country. Underwood's collection contains many rare and desirable things.

A most fortunate purchase was that of a collection of 354 birds made in the Punjab by Walter Koelz. This collection contained 227 species, many entirely new to the collection, others practically new since they were represented previously only by old skins without data and worthless for study purposes. The purchase of this collection was made possible through the generosity of two friends of the museum. India is one of the weakest points in the Museum's collections and material from there is always highly desirable.

A friend of the Museum presented a collection of birds from Spain, numbering 350 skins. 180 specimens from various localities were purchased from dealers abroad. Other purchases were 54 skins from eastern Panama collected by H. Wedel, 31 from Uruguay, the work of Juan Tremoleras, 29 from western Costa Rica taken there by Underwood and 27 from Korea and Tsushima Island.

The long awaited move into rooms 503 and 505 was effected during October after both rooms had been freshly cleaned and painted and joined by an archway cut through the wall. Room 503 is now the office of the department. This is not only much more
convenient for the staff, but for visitors to the department as well. Room 505 was providentially available for the Thayer Collection which now occupies about half of the room. Some of the older cases have been brought into this room as well and are ranged against the north wall.

The construction of a new wall case in room 507 permitted a rearrangement of the Woodpeckers, Tracheophonae, Tyrant Flycatchers, Larks and Swallows in this new case, and space left vacant by the rearrangement has allowed the expansion of the Old World Flycatchers, Bulbuls, Mockingbirds, Thrushes, Wood Warblers and part of the Finches.

During the year 31 loans were made to 18 different institutions and individuals; a total of 353 specimens was involved.

The total number of birds entered on the card catalogue was 6,300, bringing the total number carded up to 74,376. The actual number of specimens in the study collection of birds is not as great as the catalogue entries would indicate. A count based on the catalogues shows (exclusive of the Bent and Kennard Collections, which probably contain about 20,000 skins), about 233,000 but this includes all the mounted birds on exhibition, some alcoholic material in the basement, specimens discarded because of obsolescence and specimens sent in exchange. 220,000 is probably much nearer the present figure. The total, including the Bent and Kennard collections, plus the material as yet uncatalogued would probably make the sum total not far from 250,000 skins.

The first volume of Mr. Peters' Check-list of Birds of the World was issued on October 6; the second volume is nearing completion and will probably be ready for the press by February, 1933.

Mrs. Bowen resigned as secretary to the bird room staff the middle of September much to the regret of all. Her place has been effectively taken by Miss Porter. Miss Elinor K. Sutton helped in the bird department for part of the year and skillfully typed much of the manuscript for Mr. Peters' forthcoming Vol. II. Messrs. Richard Hinchman and Fred M. Packard have worked as volunteer assistants from time to time as their college work permitted. They have both assisted in the rearrangement of the Thayer Collection into the order of the fourth edition of the A. O. U. Check-list.
Owing to Professor C. T. Brues’ moving his quarters from the Museum to the New Biological Building, his vacated room, which adjoins the Echinoderm room, was turned over to the department of recent Echinoderms. This gives additional storage room for collections and for office purposes.

Work on the collection of Sea-stars was continued from last year and this material is now in excellent condition.

Work on the collection of Echinoderms, other than Sea-stars from Low Island, Queensland, of the British Great Barrier Reef Expedition, was completed and the report published. This collection contained more than 500 specimens of which some 89 were retained, and form a valuable addition to the Museum collection.

At the opening of the year, the Curator was engaged in the preparation of a report on the Echinoderms of Porto Rico, which was ultimately completed as a handbook on the littoral Echinoderms of the West Indian region. When this task was finished attention was concentrated on the collection of Holothurians and with the cordial cooperation of Dr. Deichmann, the entire collection was rearranged in accordance with the latest classification and, so far as necessary, recatalogued. It is now in satisfactory condition for use without delay or trouble. In this work we were very grateful for the unusually efficient clerical help of Mrs. Karl M. Pattee—indeed without that help the work could not have been carried to completion before the Curator’s departure for Australia, early in February.

Besides the material from the Great Barrier Reef, recorded above, the Museum received as an exchange from the Indian Museum some 71 specimens of Echinoderms, mostly Echini. Echinoderms were also received from Messrs. W. J. Clench and R. T. Jackson.
Some Fresh-water Crabs were received from Mr. A. Loveridge that he collected in Africa. A fine Crustacean from Florida was received from Mr. John W. Mills.

Most of April was spent at Lord Howe Island, where, with the efficient help of Mr. Arthur L. Livingstone of the Australian Museum, a large and approximately complete collection of the Echinoderms was made. Early in May the Curator went to Darwin, N. T., where everything conspired to make possible and profitable a visit to the Coburg Peninsula and the longsince abandoned settlement of Port Essington. This visit was of great importance in checking up on the results of work at Darwin. The month of June and a small part of July was spent at Broome, W. A., where the daily use of a pearling lugger with an experienced diver, and dredges, yielded very satisfactory results in supplementing the collections made in 1929. In all of the Australian work, the coöperation and cordial assistance of the Australian Museum at Sydney, and its Director, Dr. C. Anderson, were invaluable and deserve our sincerest thanks.

The end of the year found the Curator homeward bound from Perth, W. A., after a brief stay in that city, during which some collecting was done by dredging near Garden Island. Additional material also was loaned for study by both the Western Australian Museum and the Zoological Department of the University. Here, as everywhere else in Australia, the cordial and generous helpfulness of those whose assistance was necessary or desirable, was beyond thanks.
The Annual Report for 1925–1926 mentions the receipt for study, of the Medusae and Siphonophores collected on the "Arcturus" expedition under the leadership of Dr. William Beebe. Since the completion of the reports on the Scyphomedusae and Siphonophorae, Dr. Beebe has presented to the Museum the greater part of the representation in these two groups, making the largest accession, of the past three years, to our collection of Pelagic Coelenterates. The Report on the "Arcturus" Hydromedusae is in preparation. Other recent accessions, not previously listed are Medusae and Siphonophores collected off Monterey, California, in July, 1928; Medusae from Chesapeake Bay; and a series of the Hydromedusan genus Halimedusa presented by Dr. L. E. Griffin, from the coast of Oregon.

Large series of bathypelagic Medusae from the vicinity of Bermuda, collected by Dr. William Beebe, and of Siphonophores of the "Thor" expeditions to the Mediterranean, from Dr. Johannes Schmidt, have been received for study.

Duplicate specimens of Medusae have been sent to the Copenhagen Museum; and Siphonophores have been loaned, for study, to the British Museum. The collection of Hydroids and Pelagic Coelenterates now includes 3,425 catalogued lots, and considerable series still remain to be catalogued.

During the spring Miss Virginia Ziegler was employed to refill and clean the jars containing the collection of Hydroids. Dr. Elisabeth Deichmann is continuing this routine work on Pelagic Coelenterates. During the autumn and winter Mr. Schroeder and I completed the rearrangement of the Exhibition Collection of Fishes, mentioned in the Director's report for last year. New labels have also been prepared and installed, including descriptive labels for the higher groups.
Much of my own efforts has necessarily been devoted to the affairs of the Woods Hole Oceanographic Institution. But time has been available for work on a report (now well advanced) on the Physical Oceanography of the Waters on the Continental Shelf, Cape Cod to Chesapeake Bay, based on the periodic cruises of "Albatross II" and of "Atlantis," and for preliminary examination of the "Thor" Siphonophores, part of which were identified and listed by Miss Virginia Ziegler. Small lots of Medusae have also been identified for the United States National Museum.

Mr. Iselin has continued his studies of the dynamic circulation of the Northwestern Atlantic, largely at sea on "Atlantis," acting part of the time as her master, part of the time as Chief Scientist. Her cruises during the past year have been over the continental shelf to the Gulf of Maine; between the coast line and Bermuda, and to the western Equatorial Atlantic.

Miss Mary Sears has worked during most of the year on the zooplankton collected by the Fisheries steamer "Albatross II" and by "Atlantis," on the periodic cruises between Cape Cod and Chesapeake Bay. Mr. John Colman, of Cambridge University, holder of a Commonwealth Fellowship, studied specific relationships within the genus Littorina, besides completing a paper on the Zonation of Intertidal Animals. And Mr. W. C. Schroeder, of the United States Bureau of Fisheries, continued his investigations of the migrations of the cod of the Gulf of Maine, based on the results of the tagging experiments mentioned in previous Reports.

Other representatives of the Bureau, who have occupied space in the Museum during past years, have this year moved to the new Biological Building where more suitable accommodations are available. The investigations of the biology of the Mackerel, Haddock and Weakfish, in charge of Messrs. O. E. Sette, W. C. Herring and R. E. Nesbit, are being carried on there: also studies aimed toward the improvement of fishing gear.

The Museum continues its close association with the United States Bureau of Fisheries, the International Ice Patrol Service, the North American Council for Fisheries Investigations, as described in previous annual reports, to mutual benefit.
The greatest change that ever happened to the Department was the removal of the collections to the quarters on the fourth floor. Here there is not only more space but much better light. The moving occupied the month of October, but it took several months to get things straightened out. There was no breakage of any importance. Here there is room for the normal increase of the collections for many years.

The death of Mr. A. G. Weeks released his great collection of Butterflies which he had promised us some years ago. It now occupies the middle of the new Lepidoptera room. One of the finest private collections of Butterflies, it at once provides us with named material from all parts of the world in beautiful condition.

In March the first parts of the collection of the Harvard Australian Expedition were received, and the several groups (except Beetles) are mounted. There are hundreds of species additional to our collections, and the Coleoptera will prove of still greater value.

Besides these two great collections we received an exceptionally large amount of material.

Dr. J. Bequaert presented many miscellaneous insects from Guatemala, Texas, Arizona, and California, besides his own collections of Asilidae and Ichneumonidae.

Dr. C. R. Kellogg brought us several thousand insects from Foochow, China; a most welcome gift.

About 2,000 named Orthoptera, Hymenoptera, Diptera, and Coleoptera collected by Franz Werner in Algeria and Morocco were the gift of the Director.

Mr. Donald Wees brought us over 2,000 Insects from Paraguay; many species new to our collections.

Dr. W. M. Wheeler presented some Hawaiian and other Insects.

Mr. Marston Bates gave us many Insects from Honduras, and
Mr. Graham Fairchild specimens from Florida, Wyoming and Nova Scotia.

A small collection, mostly Flies, from Arkansas was purchased by Miss Bryant, who also bought the Spiders.

Professor G. C. Crampton gave us several hundred Insects, mostly Diptera, from China, India and Canada.

A small, but useful collection taken during the voyage of the Utowana in the West Indies was given by Dr. D. Fairchild.

The Curator spent two weeks in Cuba, and obtained several thousand Insects and Arachnids, mostly small species.

The Curator also added about 2,000 New England Insects.

Smaller lots of desirable specimens include several Dragon-flies, new to our collection, sent by Mr. E. B. Williamson; types of Cuban Ants given by Dr. C. G. Aguayo; a number of small Flies from Japan, sent by Dr. J. F. McClendon; a rare genus of Cynipidae presented by M. L. Weld; some Indiana Spiders from Miss L. M. Patten; Mr. R. P. Dow gave us some Cuban Insects; and Mr. C. W. Johnson a few valuable Diptera.

By exchange we obtained types of 20 species of Termites from Dr. A. Emerson, about 25 Diptera, added by exchange with Mr. J. Wilcox, and over 40 species of Trichoptera new to the collection (types of 24 species) from Mr. Martin Mosely of the British Museum.

Duplicates were retained from various small collections that were named, desirable specimens including types from the Oklahoma Spiders, and in various cases specimens sent for comparison with types have been presented to the Museum.

The employment of temporary help throughout the year has resulted in more curatorial work finished than in many years. All the unlined boxes (over 600) were lined with cork; label holders and labels were placed on several hundred boxes; the parts of the Bowditch collection in temporary boxes were transferred to the standard drawers; the Cryptocephalinae of the Bowditch Chrysomelidae which were in tins have been transferred to Schmitt boxes; a large part of the European Coleoptera have been brought together for the European collection; the bulk of the alcoholic Insects have been assorted to the family; the collection of locality and collector labels has been arranged; over 3,000 types (mostly in
the LeConte collection) have been verified and numbered, and several thousand cards for these and the generic index have been written; the Johnson duplicate Diptera have been labeled; the numerous accessions which came unmounted have been mounted (except Australian Coleoptera) and most of it labeled; the Myriopod collection has been gone over, vials filled, and corks often replaced; and the entire Insect collection has been fumigated twice during the year.

The Neotropical Reduviidae have been returned by Mr. H. G. Barber, mostly named; Mr. G. F. Hill returned another lot of Australian Termites, and Mr. S. Bromley returned the South American Asilidae.

Marston Bates and Graham Fairchild have assisted in arranging the Lepidoptera. Miss E. B. Bryant has assorted several collections of Spiders, prepared descriptions of some new species, and made many figures and descriptions of the types of Urquhart’s New Zealand Spiders loaned to the Museum for study.

Dr. F. M. Carpenter continued his work on the Kansan Permian Insects, and he has prepared a paper on the Trichoptera collected two years ago in the Carolina mountains.

Owing to the amount of curatorial work the Curator has done little in investigations. A collection of Indian Neuroptera was identified and a report prepared, the Oklahoma Spiders were finished, and a paper prepared and published; a supplement to the Malay Neuroptera was begun, and several small articles on certain Neuroptera also written.

A new cabinet, holding over 500 drawers, was built in the Lepidoptera room, and cases already present were modified to hold the Bowditch Chrysomelidae.

Visitors include A. Emerson, Termites; R. G. Blackwelder, Malachidae; Doris Blake, Chrysomelidae, E. A. Maynard, Collembola; S. C. Bishop, Spiders; M. C. Lane, Elateridae; J. C. Bradley, Scoliidae; H. W. Allen, Tipidae; L. W. Ling, Trichoptera, and J. R. Johnston, Thrips.
During the first half of the year the Curator accompanied the Harvard Expedition to Australia under the leadership of Professor W. M. Wheeler. Four months were spent, chiefly in Western Australia, making collections in various branches of natural history. Notwithstanding that the mammalian fauna is there much poorer than in the east and north of the continent, over 100 mammals, large and small, and a number of birds were secured, many of which are species previously unrepresented in the collection. Cordial relations established with several of the Australian museums have already proved helpful in securing additional specimens through exchange. Grateful acknowledgment should be made to Director Charles Anderson and Mr. Ellis L. G. Troughton of the Australian Museum, Sydney; Mr. L. Glauert of the Western Australian Museum; Mr. C. W. Brazenor of the National Museum of Victoria; and to Mr. H. H. Finlayson of the South Australian Museum, for many kindnesses. Such helpful contacts cannot fail to have a lasting value.

In the meanwhile Mr. Coolidge, the Assistant Curator, with the help and advice of the Director, had been active in efforts to improve the general housing conditions of the department. More cases for reference books in the office are especially appreciated and fresh white paint has made a great improvement in the appearance and light of the rooms. By far the greatest forward step, however, has been the opening of an additional room for the proper keeping of the larger tanned skins, the accumulation of which is now considerable. Hitherto these had, of necessity, to be packed away in as small compass as possible, without regard to convenience, until the difficulty of consulting them threatened to reduce very greatly the usefulness of the collection. Now, however, the entire top floor of the original east section of the building has
been converted into a suitable storage place, made tight by a lining of composition board, fitted with electric lights, and provided with long cross-poles and hooks, whereon already several hundred of the larger tanned skins are conveniently hung in systematic sequence, so as to be easily consulted and kept without creasing or folding. Much credit is due Mr. Coolidge for his part in the supervision of this work.

The department has been fortunate in having the help of several volunteer assistants: Mr. Frederic Winthrop, Jr., who has devoted much time to the arrangement of the skins in the new "hide room," as well as to the transfer of primate skulls to new tight boxes, an innovation begun last year; Miss Barbara Lawrence, who has rendered most valuable assistance in many ways, in addition to preparing many explanatory labels for the exhibition rooms; Miss Gretchen Hutchins and Miss Carolyn Sheldon, who have most generously devoted many hours to clerical and other matters. A new metal card-catalogue case, for the card-catalogue of the collection, has been added and Miss Sheldon has undertaken to type-write the manuscript cards, hitherto in this file, thus adding greatly to its appearance and usefulness. In the time that he could spare from other duties Mr. Coolidge's help has been much appreciated in the general supervision of various matters connected with the work of the department. He has, in addition, undertaken a systematic study of the races of Chimpanzee.

In the last six months the Curator has devoted a large part of his time to rearranging and spacing out the collections, finally completing the rearrangement of the osteological portion begun several years ago, weeding out the useless material from the collection of fossil mammals made fifty years ago by Garman, and distributing, in their proper places, the accumulation of specimens recently received or otherwise awaiting attention. Progress has been made in the transfer of skulls from open trays to dustproof boxes with typewritten labels, and in the final preparation of untanned hides or uncleaned skeletal material, still in need of preparation.

The additions to the collection total about 700 specimens, including a number of unusual importance, representing species or genera new to the study series or poorly represented. Such are:
the skull of a Javan Rhinoceros received in exchange from the Buitenzorg Museum; specimens of the remarkable Marsupial Mole (Notoryctes), Honey Mouse (Tarsipes), Antechinomys, Sminthopsis, and other less rare Marsupials obtained during the Australian Expedition; 40 specimens of small mammals from Ceylon secured through W. W. A. Phillips, Esq.; the tanned skins and skeletons of a magnificent pair of Bongo (Boöcercus) and of a Forest Pig (Hylochoerus) from East Africa, the gift of Mr. F. G. Carnochan; four specimens representing as many local races of Raccoons from southeastern United States, given by Dr. E. W. Nelson; an Anoa from Celebes, skeleton and mounted skin received from an anonymous friend, and a fine skull of the Dwarf PhilippineBuffalo or Tamarao, as well as other desirable species, including a series of Bats in alcohol, from Mindoro, Philippine Islands, from Sr. Pedro de Mesa. A noteworthy addition to the collection of fossil species was generously donated by Mr. Childs Frick, in the shape of several incomplete crania of the extinct Bison latifrons and parts of a Mammoth, including a perfect lower jaw and a tusk, apparently representing the Jeffersonian Mammoth, from the quaternary deposits of Alaska. In one of these Bison, the sheaths are still intact covering the horn cores, an unusual condition. From the Geological Museum was received, by transfer, a small lot of specimens from the Rancho La Brea deposit, including a splendid cranium, a lower jaw, and a perfect upper canine of the extinct Sabre-tooth Tiger, Smilodon californicus. Preliminary note should be made also, of a most welcome collection from Paraguay, consisting of skins and skulls, chiefly of larger mammals, made and presented by Mr. Donald Wees. Coming from a region practically unrepresented in the study series, this collection, brought through in the face of many difficulties, is a much-appreciated addition and includes several very desirable species. In addition to several excellent skulls of large African game mammals, Mr. John K. Howard has very generously presented a mounted head of the rare Hunter’s Antelope, skulls of Alaskan Bears, and several skins and skeletons lately obtained in Guatemala; he has also loaned a magnificently mounted head of the African Elephant, which has been placed on the wall where it may be seen from the exhibition hall. To all these persons hearty thanks are due, as well as to the following for
generous gifts:—Dr. Thomas Barbour, Dr. Joseph Bequaert, Mrs. Frederick Brooks, Gorham Brooks, Dr. Herbert Clark, Professor J. A. Cousens, the estate of George C. Deane, Dr. A. B. Fortuyn, the Franklin Park Zoo, W. S. Fulton, James Greenway, Samuel J. Guernsey, Professor F. Wood Jones, Professor Claude R. Kellogg, Col. A. LeSouëf, George Nelson, Henri Ossent, Dr. Edward Reynolds, Ringling Bros., J. V. Schofield, Dr. Richard P. Strong, Dr. William D. Swan.

Exchanges have been made with five institutions, and specimens have been loaned to four others. Among various visitors who have consulted the collections, Miss Cora Reeves spent several weeks this winter using the facilities of the department in the preparation of a handbook of Chinese animals for the use of students in China.
The collection has made a very substantial growth during the past year. The services of Miss Pineo and Miss Chippendale as part-time assistants has made possible a far more elaborate plan for exchange of material with other workers and institutions than has been possible in the past. As a consequence a large amount of this year's accession has been obtained from this source. Many specimens thus obtained have been published upon by other workers and as such have greater value than the usual exchange material.

Two field expeditions were made during the past museum year. The Curator was accompanied by Messrs. Archer and Rehder on the first trip during July and August of 1931 to North Carolina and Georgia, and during June and July, 1932 Mr. Archer and the Curator surveyed portions of northern Alabama and the Smoky Mountain region of eastern Tennessee. These field trips are a continuation of a plan initiated in 1923 to survey the southeastern States with special reference to the distribution of the Mollusk fauna. This survey is being carried out jointly with the University of Michigan and the Academy of Natural Sciences of Philadelphia. In addition to the above, financial aid and assistance in the field have been contributed by Messrs. Archer and Rehder.

The Maynard collection of Bahama Cerions was purchased jointly by Dr. Barbour and the United States National Museum. This is a most important acquisition. Many thousand specimens of this genus were collected by Maynard during his several trips to the islands and his monographs of the group are all based on this material. Cerion is the dominant Mollusk genus in the Bahaman fauna and isolation, coupled with a very plastic nature, has brought about an astonishing number of species and races. This material not only makes possible a restudy of Maynard's work but augments our own collection to a very great extent with material for studies in speciation.
Mr. Fairchild and the Curator completed a study of *Liguus* of Long Pine Key, Florida. This study was based almost entirely upon the material obtained by aid of a Milton Fund grant in 1931.

Dr. C. G. Aguayo, Assistant Professor of Zoölogy in the University of Havana, spent the past year studying Mollusks and Insects, mainly concerning the West Indian region. Several short papers were published, a few in collaboration with the Curator.

Mr. Colman completed a comparative study of certain Mollusks found along the European and North Atlantic coast of North America.

Dr. J. Bequaert, as in past years, continued his studies in African land and fresh water shells. This project is carried out jointly by Dr. Bequaert and the Curator. It is intended to monograph certain African groups and work up material obtained from specific areas.

Mr. Rehder continued his studies on the *Succineidae* until May of the past year. Then he left to accept a position in the Department of Mollusks in the United States National Museum.

Thanks are due to C. G. Aguayo, Allan F. Archer, G. Banks, G. B. Fairchild, and H. A. Rehder for much voluntary work in the department.

The Curator is indebted to Dr. R. W. Miner of the American Museum of Natural History for the privilege of studying and publishing upon a very large collection of Solomon Island land shells.

Grateful thanks are due to Senor Pedro de Mesa of Calapan, Mindoro, Philippine Islands, for a remarkable series of the shells of the Philippines. Most of the material sent by Senor de Mesa is entirely new to the collection; several species are new to science.

To Dr. E. Paravicini of Basel, Switzerland, the Museum is indebted for a very large series of land and freshwater shells obtained during a trip to the Solomon Islands. This collection has added several specimens new to the collection besides several new to science.

The Museum is indebted to the large number of people who have donated specimens during the past year.

A resume of the collection stands as follows:

- Number of accessions for the year: 4,789
- Catalogued entries in the collection: 65,728
- Number of species in the collection: 21,271
REPORT OF THE RESEARCH CURATOR IN ZOOLOGY

BY LUDLOW GRISCOM

The usual routine of the year was varied by the problems arising from the depression and the falling off of the gifts which in the past have compensated for the inadequacy of our unrestricted funds. An unexpected stroke of good fortune was the increase in the receipts from sales of our publications over the preceding year. Of the two factors largely responsible one was the sale of a complete set of Memoirs to Germany, and the other was the immediate success of Brues and Melander's volume on the classification of the insects of the world.

The granting by the Corporation of money from the Wyeth Fund improved the salary situation of many of our curatorial staff. This made possible a balanced budget for the coming year, with its reduction in income amounting to about 10%. Needless to say the preparation of this budget took both time and reflection. A possible further reduction in income for the year 1932-33 was foreseen, and economies were initiated with the object of having as much of a surplus as possible in those funds the balance of which can be carried forward into a new financial year. My final financial work of the year was the preparation of an analysis of the state of the Museum's finances should further reductions in income take place, with a view to showing that the unrestricted income was already only 3% above the minimum fixed charges of maintaining the staff and the collections.

Editorial work occupied about the normal percentage of my time. I, personally, supervised the publication of one volume only of the two Bulletin volumes completed during the year, but the proof-reading and indexing of my Guatemala report, published in New York, took considerable time.

Research work was pleasantly varied during the year. The summer week-ends were spent botanizing in southern New Hamp-
shire with excellent results. Two papers have already been published and two others are in preparation. My main work during the year at the Museum was the completion of an up-to-date check list of the birds of Panama. I also finished the examination and determination of Mr. Havemeyer's important private collection of Central American birds, and a paper is completed on the many items of interest it contains. I took my vacation in April and spent that month on the coast of northern South Carolina, a region never visited by an ornithologist, and botanically one of the least known in eastern North America. Mr. Weatherby of the Gray Herbarium spent a week with me and between us we collected nearly 1,500 sheets of plants, in sets for distribution. A report on this collection is in preparation and during May and June I spent the majority of my late afternoons at the Gray Herbarium, assisting in the determination of the 300 species found, a very fair sample of the early spring flora of the region. Several experienced amateur ornithologists also spent a week or more with me, and notes on the 195 species of birds found will be put on record in the future.
During the earlier part of the museum year several months were occupied in transferring the collection of Snakes to new and spacious quarters which will provide room for expansion during the next decade. The removal of the Snakes doubled the space available for Lizards, the latter were then respaced having been very much overcrowded for several years. New cases were installed in the Lizard-Amphibia room and this permitted of the assembling of the Caudata in the same room as the Anura, at the same time setting free eight wall cases in the Chelonia room for the expansion of the greatly congested Turtle collection. In addition to all the moving involved in keeping the collection in correct taxonomic order, over 2,200 labels were typewritten and installed on the trays to supersede the old hand-written ones.

In all these undertakings I have been greatly helped by Mr. Benjamin Shreve who has generously given of his time in this way while continuing his own herpetological studies. In addition he has replenished the losses by evaporation throughout the whole Lizard collection. This alone was no small undertaking in view of the rapid expansion of the collection.

The past year shows a further considerable increase of species or races, a gain of 181 as against 166 of last year. The figure would be considerably higher but for continual synonymizing as a result of study and in an endeavour to keep the nomenclature abreast of current literature. There was a falling off in the total of individual specimens received, only 2,523 entries having been made in the catalogues and transferred to the card indices.

Of outstanding importance among the accessions was the fine collection brought back by the Harvard-Australian Expedition: two novelties and a score of reptilian species previously unrepresented in the collection of the Museum were among the 80 forms
secured. The Amphibians received at the same time have not as yet been studied and accessed. Forty-two individuals donated specimens; of these the Antillean collection made by Dr. David Fairchild and his colleagues and presented by Mr. Allison V. Armour deserves special mention. More than 500 were presented by Dr. Thomas Barbour, including the rare Geckonia chalaziae. Mr. H. A. Carter of Georgia contributed a representative series of Reptiles and Amphibians from that State. Mr. Clinton V. MacCoy brought back a welcome herpetological collection as a result of his Arizona trip.

Exchanges were arranged with twenty-two institutions and resulted in 608 additions, both these figures show an increase over those of the preceding year.

Only eighteen loans of specimens have been made during the year; about half the usual number. This material was borrowed by workers at the National Museum, Michigan University Museum of Zoology, the Field Museum of Natural History, British Museum and Dr. E. R. Dunn. The opportunity is taken of expressing our indebtedness to Dr. Dunn for his willing cooperation in identifying various lots of Central American material.

Mr. Clinton V. MacCoy has continued his studies on the Scelopori. Mr. H. Hechenbleikner is undertaking a thorough revision of the family Chamaeleontidae. Mr. B. Leavitt has been investigating the status of certain Bufonids. Other students have been working on various problems for lesser periods. Among visitors who have utilized the collections are Dr. H. L. Babcock, Dr. G. K. Noble, Professor Junji Oyama, Dr. and Mrs. R. Stohler, Mr. L. C. Stuart, etc.

A census of the collection follows:

<table>
<thead>
<tr>
<th>Genera</th>
<th>Species</th>
<th>Gain Genera</th>
<th>Gain Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rhynchocephalis</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Crocodilia</td>
<td>8</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Chelonia</td>
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<td>0</td>
<td>11</td>
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<td>Lacertilia</td>
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<td>88</td>
</tr>
<tr>
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<td>300</td>
<td>5</td>
<td>63</td>
</tr>
<tr>
<td>Amphibia</td>
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<td>0</td>
<td>17</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>865</td>
<td>6</td>
<td>181</td>
</tr>
</tbody>
</table>

Gain: Genera, Species
Aided by a grant from the Milton Fund, the curator spent five months of the year 1931 in the British Isles. Four months of this time were employed in studying the Paleozoic Crustaceans at various museums, particularly the British Museum (Natural History) in London, and the Royal Scottish Museum in Edinburgh. Shorter periods were spent on the collections of the Geological Survey (both in London and Edinburgh) and in the museums at Bristol, Manchester, Newcastle, and Dublin. The results of these studies are embodied in two papers which cannot be completed until it is possible to study the American representatives of the groups involved.

One month was devoted to field work and collecting. Material of various groups of invertebrate fossils was obtained from the Jurassic of the south of England, from the Carboniferous and Rhaetic near Bristol, from the Ordovician of Shropshire, from the Permian at Sunderland, and the Carboniferous near Dublin. A large series of Devonian Fish remains was collected at Hugh Miller's original locality at Cromarty, and two very good suites of Lower Carboniferous Crustaceans secured at localities near Edinburgh. Mr. Forbes M. Hutchins accompanied the Curator on the excursion in the field, and was of great assistance. We are indebted to many individuals for help and courtesies, both in museums and in the field.

In June, 1932, the Curator spent ten days in collecting in Pennsylvania, obtaining invertebrate fossils from the Ordovician, Silurian, and Devonian.

During the winter the work of rearranging the collections in storage was continued, the room devoted to Arthropods being completed. Considerable time was devoted to the study of certain Arctic sediments collected by the Nautilus expedition.

Two foreign investigators have been guests of the Palaeontolog-
cal Department of the Museum during the year. Dr. Leif Störmer of Oslo, on a fellowship from the Rockefeller Foundation, was engaged in the study of appendages of Trilobites from October till March. Dr. Teiichi Kobayaski of Tokio spent a month in comparing Ordovician Trilobites from Korea with specimens in our collection.

Some of the accessions mentioned below were received during the year 1930–31, but were not previously reported because of my absence from the Museum last summer.

The most important addition to the collection is a large series of Mollusca and Echinoids from the Cretaceous of Texas. These specimens were collected and named by Professor J. L. Patton, at the expense of Dilworth S. Hager '12 of San Antonio, Texas, to whom we are indebted for so excellent a representation of this fauna.

A noteworthy specimen is a Lobster of the genus Podocratus, obtained by exchange with Mr. Lucius J. Wing '35. It was collected from the Cretaceous of Long Island, and is the only Lobster yet found in the Cretaceous of eastern North America. The gift of seven specimens of Trilobites, all topotypes, from Girvan, Scotland, by Mr. James Begg of Glasgow, increases our indebtedness to him.

Other accessions by donation are Gastropods from Cuba, by Mr. N. Bowen, Trilobites from Mt. Stephen, B. C., by C. H. Burgess, a large Asthenodonta from New Brunswick, by Mr. Charles H. Taylor, Ordovician and Devonian fossils from New York by Mr. Walter H. Smith of Utica, specimens of Eurypterus remipes from New York, by Mr. Charles Brewer, Jr., a slab of Crinoids and an excellent Nahecaris from Germany (placed on exhibition), from Dr. Barbour, Pleistocene shells from Nantucket from Mr. John P. Marble, a nearly complete Eurypterid from the Permian of Kansas, by Dr. F. M. Carpenter, and four Pelecypods dredged on Georges Bank, by Mr. C. O'D. Iselin.

By exchange, specimens of Eurypterids have been received from the University of Oslo through Dr. A. Heintz, Chazyan fossils from Clear Lake, Utah, from Mr. E. W. John, and a number of Tellicarids from Professor Gordon of Kings College, London.

Three drawers of Silurian and Tertiary fossils were collected in Australia by W. M. Wheeler, G. M. Allen and W. E. Schevill.
The past year has seen an unusually large growth in the collections of vertebrate fossils.

Through the generosity of a friend the Museum secured three nearly complete individuals of the rare Lariosaurus from the Alpine Triassic of Lugano, Italy. One of these was exchanged with the University of Michigan for a perfect skull and lower jaw of *Buettneria bakeri* and the coracoids and intercoracoid of the larger *B. perfecta*. This material was part of the remarkable collection made by Professor E. C. Case in the Triassic of Snyder Co., Texas in the summer of 1931. The Museum is indebted to Mr. George Nelson for the great skill and patience which he has displayed in working out these fragile specimens from a very difficult matrix. The resulting mounts have been a great addition to our exhibit of Amphibians. Two individuals of Branchiosaurus with unusually perfect limbs have also been presented by the same person.

We have again had to call on outside help to keep pace with our accessions and two specimens were sent to Mr. Charles J. Lang for mounting. One of these is the little known Oligocene *Alligator prenasalis*, the other a new species of Promerycochoerus. Both are excellent mounts.

Mr. Schlaikjer’s expedition of 1931 resulted in many welcome accessions, including a mountable skull of Triceratops from the upper part of the Lance, a great deal of bird and horse material from the Oligocene quarry owned by the Museum at Torrington, Wyoming and a perfect skull of Mesocyon.

A fine series of Bison skulls and much Mastodon material from the Pleistocene gravels near Fairbanks, Alaska, was secured through the generosity of Mr. Childs Frick—a valuable addition to our collections.

An exchange has been arranged with Dr. Anatol Heintz of the
Palaeontological Museum in Oslo whereby we are to receive a large suite of Spitzbergen Cephalaspids for our cast of Iguanodon. This possesses a double advantage from our point of view. Not only do we obtain a collection of Cephalaspids second only to Oslo, but the congestion in the Reptile room has been relieved and its appearance vastly improved, as the room was too small for the adequate display of such a large animal. In addition we received several excellent Anaspids from Kiaer's original material.

Further accessions to the fishes comprise three exhibition specimens from the Green River shales, as well as an unique collection of Old Red material obtained by Professor Raymond and Mr. Forbes M. Hutchins from one of Hugh Miller's old localities at Cromarty, Scotland.

The exhibitions of fossil fishes have been completely rearranged and several specimens were brought from storage, and mounted by Mr. George Nelson, to fill up the systematic gaps. Descriptive labels have been supplied throughout, as in the Invertebrate room, to aid the laboratory instruction in courses in Palaeontology. With the above purpose in mind two wall charts have been placed in the exhibition rooms, one a family tree of the fishes after W. K. Gregory, the other a geologic time table showing the principal faunal occurrences and tectonic events, and illustrated by photographs of the Knight paintings from the Field Museum.

Mr. Nelson's time, in addition to the work mentioned above, has been occupied largely with the first stages in the assembling and mounting of the Dinosaur Plateosaurus, a laborious task when undertaken single handed.

Mr. Charles Tilton has worked faithfully throughout the winter cleaning and preparing material acquired during the previous summer. Both he and Mr. Schlaikjer are again in the field and report excellent progress. Mr. Schevill, now in Australia, has found some time to devote to fossils and reports collecting the skull of Diprotodon, as well as some good Fishes from the Hawksbury and some fragmentary Reptiles.

Through the generosity of a friend the vertebrate portion of the Earl Douglass collection was acquired. This material is largely from the Uinta. The prize specimen, perhaps, is the complete skull of Dolichorhinus.
By exchange with the National Museum we obtained a perfect skull and jaws of Plesippus. Other accessions include several artifacts found associated with the Pleistocene fauna of Florida, collected by C. P. Singleton, two restorations of Phytosaur heads and a model of Desmatocushus, gifts of Professor E. C. Case, and a model of Palaeosuchus from Mr. Barnum Brown.

My own time, aside from routine work, has been largely occupied with a further extension of the work begun last summer at the Woods Hole Oceanographic Institution on problems of marine sedimentation. To be of any value, such work must have a stratigraphic and geologic bearing and is therefore not so far removed from palaeontology as at first sight it might seem to be.
In common with others, the resources of this department, slender as they were in the past, have been seriously affected by the stress of the present economic situation. It is hoped, however, that conditions will soon improve, making a small budget available to meet the expenses required for the resumption of studies on life histories of parasitic worms and such phases of the relationship existing between host and parasite as receive expression in phenomena of resistance and susceptibility. It is in those bionomic fields that the Curator's special interests have in recent years been centered.

In the absence of funds permitting experimental work, practically all our efforts have been directed to the tasks of identifying and increasing the Museum's collection of Helminths which are now assembled in a room in the new Biological Institute. As a result, the study of the large collection containing several new forms of Helminths, made by Dr. Ralph E. Wheeler as a member of the Kelly-Roosevelts expedition to French Indo-China, has been practically completed. Two interesting Helminths procured through the kindness of Mr. Arthur S. Vernay from the rare *Rhinoceros sondaicus* of the Malay States have been described in a paper already in the hands of the publisher.

Thus the accretion of identified species accessioned in our catalogue has this year been significant and the collection is commencing to assume worth-while proportions.

As is to be expected in these days of specialization, the Curator does not pretend to make authoritative identifications in all of the large divisions included under the caption of the department. There is consequently accumulating a considerable quantity of material which after superficial classification is set aside for subsequent identification by specialists in the particular groups. This year we are fortunate in having had Dr. Jean G. Baer of the Uni-
University of Neuchatel consent to work up the extensive collections of Tapeworms collected by members of the Museum on several expeditions into Africa and Indo China. Dr. Baer writes of finding several new forms of exceptional interest. This report is to be published in Europe in the near future.

Other interesting specimens donated to the museum were collected by Mr. Donald Wees in Patagonia.

Starting with an unprecedented number of specimens of the so-called "blinding filaria" of man collected by Dr. Strong, Professor of Tropical Medicine, on his recent expeditions to Guatemala, the Curator undertook to restudy this important parasite with the view to establishing on a morphological basis its relationship to the allied species that affects man in the tropics of Africa. For representative material of the African species we are indebted to Professor F. Fülleborn of Hamburg. From this beginning, the study broadened into a review of the entire genus, Onchocerca. Rather unexpectedly it was found that more than 50 percent of horses killed in the knacker's yards of Boston were infested with a third species of this genus. Further comparative material of other reputed species in cattle from different geographic regions was secured through the courtesy of Professor Emil Brumpt of Paris, Dr. T. W. M. Cameron of Edinburgh University, Dr. Abdul Shafi Mohammed of Cairo University, and Dr. G. M. Heydon of the School of Tropical Medicine, Sydney, Australia. It has probably never before fallen to the lot of any student to have such an assembly of representative species of this important genus available for review. The interesting implications drawn from the revision of this confusing genus is soon to be published as a special section of Dr. Strong's report.

We have continued to examine and report on animals that have died in the Franklin Park Zoo. This year more than a dozen animals, including an Indian Nilgai and a Snow Leopard, were submitted by Mr. Harkins, Curator of the Zoo. While it often happens that animals kept in captivity over a period of years lose their autochthonous parasites, the zoo presents great potentialities as a source of parasitological material otherwise unobtainable, and the arrangement between the zoo and the museum is mutually advantageous.
The Curator has also been able, on a few occasions, to provide information on problems of parasitism to members of the staff of the United States Bureau of Fisheries quartered in the Biological Institute.

Other gifts of helminthological specimens (including paratype specimens) must be acknowledged from Dr. E. L. Taylor of the Veterinary Laboratory, British Ministry of Agriculture, Dr. B. G. Chitwood, Division of Zoölogy, United States Department of Agriculture, and Mr. R. D. Harwoon, Rice Institute of Texas.
REPORT ON FISHES

By N. Borodin

_Type Specimens:_ Most of the time during the year has been used for picking out the type specimens in the collection, cataloguing them, and preparing full notes concerning them for publication. This work is done so far to the stage of completing a card catalogue; there remains the typing of cards and of the text from the cards. Instead of 489 types recorded in the report for 1930–31 (see page 38) at the present time we have 1,112 type specimens listed; that is, 723 specimens were found and card catalogued during this year. It is of the utmost importance that a great many valuable types of Louis Agassiz, F. Poey, Fr. Steindachner, and other notable ichthyologists were finally located and registered. Our list at the present time includes 125 types of Poey, 49 of Steindachner, 41 of Louis Agassiz, 13 of Cope, 66 of Girard, 42 of Goode and Bean, 24 of Gilbert, 5 of Putnam, 91 of C. Eigenmann, 75 of Eigenmann and Eigenmann, 266 of Garman, 6 of T. Barbour, 34 of N. Borodin, and 275 of others miscellaneous. Total 1,112.

It would be worth while to mention that many specimens which have been marked by red labels (Museum sign of type) were found to be simply manuscript names. These, as well as many other supposed-to-be-types for which no references could be found, made it necessary to enter into correspondence with many authorities who have been kind enough to assist in this matter. Among them Dr. Fowler, Dr. Pellegrin, Dr. Evermann, and Mr. A. Seale must be mentioned.

The great majority of type specimens were found in fair condition, and curiously enough the specimens collected in the 60's (by Poey and Thayer Expeditions) were found in better shape than those collected in the 80's and 90's of the last century. The most mutilated type specimens were found to be the Macruroid and some other soft deep sea Fishes.
All type specimens are supplied with red labels, small bottles were exchanged for larger ones, filled with fresh alcohol, and new labels with recent scientific names made. In this painstaking and scrupulous work the Curator was helped by Mrs. N. Borodin who has been engaged for assistance in the Department of Ichthyology. She is continuing the cleaning of bottles and changing the old deteriorated labels on them, which task is not yet completed.

Another important job is to be done next year—completing the six volumes of the Catalogue of Fishes, in which thousands of names of Fishes, even the types, are not yet inserted.

Accessions: No considerable accessions were made this year; 15 specimens of California Fishes from L. A. Walford; 12 Atlantic shore Fishes from E. L. Mark; 1 from R. E. Bowen; 5 from N. Borodin; 5 from Mrs. Borodin; 40 Alaskan Fishes from Mr. A. Lawrence; 1 from F. E. Firth; 3 from Miss E. Deichmann; 26 Cuban Fishes (4 types) from Dr. L. H. Rivero; 1 from Toronto Museum (in exchange); 1 from the Field Museum (in exchange); 1 from the University of Alberta (in exchange); 2 from P. de Mesa; 1 from A. Loveridge; 1 from Professor Parker; 1 from Dr. Thomas Barbour.

Exchanges: No considerable exchanges took place this year. Small exchanges are mentioned above.

Visitors: Several persons visited the department, some of them for a considerable length of time, namely, Professor W. H. Longley of Goucher College, Baltimore, in February (4 weeks) and in April (3 weeks). Mr. Longley studied collections of Pomacentridae, Scaridae, and some other families of Fishes from Florida and Cuba. Mr. John Tee Van, assistant of Dr. William Beebe, in the month of March examined the collection of Bermuda Fishes. Dr. E. W. Gudger (March 7-8) examined teeth of shark and skates. Mr. A. E. Parr, Curator of the Bingham Oceanographic Collection at Yale University, examined the collection of Myctophid Fishes.
For many years reference to the interest and generosity of Colonel John E. Thayer of Lancaster, Massachusetts, towards this Museum has approached the monotony of annual repetition. This year, however, it is impossible adequately to express our appreciation of his tremendous gift—his wonderful collection of 15,000 North American Birds' eggs, to say nothing of his huge accumulation of skins.

As to the former; a brief survey of the collection reveals Colonel Thayer's painstaking, and highly successful efforts towards a balanced representation. As might be expected, a considerable number of subspecies, especially those based on a degree of inspiration denied most mortals, is lacking.

A brief list of some of the more desirable items is as follows: Yellow-billed Loon; Guadalupe Petrel; California Condor (9 eggs); Surf-bird; Knot; Rufous-necked, and Spoon-bill Sandpiper; Ivory, and Ross' Gull; Great Auk (10 eggs); Passenger Pigeon; Eskimo Curlew; Thick-billed Parrot; Black Swift; Guadalupe Flicker; Ivory-billed Woodpecker; Xantus's Becard; Beardless Flycatcher; White-winged Junco; etc.

The transfer of the collection, effected without noticeable mishap, proved more nerve-wracking in anticipation, than in reality. Happily I had the able assistance of Mr. Peters after he had completed the somewhat speedier, and less exacting task of tending to the skins. Colonel Thayer's well-made cases fit the room devoted to eggs with such a nicety as to give the impression that they were made expressly for that location.

Eggs representing birds of forty-five unrepresented genera from India and Burma were acquired by purchase.

Also a gift of various North American eggs from Mr. F. H. Kennard is highly appreciated.
Mr. Arthur C. Bent has been, as always, ever ready to assist me with his extraordinary knowledge of the life-histories of North American Birds.

The entire collection represents 110 families; 638 genera; 1,584 species, and a trifle over 35,000 eggs. These figures are not given with any sense of pride, but rather to show how much we need of common material from Europe and elsewhere.
REPORT ON FOSSIL ECHINODERMS

BY ROBERT T. JACKSON

As last year the Curator spent a good deal of time revising the Mesozoic and Tertiary Echini. Dr. Edwin Kirk of the United States Geological Survey borrowed a few Crinoids from the de Koninck collection for study. These have been returned.

A gift of 55 specimens of Cretaceous Echini from Texas was received from Mr. Dilworth Hayes; a gift also was received from Professor H. G. Schenck, of Leland Stanford University, of fossil Echini from Oregon and California. Mr. J. B. Litsey, of Dallas, Texas, kindly gave some choice fossil Echini from the Tertiary of Florida and Cretaceous of Texas.

A fine series of 67 selected Cretaceous Echini from Texas was purchased of Mr. J. B. Litsey of Dallas, Texas. These, with those from the same source in previous years, gives the Museum an excellent representation of fossil Echini from Texas.
During the fall of 1931 the collections of Stony Corals were moved from the fifth floor to the fourth and installed there. Most of the year has been spent in identifying and cataloguing this material. Several visits have been made to Washington, D. C., to study the collections of Stony Corals and Alcyonarians in the United States National Museum and to make arrangements for exchanges in the future. A number of duplicates have been sent to other institutions.

The cataloguing of the Alcyonarians has been completed, the card-catalogue of the other Coelenterates has been rewritten, and the collections in the basement have been attended to.

The material of Californian Alcyonarians belonging to the United States National Museum has been sent up to Cambridge to be identified and used, with the material in the Museum of Comparative Zoology, for a revision of the Californian species.

A set of fifty Stony Corals, from the Albatross Cruise 1899–1900 has been received from the United States National Museum as the share to which the Museum of Comparative Zoology was entitled, according to arrangements made in 1899. Most of these are already identified by Dr. T. W. Vaughan.
Due to the relocation of various departments of the Museum, the library last fall acquired more space into which to expand and now occupies the entire north side of the second floor of the building. The entomological library, located for several years in a dark and otherwise unsatisfactory room, was moved to a large room on the north side; stacks were put up in the center of the room and tables placed near the windows. We have made a beginning on much-needed shelf-listing of this entomological collection, where the books and pamphlets were often out of place.

Extra space has been gained in one of the Whitney rooms by the deposit of most of our maps in the Institute of Geographical Exploration. We spent several weeks sorting the maps, aiming to keep here only those which accompany texts in the library. Our maps, as a whole, were so seldom used that we never felt justified in spending the time to arrange and catalogue them completely; they are now entirely classified and catalogued in the Rice building where they are available to all members of the Museum Staff.

We have also deposited in the Institute of Geographical Exploration 135 volumes of our “travel” books—those containing no material on zoology or geology; there are still more such books to be similarly deposited after sorting. Cards for these works are still kept in our catalogue, showing their new location—as they are still, like the maps, the property of the Museum.

Last November Professor Crozier of the Physiology Department agreed to carry on the subscriptions for various physiological journals to which we have subscribed for years, if we would deposit our files of these in the library of his department. Under this agreement we sent over for deposit there 479 bound volumes which are for use only in the Biological Institute.

The removal of the telephone switchboard from the library was
a welcome relief to the library staff as well as to people using our reading rooms for study.

The last of the serials to be transferred to this library from the Bussey Institution were received in March; 63 volumes, 22 pamphlets, and 153 parts of volumes were thus added to our library, in most cases filling gaps in our own sets of the serials.

A small collection of books and pamphlets from the library of Miss Elvira Wood, who worked on the collection of fossils here some twenty years ago, were received through the kindness of her brother.

Because of lack of funds we have been able to bind only about half as many volumes as last year—317 in all.

From the following members of the Museum Staff we have received serial publications regularly: Dr. Barbour, Mr. Bangs, Dr. Clark, Dr. Bigelow, Dr. Allen, Mr. Clench, Mr. Loveridge, Mr. Griscom, Mr. Coolidge, Dr. Bequaert, Dr. Brues and Dr. Wheeler. A large number of serials still come through Professor Davis, and several from Professor Parker and Professor Daly. Reprints also are received from these people and from other members of the Staff and from other institutions. The College Library continues to send us several serials, many reprints and many doctors’ theses published by foreign universities.

In connection with a survey of museum libraries throughout the country, undertaken by the Special Libraries Association, we made a count in March of the periodicals received here regularly. Of a total of 916 such publications, 509 are exchanges (371 foreign, 138 domestic), 208 are gifts (from societies, institutions, and individuals), and 199 are purchased. Subscriptions to those which are purchased take by far the greater part of the library’s funds, as we spend only a small part for separate works.

We have added 1,195 volumes, 4,126 pamphlets, and many parts of volumes to the library during the last year, making the totals on August 1, 1932, 72,761 volumes and 86,804 pamphlets. The pamphlet file, which we began on last year, proves very satisfactory and enables us to dispose of this class of our accessions with much greater speed than heretofore.

Circulation has increased this year and is as follows: 5,837 books were borrowed for use outside the library, 1,543 by the Museum
Staff and 4,176 by teachers, students and others not connected with the Museum. Inter-library loans to other institutions totalled 118. Books were reserved as usual for several courses during the reading and examination periods. There has been more than the usual number of people using the library during the summer months.
PUBLICATIONS
FOR THE YEAR 1931-1932
(1 August, 1931—31 July, 1932)
MUSEUM OF COMPARATIVE ZOOLOGY

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

BULLETIN: —

Vol. LXXII
No. 3. Atlantic Deep-sea Fishes. By N. A. Borodin. 33 pp., 5 pls. August 1931.
No. 5. The Kiln Shale Fauna. By C. H. Burgess. 7 pp., 1 pl. November 1931.

Vol. LXXIII
Classification of Insects. A Key to the Known Families of Insects and Other Terrestrial Arthropods. By Charles T. Brues and A. L. Melander. 672 pp., 1,125 figs. 1932.

Vol. LXXIV

Publications by the Museum Staff

ALLEN, G. M.

BANGS, O.

BANKS, N.

BARBOUR, T.
To Leonhard Stejneger. Copeia, 1931, no. 3, p. 73.
MUSEUM OF COMPARATIVE ZOOLOGY


On a New Anolis from Western Mexico. *Copeia*, 1932, no. 1, pp. 11–12.

The Lesser One-horned Rhinoceros. *Journ. of Mammalogy*, 1932, 13, 2, pp. 144–149, 1 pl. (With Glover M. Allen.)


**BENT, A. C.**


**BEQUAERT, J. C.**


Bigelow, H. B.


Borodin, N. A.


Brues, C. T.

Classification of Insects: A Key to the Known Families of Insects and Other Terrestrial Arthropods. *Bull. Mus. Comp. Zool.*, 1932, **73**, pp. 1–672, 1,125 figs. (With A. L. Melander.)

Bryant, Miss E.


Carpenter, F. M.


**Clark, H. L.**


**Clench, W. J.**


New Cuban Cerions. *Nautilus*, 1932, 45, pp. 89–91, pl. 6. (With C. de la Torre.)

Two New Subspecies of Cuban Liguus. *Nautilus*, 1932, 45, pp. 98–100, pl. 6. (With C. G. Aguayo.)


Thomas Say — His First Paper on American Mollusks. *Nautilus*, 1932, 45, p. 112.


Descriptions of Some Land Snails of Southwestern North Carolina. *Nautilus*, 1932, 46, pp. 14–18, pl. 2. (With G. S. Banks.)
GREENWAY, J. C., Translated by

GRISCOM, L.

ISELIN, C. O'D., II

JACKSON, R. T.

LOVERIDGE, A.


**Peters, J. L.**


**Phillips, J. C.**


**Raymond, P. E.**


Sandground, J. H.

Stetson, H. C.

Wheeler, W. M.
### INVESTED FUNDS OF THE MUSEUM

**IN THE HANDS OF THE TREASURER OF HARVARD COLLEGE**

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<thead>
<tr>
<th>Fund Name</th>
<th>Amount</th>
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<td>Alexander Agassiz Fellowship in Oceanography Fund</td>
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**Total:** $1,215,850.67

The payments on account of the Museum are made by the Bursar of Harvard University, on vouchers approved by the Director or by his delegated authority. The accounts are annually examined by a committee of the Overseers. The income of funds which are restricted is annually charged in an analysis of the accounts, with vouchers, to the payment of which the incomes are applicable.

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 Zoology and of Comparative Anatomy in Harvard University, "in supporting or assisting to support one or more students who may have shown decided talents in Zoology and preferably in the direction of Marine Zoology."
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.

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 Zoology ** 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 at Soledad, Cuba, or at the Barro Colorado Island Laboratory in the Panama Canal Zone may be addressed to the Director. A limited number of Fellowships are available for workers at Soledad. Details concerning the concessions allowed to workers in 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 several institutions supporting the institution and the Director of the Museum at present is Chairman of the Committee.

Applications 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.