SENATE..... .....No. 5.

ANNUAL REPORT

OF

THE TRUSTEES

OF THE

MUSEUM OF COMPARATIVE ZOÖLOGY,

AT HARVARD COLLEGE, IN CAMBRIDGE:

TOGETHER WITH THE

REPORT OF THE CURATOR

TO THE COMMITTEE ON THE MUSEUM,

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Commonwealth of Massachusetts.

Boston, January, 1877.

To the Honorable President of the Senate.

Sir :—The Trustees of the Museum of Comparative Zoölogy have the honor to present to the Legislature the Report of the Curator to the Committee on the Museum, marked [A]. There are added to the Report: [B], the petition of the Trustees to the Legislature, asking to be authorized to transfer the trusts in their hands to the Corporation of Harvard College; [C], the Act of the Legislature giving their consent to this transfer; [D], votes of the Trustees and of the Corporation of the College relating to the transfer of the property; [E], the indenture between the Trustees of the Museum and the President and Fellows of Harvard College, accepting the trust; [F], a Schedule of the property received by the Treasurer of Harvard College from the Treasurer of the Trustees; [G], report of a committee of the Museum Faculty on the publications of the Museum. [H] contains a list of the Faculty of the Museum and the Assistants appointed by them; and [I] a list of the present Trustees.

ABBOTT LAWRENCE, *Secretary.*

[A.]

REPORT OF THE CURATOR

TO THE

MUSEUM COMMITTEE.

As will be seen by this Report, the past year has been an important one in the history of the Museum, changing radically its financial management and greatly enlarging the field of its activity. Though the assistance and constant support of the State were all-important to the Museum in its early stages, enabling it, with the help of a separate board of trustees and an independent faculty, to develop more rapidly than it could have done in direct connection with any other educational establishment, the time has now come when the institution, which has thus far owed so much to the liberality of the State, must depend for its future prosperity upon the friends of the cause of education in general.

The organization of the Museum has been simplified little by little, and it has seemed wise to the present Board of Trustees to reduce the complication still further by consolidating the two boards hitherto holding the property and having charge of the institution into one body. They have thought it advisable to petition the Legislature for permission to transfer the property in their charge to the Corporation of Harvard College. The successful close of the Agassiz Memorial Fund placed in trust in the hands of the Corporation, offered a fitting occasion, and their petition asking for the

passage of an Act authorizing the proposed change, being cordially granted by the Legislature, the transfer of the property to the Corporation of Harvard College was duly made in accordance with said Act. [See the Appendix for the petition of the Trustees, the Act of the Legislature, the indenture between the Corporation of Harvard College and the Trustees, and the receipt of the Treasurer for the property so transferred.]

The objects to be obtained by the proposed transfer of the property in the hands of the Trustees of the Museum to the Corporation of Harvard College are: 1st, to simplify the somewhat cumbersome organization by which the property devoted to the Museum is managed, by placing the trust now controlled by two independent bodies, under the care of a single board; 2d, to enable the Museum Faculty by this change to concentrate at the Museum the Natural History departments of Harvard University, now only mechanically connected with it; 3d, to enable the Trustees of the Peabody Museum of Archæology to erect an edifice eventually to be connected with the Museum building originally planned by the late Professor Agassiz, upon land assigned to them by the Corporation of Harvard College.

From the very foundation of the Museum, the articles of agreement between the Corporation of Harvard College and the Trustees, showed that a most intimate connection between the Museum and the College, so far as consistent with the rights of the public, was contemplated. Without diverging from the spirit of the charter, modifications of these first articles of agreement were subsequently rendered necessary. This was partly a result of the growth of the establishment and partly the desire on the part of the Trustees, fully shared by the Corporation, to prevent by a concerted action, unnecessary duplication either in the instruction to be given at the Museum, or in the collecting of the material necessary to illustrate the several departments. With this object, the instruction in natural history at the Museum has gradually been assumed by the College in exchange for the facilities given by the Museum in the way of collections and laboratories, the Museum retaining, however, the general direction of the educational interests.

The Corporation of the College now pays annually, in salaries connected with the Museum, nearly as much as the original income of the Museum itself. This makes a closer official relation between the Museum and the University doubly important, were it only for the fact that the specimens necessarily accumulated by the instructors in the several departments of natural history are, under the present conditions, merely deposited in the Museum without becoming an integral part of its collections, thus depriving the institution of a great element of stability. It is probable, indeed, that no change in their disposition will be made, but it needlessly complicates the care of the collections.

The Faculty of the Museum, an independent body, distinct from the Trustees and Corporation, and duly recognized in the original articles of agreement between the two bodies, will still continue to exist, and will retain as hitherto the whole scientific direction of the institution and the care of the collections. This Faculty appoints its own members, subject to the approval of the Corporation; they nominate the Curator of the Museum and his assistants, and determine in a general way the policy of the Museum. The direction of the instruction belongs to the Curator, who determines also the expenditures, subject to the control of the Faculty. Thus, while the Trustees have always held the real estate, collections, and buildings, as well as about $116,000 in trust as a permanent fund, being in fact the guardians of the material interests of the State therein involved, they have never had any voice in the details of the management, the latter being intrusted to the Faculty. It is not proposed, in making this transfer, to alter in any way the status of the Museum Faculty as above defined. With the establishment of the Peabody Museum, a distinct trust was created for the maintenance of one branch of natural history originally included in the plan of the Museum of Comparative Zoölogy, and the latter was thus relieved from the necessity of providing for that department. It is, however, most important that the scientific aims represented by these two institutions should not be disconnected, and the transfer of the Museum trusts to the Corporation of Harvard College enables the latter, as above stated, to assign to the Peabody trustees a site for their new building on the

Museum grounds.* The advantages to be gained by a concentration of all the natural history departments within one enclosure, are too obvious to need enumeration, and this centralization will undoubtedly build up, within a comparatively short period, a comprehensive institution of natural history, with facilities enjoyed by few like establishments elsewhere.

The State has given about	$290,000 00
Private sources, including college, about . . .	695,000 00
	$985,000 00

Which is represented by the following investments: $116,000 held by the Trustees, and $350,000 held by the Corporation, the balance being in land, building, collections, and the work done upon them since 1859. In addition to the income derived from these funds, the College pays annually about $10,000 towards the salaries of instructors connected with the Museum and its different departments, while the Peabody trust virtually increases the resources of the Museum by providing in one of the most expensive branches of natural history, the means for a professorship, beside a collection and building fund, amounting together to more than $200,000.

As the trusts held for the Museum by the Corporation of the College have all been given for the benefit of the institution on certain conditions which cannot readily be changed, the proposed consolidation offers the readiest means of carrying out at once a plan the completion of which seemed to the founder hopelessly remote, while the transfer of the care of the property to the corporation of Harvard College protects the interests of the State and in no way lessens the value of the Museum to the public.

For the work carried on in the different departments, I would refer to the special reports of the professors and assistants.

The instruction at the Museum has been given by Profs. Whitney, Hagen, Shaler, McCrady, Dr. James, and Mr. Allen.

Prof. Whitney gave a course of thirty-four lectures on economical geology, which were attended by some candidates

* Early last summer, the Corporation assigned, as was expected, a site on the Museum grounds to the trustees of the Peabody Museum.

for higher degrees, and students in the fourth year of the engineering course of the Lawrence Scientific School. These lectures were given in the Lawrence Scientific School building for want of accommodation in the Museum, a difficulty which has now been remedied.

Dr. Hagen gave special instruction in entomology to eight persons during the past year,—one undergraduate, six graduates, and one young lady.

Mr. Allen also gave instruction in ornithology to one special student.

Dr. James gave instruction last year to eight seniors, twenty-five juniors, three sophomores, and two scientific students in vertebrate anatomy and physiology. The anatomy was taught mainly by lectures, and was confined to osteology almost wholly. In physiology, Küss's Elements was used to recite from in addition to lectures. The whole class was obliged to draw pretty thoroughly from nature the facts described in the osteological part of the course; and the laboratory was thrown open to all who chose to dissect. Fifteen to twenty of the class dissected, quite assiduously, fishes, fowls, rabbits, cats, turtles, frogs, etc., and some time was daily spent by Dr. James in supervising them. Dr. James also gave special instruction in anatomy to two extra students who arrived late in the year.

Prof. McCrady's lectures on the zoölogy of the invertebrates were unfortunately interrupted during December, owing to a dangerous illness, which compelled him to leave Cambridge for the South. His lectures were attended by five undergraduates and by five special students. During Prof. McCrady's illness, the laboratory work was continued as usual under Mr. Faxon's supervision.

Prof. Hamlin has continued to take charge of the instruction to undergraduates in structural geology and physical geography.

As will be seen by his Report, Prof. Shaler, in addition to his regular instruction at the Museum, has taken charge of the summer school of geology in connection with the work of the geological survey of Kentucky.

I would heartily congratulate the Museum on retaining the services of Dr. Hagen, who has declined an urgent and

most tempting invitation to take charge of the great entomological collection in the Berlin Museum, in order to cast his lot with us. It is no slight encouragement to a young institution like the Museum that such an investigator prefers to continue his work here, rather than become the successor of the eminent men who have held the place Dr. Hagen now refuses.

It gives me pleasure to be able to state that Mr. F. W. Putnam has returned to the Museum after an absence of twelve years, and is now again in charge of the ichthyological collection.

For important volunteer work, I have to thank as usual Messrs. Pourtalès, Lyman, and Cary.

The publications of the Museum have been continued with more activity than usual. Five numbers of the Bulletin (completing Vol. III.) have been published, four of which contain partial results of the exploration of Lake Titicaca made by myself and Mr. Garman, prepared by Messrs. Garman, Derby, Pourtalès, Allen, Faxon, and myself. One number of the Bulletin, on the Development of Salpa, is by Mr. Brooks, the work for it having been done in my laboratory at Newport.

The scope of the quarto publications of the Museum having been enlarged according to a recommendation of the Museum Faculty, their title has been changed to Memoirs, the former publications collected into volumes, and the fourth volume of Memoirs concluded by an important paper by Mr. Allen on the North American bisons,—twelve plates. This Memoir has been published in connection with the geological survey of Kentucky, the Museum supplying a number of the plates accompanying the paper, the survey electrotyping the text, and both parties profiting by this joint method of publication. It is hoped that the Museum may hereafter continue with other individuals or institutions this mode of issuing a part of their publications.

A shorter paper by Dr. Hagen, on Insect Deformities, illustrated by a single plate, has also been published during the past year.

The Museum has also supplied materials to assist in preparing several publications issued in European scientific journals;

Prof. Zeller of Stettin has written three papers on North American Microlepidoptera in the Proceedings of the Zoölogical Botanical Society of Vienna, and he has also described a large number of species, mostly from Texas. Prof. Frey of Zurich has described in the Stettiner Entom. Zeitung, a number of North American Tineina. Mr. E. von Harold of Munich has a couple of papers on Coleoptera from the Argentine Republic, in his Coleopt. Hefte. Mr. R. McLachlan of London has published a monographical revision of the Trichoptera; and Dr. Hagen a paper on Phryganidæ in the Proceedings of the Zoölogical Botanical Society of Vienna. A large amount of Museum material has also been available to Mr. Selys Longchamp of Liege, Belgium. He has published a number of memoirs on Odonata in the Bull. de l'Académie Royale de Belgique.

As will be seen by the reports of Messrs. Putnam and Garman, a large number of collections of fishes and reptiles were distributed to our correspondents. They consisted mainly of materials gathered in the Thayer Expedition to Brazil, and in the voyage of the Hassler. A number of collections of insects, corals, fishes, reptiles, etc., have been distributed in this State.

Considerable material has, as usual, been supplied to original investigators, where it was possible to do so without interfering with the regular Museum work. Collections have been sent to Prof. Lovén, to Dr. Lütken, to Prof. Perrier of the Jardin des Plantes, and to Dr. Steindachner of Vienna. Dr. Steindachner has continued to use the material sent him for incorporation with his monographs on South American fishes. He has also published a finely illustrated memoir in the Mem. of the Zoölogical Botanical Society of Vienna, on the Reptiles of the Gallapagos Islands, from material collected by the Hassler Expedition.

Some progress has been made in the arrangement of two of the exhibition-rooms, that of Radiates and of the Synoptic room, in both of which a good deal of work has been done. The latter, as far as arranged, proves unusually attractive to visitors.

ALEXANDER AGASSIZ.

REPORT ON THE INSTRUCTION IN GENERAL GEOLOGY AND PALÆONTOLOGY.

By Prof. N. S. Shaler.

During the year 1876, instruction in general geology has been given in the laboratory to two classes; during the first half of the year to a class of forty-eight persons, and in the second half of the year to a class of sixty-two persons. In this course, the instruction has consisted of lectures,—one hundred in number,—following the general course of Lyell's Principles of Geology; of field work in the district adjoining Cambridge, and of laboratory work during that part of the year when field work has been impossible.

A course of lectures on Palæontology, one hundred in number, has been given, during the first half of the year to a class of eight persons, and during the second half of the year to a class of ten persons. In this department a certain amount of laboratory work has also been required.

The summer course of Field Geology and Palæontology, designed to supplement the winter instruction and also to aid teachers in acquiring proper methods of teaching these sciences, was taught in connection with the work of the Kentucky Geological Survey, and by a journey through parts of the States of Virginia, Tennessee and North Carolina. This course was attended by a class of sixteen persons. As will be seen by comparing these numbers with those given in previous reports, there is a steady increase in the number of students in these departments. A corresponding increase has been made in the amount of the required work and the thoroughness of the examinations thereon. The field instruction, both in the neighborhood of Cambridge, during term time, and in the wider field of the summer course, has been more fully organized. By the aid of my assistant, Mr. W. M.

Davis, I have been able to secure field teaching on at least two days in each week during the season when out-door work is practicable. This part of the instruction is so conducted as to require each student to acquaint himself by practical work with the elements of the method of geological determinations. A large part of each class attains considerable skill in making sections and in determining the nature and extension of formations.

During the last session of the summer school, the work was so directed as to secure some important contributions to our knowledge of the structure of the Appallachian system of mountains. A carefully measured section was made from the Cumberland Mountain across the valley of East Tennessee to the Black Mountain of North Carolina. This section is, for its length, the most carefully made of any known to me in this country, and when published will throw a good deal of light on some of the most important problems of mountain structure.

Although some advance has been made in the preparation of materials for teaching, the most important gaps in our collection of such objects remain unfilled. It has been found very difficult to arrange and keep in order a sufficient cabinet of palæontological specimens, to give the student a good basis for laboratory work. To this task the whole time of one competent assistant could well be given. Considerable additions have been made to the collection of maps and models for geological illustration, and a collection of several hundred specimens illustrating the principal problems of lithology has been made, freely accessible to students. A collection of over one hundred volumes of general works on geology and zoölogy has been placed in the laboratory for free use. Most of these books have been deposited by the Harvard Natural History Society, with the condition that they remain freely accessible to students.

A good deal of my time, as well as that of my assistant, Mr. Davis, has been given to the fostering of the Harvard Natural History Society, an association which now serves as a centre of scientific inquiry among the advanced students of the University. This society has become a valuable helper of the natural history instruction given in the Museum. Its

special aims are to train students in methods of presenting their researches, and to secure their attention to all the noteworthy contributions on natural science. To accomplish this latter purpose, arrangements have been made with the special students of various subjects to bring the contributions in their several departments before the society for criticism and discussion.

The next session of the summer School of Geology will begin at the Museum in the first week of July, 1877. After about three weeks' work on the collections and in the neighboring geological fields, the work will be continued in the form of an excursion through the Connecticut Valley, the Berkshire Hills, and the Scoharie Valley in New York. At the close of the regular term of the school, the work will be extended along the line of the railway to Louisville, Kentucky, and will close with a few weeks' study in the cavern district of Kentucky.

REPORT ON THE MAMMALS AND BIRDS.

By J. A. Allen.

During the past year, two important collections have been received from the Rev. M. M. Carleton, from near Umballa, Northern India. These embrace in the aggregate eighty-six specimens of mammals, representing twenty-three species, and two hundred and ninety specimens of birds, representing seventy species. The collections of birds consist mainly of large species, and embrace pretty full suites of the raptorial and rasorial birds of Northern India. From the Smithsonian Institution we have received the first duplicate series of the types of Dr. Elliott Coues's "Monograph of the North American Muridæ," embracing twenty-five species and varieties, represented by about fifty specimens. Also, from the same source, twenty-two skulls of North American hares, and several skulls of beavers and porcupines. From Mr. Charles Coxen we have received twenty-five species of birds, represented by twenty-eight specimens, from Queensland, Australia, to whom has also been sent a collection of North American birds, numbering eighty-five specimens and representing sixty-one species.

Among other noteworthy additions are some thirty specimens of birds and birds' eggs, contributed by Capt. Charles Bendire, U. S. A., from Camp Harney, Oregon, which includes a fine specimen of Ross's goose (*Anser Rossii*), and large series of skins of *Leucosticle tephrocotis* (vars. *tephrocotis* and *littoralis*). Capt. Bendire has also sent us a small lot of skins of squirrels and marmots. From Prof. J. D. Whitney has been received a valuable lot of fossil mammalian remains collected by him some years since from the lead crevices of the Wisconsin Lead Region. Dr. S. L. Yates of Centreville, Alameda County, California, has presented a horn of *Bison antiquus*, and bones of the extinct elephant from Alaska.

By purchase have been added a skeleton of *Delphinus delphis*, a small collection of rare nests and eggs of Rocky Mountain birds, and a series of casts of the interior of crania of some forty species of mammals, prepared at the Museum of the Royal College of Surgeons of England.

Early in the year, some twenty or more skins of South American mammals, including the llama, guanaco, vicuña and alpaca, as well as several species of monkeys, sloths, rodents and carnivores, were sent to Prof. Ward to be mounted, and have already been returned satisfactorily prepared. At the same time were sent him for preparation about one hundred and sixty osteological pieces, a large proportion of them skeletons, which still remain in his hands.

During the year, considerable advance has been made in the critical determination of the exotic birds, particularly the South American, and much revisionary work has been done upon the mammals. The collections, including both the skins and the alcoholic materials, remain, as heretofore, in safe condition.

REPORT ON THE REPTILES BATRACHIANS AND SELACHIANS.

By S. W. Garman.

For additions to the collections in these departments, the Museum is under obligations to its friends, Samuel Powel, Aug. R. Grote, Hendrick Butler, Chas. Sarkady, Jos. L. Barfoot, Thos. G. Cary, F. W. Putnam, and J. Henry Blake. All of the contributions were in excellent condition. The work of changing the alcohol has been continued through the entire collections. Although redistillation caused a loss in bulk of about one-half, the amount of alcohol withdrawn, added to what was set free by sending duplicates away, lacked but a barrel of being enough to replace the twenty barrels needed for the change. Numerous experiments are being made to determine the relative stability of various metals when used for cans or labels, and the amounts of evaporation and comparative value of different liquids for preserving specimens. Thirty-seven collections, averaging forty species each, were sent to colleges and museums in different parts of this country and Europe for teachers' use and in exchange.

Such specimens as were needed in their studies have been taken out from time to time by the college students.

I am able to report these collections in better condition than ever before.

REPORT ON THE DEPARTMENT OF ICHTHYOLOGY.

By F. W. Putnam.

On taking charge of the collection of fishes contained in the Museum in September last, it was considered of primary importance that it should be placed in thorough systematic order before any other work was attempted. I therefore at once began the work of arranging the specimens in the several thousand jars now in the large room and gallery devoted to the department. This work has been carried on as fast as practicable, and the fishes contained in jars are now nearly all placed in their proper family or sub-family groups, and in some instances the genera have been separated. This work will be continued until the collection is so arranged that each genus will be by itself; the identification of the species and the arrangement of faunal and systematic collections can then be proceeded with to better advantage than heretofore.

I estimate that about one-fifth to one-quarter of the collection has been identified by various persons during the past few years, principally by Dr. Steindachner and Messrs. Bliss and Garman.

The elimination of a large mass of decayed material and many duplicate specimens, during the past two years, leaves the collection in as good order as can be expected until the further separation of specimens, in the jars which are still overcrowded, can be accomplished by their distribution to the several collections of the permanent arrangement.

I find by the records of the year, that the work of selecting duplicates for exchange and presentation to various institutions and individuals, begun by Mr. Bliss and completed by Mr. Garman, resulted in the distribution of forty-seven lots, each containing on an average about seventy species, and that the total number of specimens distributed was three thousand six hundred and fifty-six. As these specimens were all

identified and carefully packed in cans with alcohol, the time and expense necessary for this undertaking will be readily understood. By this distribution, seven educational institutions in the State received valuable named specimens ready for placing in jars in their respective museums. The rest of the lots were distributed to nine institutions or individuals in the United States and Canada, and thirty in the Old World.

The specimens of Scomberesoces sent to Prof. Lütken of Copenhagen, in January, 1875, have recently been returned with his identifications.

The few additions during the year consist of the following lots in alcohol:—

From the Rev. R. W. Wood, a collection from the Marshall Islands, made by the Rev. B. G. Snow.

From the Department of Engineers, U. S. Army, through the Smithsonian Institution, a series of the type specimens described by Messrs. Cope and Yarrow in the Zoölogical Report of the U. S. Geographical and Geological Surveys, west of the one hundredth meridian, under charge of Lt. G. M. Wheeler, U. S. Engineers.

From Mr. Charles Sarkady, seven species from Napo and Marañon.

From the Boston Society of Natural History, the bulk of the collection which I made at Lake Erie in 1865.

From Mr. T. G. Cary, one specimen from Cape Cod.

From Mr. J. H. Blake, a small collection from Provincetown, Mass.

From Alexander Agassiz, a collection of young fishes from Newport, R. I.

From Mr. Charles Bryant, several species from Onalaska.

From the Rev. M. M. Carleton, a few specimens from Eastern India.

In relation to the last two lots, it is to be regretted that only a few specimens could be saved from each, and I take this opportunity to call attention to the great care that should be given to the proper preservation of specimens intended for the Museum. It is not only necessary to enclose the specimens in tight bottles, cans or kegs, but care should be taken to change the spirits in which they were first placed for strong alcohol before starting the packages on their journey, and above all not to crowd the specimens. By packing cotton rags, hay, moss or shavings between the specimens, crowding

is prevented, the alcohol is brought in contact with the fishes from all sides, and the scales, fin-rays, and other delicate parts are protected. The disappointment to both sender and receiver is so great, when specimens, carefully collected, often at great expense, are destroyed from the lack of the above simple directions, that I do not hesitate to impress on all collectors the great importance of following them, when making up their future contributions to the Museum.

The large collection of Selachians has continued to be in charge of Mr. Garman during the past year, and his report will show what has been done in that group. I can only mention that the collection is well cared for, arranged in part in jars and in part in copper cans and large tanks, and that the specimens have been identified and catalogued by Mr. Garman during the few past years.

Mr. Garman has, during the year, also changed the alcohol in many of the large jars in the upper fish-room, and for this purpose about two hundred and seventy gallons of alcohol were required.

In regard to the portion of the collection still remaining in bulk in copper cans and large jars in the fish-room in the basement, nothing has been done during the year, and it will be part of the work for this winter to examine its condition and separate the specimens as far as practicable, in order to complete the systematic arrangement of the class.

In closing this Report, I beg leave to express my gratification in regard to the general good condition of what I believe to be the largest and most important collection of fishes in existence, to the charge of which I have the pleasure of returning after an absence of twelve years.

Cambridge, November 23, 1876.

REPORT ON THE INSECTS.

By Dr. H. A. Hagen.

Additions to the collection: from—

1. Mr. Jones, from Bermuda Islands. Several insects from Bermuda Islands.
2. Mr. Palmer. Lepidoptera from Guadaloupe Island, Cal.
3. Mr. J. A. Allen. Insects from Yellowstone.
4. Dr. J. H. Kidder, from New York. Odonata from New Zealand.
5. Mr. S. W. Garman. Insects and Fossil Insects from Illinois.
6. Count Kornis, from Austria. Cave Beetles from Krain, Europe.
7. Rev. N. H. Chamberlain. An African Locust, taken at sea, 1,200 miles from land.
8. Dr. C. A. Dohrn, from Stettin. Five hundred and twenty-seven specimens of Coleoptera, all new to the collection. (Exchange.)
9. Mr. H. Edwards, from San Francisco, Cal. Neuroptera.
10. Mr. T. V. Chambers, from Covington, Ky. A very large lot of Microlepidoptera, types of the species published by him.
11. Mr. H. Strecker, Reading, Pa. A large lot of Lepidoptera of the United States. (Exchange.)
12. Dr. A. Staudinger, from Dresden. A large lot of Lepidoptera from Europe. (Exchange.)
13. Mr. Beddome, from Queensland, Australia. A lot of Lepidoptera.
14. Dr. C. A. Dohrn, from Stettin. A large collection of Staphylinidæ and Pselaphidæ, named. (Exchange.)
15. Mr. Meade, Bradford, Eng. A large lot of types of Anthomyidæ, presented by Baron Osten-Sacken.

16. Mr. Fr. Sanborn. Biological specimens from the United States.

17. Mr. R. Thaxter. Odonata from Florida and New Brunswick.

18. Mr. C. E. Webster, from Binghamton, N. Y. Œstrus emasculator.

19. Mr. F. Steindachner, Vienna, Austria. A large lot of Lepidoptera from Tyrol.

20. Baron Osten-Sacken. A large lot of Neuroptera, collected by him in California, Nevada, Utah, and biological specimens; also oak galls from California.

21. Mr. J. Behrens, Saucelito, Cal. Neuroptera.

22. Mr. T. V. Chambers, Covington, Ky. A lot of Microlepidoptera from Colorado.

23. Mr. L. Cabot. Catocala relicta from Manchester, Mass.

24. Mr. H. Strecker, Reading, Pa. A very large lot of Lepidoptera, mostly new to the collection. (Exchange.)

The additions to the Coleoptera, Lepidoptera, and Neuroptera are prominently important.

A large part of the time of Miss M. Clark and myself had to be spent in emptying about twelve hundred boxes needing repair and new paint, in destroying the Museum's pests, and watching the infested boxes. Now the insects are again in good condition.

Baron Osten-Sacken has published a monograph of the Tabanidæ of the United States. The types are in the collection. Some families of the Muscidæ of the United States are now worked up by him, and partly in England by Mr. Meade.

The United States Lepidoptera, forming a separated collection, are now arranged and mostly determined. For the determination of a large number of the Noctuidæ, the Museum is indebted to Mr. H. K. Morrison; of the Geometridæ, to Dr. A. S. Packard. The Tineidæ received a very valuable addition by a large number of types presented by Mr. T. V. Chambers.

The general collection of Lepidoptera is now arranged for Papilionidæ to the end of the Satyridæ, and a part of the Bombycidæ. The Museum is indebted to Mr. Strecker for a large amount of determinations.

Concerning the Coleoptera, the United States collection is throughout in order, and has been used by several students. For the general collection, the arrangement of the Curculionidæ, Brenthidæ, Anthribidæ, Bruchidæ, is finished. The collection contains for those families about one-third of the species known and two-thirds of the genera.

The large addition of specimens determined by first-class authorities allowed us to arrange the Staphylinidæ and Pselaphidæ, containing about one-fifth of the known species. During the last month the Buprestidæ were arranged, and the family of Carabidæ commenced.

REPORT ON THE CRUSTACEA.

By Walter Faxon.

The chief work on the collection during the past year has been the continuation of the *scientific* determination and cataloguing of the specimens. At the same time, the duplicates are eliminated, and, being identified and labelled, become for the first time fit for exchange. One may form some notion of the condition of the collection, when it is known that in the group of *Maioids*, answering to 373 catalogue numbers, but forty had been previously identified, mostly by Stimpson.

The card-catalogue system, previously introduced in other departments of the Museum, has been adopted here, and together with a duplicate-sheet catalogue, in which the objects are entered in a consecutive numerical order, fulfils all requirements.

A series of recent and fossil *Crustacea* has been prepared and mounted for the Synoptic collection, and is now on exhibition.

Collections have been received during the year from—

Agassiz, A. *Larvæ* from Newport, R. I.

Bundy, W. F. *Cambarus* from Racine and Ironton, Wis.

Hammond, G. G. *Callinectes* from New London, Conn.

Higgins, Mr. Three species, eight specimens, from Drownville, R. I.

Leinney, W. M. Living *Cambarus juvenilis* from Perryville, Ky. (In exchange.)

Peabody Academy of Science. *Myctiris* from Newcastle, N. S. W.; *Palæmon Amazonicus?* from Para, Brazil. (In exchange.)

Smith, S. I. Three species from Provincetown, Mass.; New Haven, Conn.; Wisconsin; San Francisco, Cal.

Unknown. *Lithodes Maia* from Pigeon Cove, Mass.?

Van Vleck, B. H. *Cambarus.*

Wood, Rev. R. W. Collection made at the Marshall Islands by the Rev. B. G. Snow.

REPORT ON CONCHOLOGY.

By JOHN G. ANTHONY, Assistant in Conchology.

The progress made in this department during the current year will compare favorably with that of preceding years, and is on the whole most satisfactory.

The same plan of revision and re-identification of every species in our collection which was in operation at the close of the past year has been continued in this, and so far as our Univalves are concerned, has been satisfactorily completed. The result has been the critical examination and cataloguing of eleven thousand three hundred and twelve species, which is the number at present in our collection. The bivalves are not, of course, included in that number, that part of the collection being now under examination and very far from being completed.

As fast as we have received species and specimens designed to be added to the collection, they have been carefully cleaned and mounted for exhibition by my daughter, who attends to this part of the Museum work, and this has been done with her usual commendable skill.

Among our other duties, the cause of education has not been forgotten or neglected, and this department has sent out during the current year no less than seven collections of shells, selected expressly to show generic forms. These have been presented to educational institutions, to enable them to teach this branch of natural science more effectually.

We have received since our last report twenty-nine packages, containing one thousand and eighty-two species and seven thousand six hundred and thirty-four specimens. This is about our usual number, though as we now solicit only such species as will add directly to our numbers, we ought not to expect to receive as large accessions as when our collection being smaller we required a larger range of species.

Dr. Dohrn has not been wanting in his usual kindness, and although he has sent us but one package of two hundred species, it contained one hundred and eighty-three species which were not before in our possession, and illustrated many genera and sub-genera of which we previously had no representatives.

Mons. Morelet, too, has again favored us, and this time with a small invoice of species which, however, being from Morocco and North China, were especially acceptable, and added twenty species to our number.

From Dr. Haast of the Canterbury Museum, New Zealand, we received a valuable contribution of marine shells from that coast, adding twenty or more new species.

Since our last report, we have heard of the death of one of our most valued contributors, Mr. Charles Coxen of Queensland. Before his death, which took place on the 17th of May last, he had prepared and packed a box which has since been forwarded us, containing not only one hundred and fifty species of the fine shells of that region, but a fine contribution of bird skins of which Mr. Allen will speak more particularly.

Our consignments during the year have been to twenty-eight persons and institutions, being forty-two packages, containing four thousand one hundred and thirty species and ten thousand five hundred and thirty-one specimens.

This is somewhat larger in amount than last year, and is considerably in excess of our receipts; but the large contribution we have made to educational institutions, and some payments made on account of other departments, have helped materially to swell the amount.

REPORT ON CONCHOLOGY.

By Charles E. Hamlin, Assistant in Conchology.

The revision and determination of species of marine shells, in which I have been chiefly engaged during my connection with the Museum, has proceeded as regularly and rapidly through the past year, as numerous interruptions have permitted. The identification of Gasteropoda having been completed in September, 1875, I began work on the Lamellibranchiata the following month, and to this all time, not otherwise occupied, has been devoted.

In the early spring of this year, considerable time was given to selecting and naming a series of marine shells for the Synthetic collection.

Several weeks of April and May, and part of the present fall, have been given to putting in order and arranging in the new glazed cases of the attic, the Tertiary, Cretaceous, Jurassic, and Triassic fossils.

At present I am engaged in arranging the Palæozoic fossils of each age by classes. With the return of spring, preliminary labor on this part of the Palæontological collection will be completed, when it is hoped that the fossils will be well secured from dust, and placed in such convenient order as will facilitate access to them, and the subsequent special study to which they will be submitted. In work upon the fossils, I have had the efficient aid of Misses Atkinson and Anthony.

Instruction of a college class in Structural Geology and Physical Geography has occupied the greater part of two days of each week during term time.

REPORT ON RADIATA.

By L. F. Pourtalès, Keeper of the Museum.

No important additions to this department have been made during the past year. Several sets of duplicate corals have been forwarded to different institutions, in exchange for specimens received in other departments of the Museum, and a number of sets of named species have been prepared and laid aside for future similar use.

The synthetic-room, on the first floor of the Museum, has been in part arranged, according to the plan of the late Professor Agassiz. The Protozoa, Radiates, Crustacea, Birds and Mammals, are in their places, represented by characteristic specimens of the principal families. The other classes are rapidly advancing towards complete arrangement. The room is already used by students to a considerable extent, being conveniently situated relatively to the lecture-rooms, and presenting a general view of the animal kingdom in a small compass.

In the room devoted to the systematic collections of Radiates, the different orders of Echinoderms have been placed on exhibition, with the exception of the Holathuridæ, which will also soon be arranged. The remaining space will be occupied by the sponges and by the Alcyonoid corals, when the latter are returned by Professor Kölliker.

The fossil corals have been put in order, named in part, and catalogued. They are now kept in the new glass-cases in the attic, under better protection from the dust than heretofore, and will be readily accessible when wanted. As in former years, Miss Hyde has done most of the work of cataloguing, mounting and arranging the specimens.

Mr. Theodore Lyman has taken charge, as usual, of the collection of Ophiuridæ and Astrophytidæ, of which preparations have been made, under his direction, by Miss Clark.

REPORT ON THE LIBRARY.

By Miss Slack.

During the year ending October 1, 1876, the library has received 784 volumes, parts of volumes, and pamphlets.

Complete works,	volumes,	110
Transactions, and other serial publications,	"	45
" " " "	parts,	419
Pamphlets,		210
		784

Of these, there were received from—

Mr. Alex. Agassiz: 61 volumes, 159 parts, 61 pamphlets,	281
Societies: 21 volumes, 242 parts, 3 pamphlets,	266
Library of Louis Agassiz: 26 volumes, 1 part, 53 pamphlets,	80
Baron R. Osten-Sacken: 35 volumes and 19 pamphlets,	54
Department of the Interior: 5 volumes, 9 parts,	14
Mr. L. F. Pourtalès: 2 volumes,	2
Dr. C. G. Giebel: 2 volumes,	2
Mr. S. H. Scudder: 1 volume and 7 pamphlets,	8
Mr. Theodore Lyman: 1 volume and 1 part,	2
Prof. A. H. Worthen: 1 volume,	1
Museum of Comparative Zoölogy: 5 parts,	5
Bought: 4 parts,	4
Bureau of Education: 3 parts,	3
Mons. P. H. Nyst: pamphlets,	12
Mr. A. Hyatt: "	10
Prof. O. C. Marsh: "	9
Prof. F. Plateau: "	7
Dr. F. Steindachner: "	5
Prof. J. Steenstrup: "	3
Mr. S. W. Garman: "	3
Mr. George Lawrence: "	2
Prof. B. G. Wilder: "	2
Miscellaneous,	9
	784

APPENDIX.

[B.]

PETITION.

To the Honorable the Senate and the House of Representatives in General Court assembled.

The petition of the Trustees of the Museum of Comparative Zoölogy, a corporation established by Act of the Legislature of April 5, 1859, respectfully represents, that the main purpose for which said Act was passed was to establish a body corporate, with power to receive, hold and possess real and personal property, not exceeding the sum of three hundred thousand dollars, for the erection, support and maintenance of a "Museum of Comparative Zoölogy," at Cambridge; that since the passage of said Act, a large amount of property has been raised, by contributions and otherwise, for the use and benefit of said Museum, consisting of money, real estate and buildings, and of specimens and collections in natural history, all which are now held in trust by said Trustees, for the uses and purposes set forth and declared in said Act; that in addition to the property so held by said Trustees in trust, there has also been raised by general contribution other large sums of money and property, which have been given to, and are now owned and held in trust by, the President and Fellows of Harvard College for like purposes as those declared in said Act, to be used, expended and appropriated for the benefit and support of said Museum; that the result and effect of the creation and establishment of the trusts above set forth, is, that the property designed for the maintenance and support of said Museum of Comparative Zoölogy, instead of being placed in the management and control of one corporation, clothed with necessary power to provide for all its wants, and to administer its affairs with a single eye to the success of the particular department of science and instruction which it was intended to found and promote, is now vested in two distinct corporate bodies, part being held by the corporate body which your petitioners compose, called the "Trustees of the Museum," and part by the President and Fellows of Harvard College.

Neither of these bodies has any direct authority in the management of the Museum, which lies fully in the hands of its Faculty, a body whose status is recognized by the original articles of agreement between the corporation of Harvard College and the said Trustees.

Over the appointment of this Faculty the Trustees have no control, their function being limited to holding the fee in the real estate and the property in the collections, and to the management of about one-quarter of the invested funds, the control of the other three-quarters being in the hands of the said corporation. The management by two corporate bodies of funds held for the same purpose, is obviously unnecessary, and inconvenient.

Your petitioners further represent that the larger part of the funds now held for the use and benefit of the Museum are vested in the President and Fellows of Harvard College, and are held upon trust in such a way that they cannot be diverted or in any way changed; that it would greatly simplify the management of the property to place it in the hands of the President and Fellows, a fixed and established corporate body of well-known and defined powers, and composed of persons charged with the duty of maintaining and administering trusts of like character with those vested in said Trustees.

For these reasons, your petitioners ask that an Act may be passed by which, with the assent of the President and Fellows of Harvard College, all the powers and trusts now vested by law in the "Trustees of the Museum of Comparative Zoölogy" may be transferred to and be vested in said President and Fellows; that said Trustees may be authorized and empowered to make, execute and deliver valid deeds of conveyance of the real estate and property now held by them to said President and Fellows, to hold upon the same trusts upon which they are now vested in said Trustees.

ABBOTT LAWRENCE, *Secretary.*

[C.]

[Senate No. 51.]

COMMONWEALTH OF MASSACHUSETTS.

In Senate, February 23, 1876.

The Committee on Education, to whom was referred the petition of the Trustees of the Museum of Comparative Zoölogy, have considered the same, and report the accompanying Bill.

By order of Committee,

JOHN SARGENT.

AN ACT

Concerning the Trustees of the Museum of Comparative Zoölogy.

Be it enacted by the Senate and House of Representatives, in General Court assembled, and by the authority of the same, as follows:

Section 1. The Trustees of the Museum of Comparative Zoölogy are authorized and empowered to convey all the property in their hands to the President and Fellows of Harvard College, upon the same trusts upon which it is now held by said Trustees, and upon such other trusts not conflicting or inconsistent therewith as said corporations may agree upon, and the said President and Fellows of Harvard College are authorized to receive said property upon said trusts, and shall thereupon have all the powers and be subject to all the duties in relation to the said property given to and imposed upon the said Trustees by their act of incorporation and the acts in amendment thereof.

Sect. 2. This act shall take effect upon its passage.

[D.]

At a meeting of the President and Fellows of Harvard College, in Boston, May 1, 1876, the President presented a communication from the Trustees of the Museum of Comparative Zoölogy, with copy of a vote passed at their meeting of April 26, 1876, as follows:

Voted, That the treasurer be authorized to execute and deliver to the President and Fellows of Harvard College, the trust deed and the deed of the land, together with the accompanying papers, prepared by the committee of the trustees, in accordance with the Act of the Legislature of March 13, 1876, and to deliver all the property named in said deeds and held by the trustees for the benefit of the Museum, to the President and Fellows of Harvard College.

Whereas, The Treasurer of said Trustees is now ready to transfer and deliver to said President and Fellows, the property in his hands as aforesaid: Now, therefore—

Voted, That the treasurer be authorized to execute on behalf of the Corporation the trust deed referred to in the above vote, and to receive the property in accordance therewith and on the trusts therein set forth or referred to.

A true copy of record. Attest:

(Signed) E. W. HOOPER,
Secretary of the Corporation.

[E.]

AGREEMENT

BETWEEN THE TRUSTEES OF THE MUSEUM OF COMPARATIVE ZOÖLOGY AND PRESIDENT AND FELLOWS OF HARVARD COLLEGE, DATED MAY 6, 1876.

This indenture, made this sixth day of May, A. D. 1876, by and between the Trustees of the Museum of Comparative Zoölogy hereinafter called the Trustees on the one part, and the President and Fellows of Harvard College hereinafter called the Corporation on the other part,—

WITNESSETH:

Whereas, Louis Agassiz, then Lawrence Professor of Zoölogy and Geology in the Lawrence Scientific School of Harvard University, did, prior to and during the year 1858, make a valuable collection of objects of Natural History:

And whereas, In the said year 1858, a fund of fifty thousand dollars was given to the said Corporation by William Gray, executor of the last will and testament of his uncle, Francis C. Gray, late of said Boston, deceased, in trust, to preserve the same as a separate fund, and to appropriate the income thereof to the establishment and maintenance of a Museum of Comparative Zoölogy at Harvard College; but no part of the same to be appropriated to the payment of salaries or the purchase of real estate: which donation was made and accepted on a condition that the said Museum be arranged and conducted under the superintendence of a body of five persons, to be denominated the Faculty of the Museum of Comparative Zoölogy, constituted and appointed in the manner set forth in the letter of the said donor, dated December 20, 1858, to the said Corporation, and accepted by vote of said Corporation of December 24, 1858:

And whereas, The Legislature of the Commonwealth did, by Act

of April 2, 1859, make an appropriation of one hundred thousand dollars out of the proceeds of Back Bay lands, to be paid to such persons as should be incorporated as the Trustees of the Museum of Comparative Zoölogy; provided an equal amount should be secured by private subscription:

And whereas, By Act of April 6, 1859, the said Legislature incorporated the said Louis Agassiz, William Gray and others, and their successors, as the Trustees of the Museum of Comparative Zoölogy, with power to receive, hold, purchase and possess real and personal property not exceeding three hundred thousand dollars in value, to be used and improved for the erection, support and maintenance of a Museum of Comparative Zoölogy at Cambridge, in this Commonwealth; and, provided, that the sum of fifty thousand dollars, given as aforesaid by said William Gray, should be deemed a part of the sum required to be raised by private subscription for said Museum, as a condition precedent to the payment of said grant of one hundred thousand dollars:

And whereas, A sum of more than seventy thousand dollars in addition to the said Gray donation, was raised by private subscription, and paid to the said Trustees, who have also since received the said grant of one hundred thousand dollars from the Commonwealth, and other funds for the support and maintenance of the said Museum:

And whereas, By articles of agreement between the parties hereto, dated June 14, 1859, it was agreed that certain lands should be conveyed for a nominal consideration by the said Corporation to the said Trustees for the purpose of enabling them to erect buildings for the said Museum, and rules and regulations were established for the government, occupation, care and management of the institution to be established and maintained by means of the funds, collections and other property held by the said parties for the purposes of a Museum as aforesaid:

And whereas, By deed dated the same day, certain lands were conveyed by the said Corporation to the said Trustees, together with the collections of articles already acquired by the said Corporation toward the formation of such a Museum, to be held by the Trustees upon trust for the erection of buildings, and the maintenance, improvement and extension thereof, and for the establishment and maintenance of the Museum of Comparative Zoölogy, to be used, occupied, managed and governed in strict conformity

to the rules and regulations agreed upon in the aforesaid contract of the same date, which should not be repealed or altered except by mutual consent of the said Corporation and the said Trustees:

And whereas, Since that time a Museum building has been erected by the said Trustees upon the said parcel of land, and large collections have been made, and donations of money and land for the maintenance, support and extension of said Museum, have been contributed, and are held partly by the said Trustees and partly by the said Corporation, and administered under regulations adopted by concurrent vote passed by said Trustees, January 28, 1874, and by said Corporation, January 30, 1874, in accordance with the terms of said articles of agreement of June 14, 1859:

And whereas, It has been deemed advisable that the ownership, management and control of the said Museum, and collections, lands, funds, and other property held for the purposes of said Museum, should be united in the hands of said Corporation, and the said Legislature has, by Act of March 13, 1876, authorized the said Trustees to convey all the property in their hands to the said Corporation upon the same trusts on which it is now held by the said Trustees, and upon such other trusts not conflicting or inconsistent therewith, as the said Trustees and the said Corporation may agree upon:

Now, therefore, In consideration of the premises, the said Trustees of the Museum of Comparative Zoölogy do hereby convey, remise, release and forever quitclaim to the said President and Fellows of Harvard College, all the lands, buildings, Museum, collections, stocks, bonds, notes, mortgages, money, funds, accumulations and property of whatsoever name or nature held by them, or to which they are in any manner entitled as such Trustees:

To have and to hold, the granted premises to them the said President and Fellows of Harvard College, their successors and assigns, to their use forever; but in trust, nevertheless, as to all the said property except the said lands for the uses and purposes for which, and subject to the duties and trusts upon which the said Museum and other the granted premises are held by the said Trustees, and upon the further trust that the Museum shall continue to be as at present, under the charge of an independent Faculty constituted and appointed in the manner provided in the sixth article of the conditions named in the aforesaid letter of December 20, 1858, accompanying the said donation of William Gray. And as to the

said lands upon trust, to use them only for the purposes of the said Museum and for other purposes of a similar nature which can be conveniently combined with said Museum.

And the said President and Fellows of Harvard College accept the property herein conveyed upon the trusts aforesaid.

In witness whereof the said Trustees of the Museum of Comparative Zoölogy have caused these presents to be signed with their corporate name and sealed with their common seal by Theodore Lyman, their Treasurer, thereto duly authorized: And the said President and Fellows of Harvard College have caused these presents to be signed with their corporate name and sealed with their common seal by E. W. Hooper, their Treasurer, thereto duly authorized on the day first above mentioned, May 6, 1876.

TRUSTEES OF THE MUSEUM OF COMPARATIVE ZÖOLOGY,
[SEAL.] THEODORE LYMAN, *Treasurer.*

THE PRESIDENT & FELLOWS OF HARVARD COLLEGE,
[SEAL.] By E. W. HOOPER, *Treasurer.*

In presence of
ARTHUR G. DAVIS,
to both.

[F.]

SCHEDULE OF PROPERTY

In the Hands of the Trustees of the Museum of Comparative Zoölogy, on May 6, 1876.

Land and buildings, at original value,	$78,542 13	
Land given by Shaw and Agassiz, at cost,	9,302 34	
Land bought of Harvard Memorial by Agassiz, at cost,	6,937 20	
Collections in Museum, original value,	61,340 06	
Total property yielding no income,		$156,121 73
United States bonds, 5-20s, registered at par,	$11,000 00	
Boston & Albany R. R. bonds, 7s, 1892, cost 103,	77,250 00	
Part of Eldredge's mortgage note for $20,000,	19,959 34	
Total of Permanent Fund,		108,209 34
Balance of Eldredge's mortgage note,	$40 66	
Chicago, Burlington & Quincy R. R. 7s, 1903, at par,	7,000 00	
Total of Humboldt Fund,		7,040 66
Note of A. B. Almon, with collateral (less discount),	$11,634 00	
Note of R. S. Fay, with collateral (less discount),	4,363 50	
Note of Washington Mills, indorsed (less discount),	19,390 00	
Chicago, Burlington & Quincy R. R. 5s, 1895, cost 88, and interest,	14,166 67	
Cash in New England Trust Company,	445 83	
Total of State grant to Agassiz Memorial Fund,		50,000 00
Balance due income account in New England Trust Company,		730 52
Total of property (at value as above),		$322,102 25

Boston, May 6, 1876.

Received of Theodore Lyman, Esq., Treasurer of the Trustees of the Museum of Comparative Zoölogy, all the property mentioned in the above schedule, to be held by the President and Fellows of Harvard College in accordance with the terms of an agreement between them and said Trustees dated May 6, 1876.

(Signed) E. W. HOOPER,
Treasurer of Harvard College.

[G.]

The Committee appointed by the Faculty of the Museum to consider the expediency of extending the Museum publications so that they should fairly represent the scientific activity of the Natural History Departments of the University, beg to report:—

That, were the University now beginning a system of publication, it would be desirable that all memoirs, papers, etc., issued by the different departments, should form distinct series in one set of University publications. This is, however, impossible, since the Observatory, the Museum of Comparative Zoölogy, the Bussey Institute and the Peabody Museum each have a distinct plan of publication, from which it would be difficult, if not impossible, to deviate.

They therefore recommend that the Museum publications be so extended as to include all the departments lately incorporated with it, retaining the Bulletin for the issue of shorter notices requiring extensive circulation, and that a quarto series of memoirs, to include the larger contributions to science, be substituted for the illustrated catalogue. The heading of each memoir should indicate under which department of the Museum it has been prepared.

While the Committee recognize the impossibility of combining the existing University publications in one series, they hope that after all the different departments of the University have their special publications, there may yet be established, in addition, an octavo journal, to serve as the scientific organ of the University, where professors would be able to give abstracts from the work done in their departments, call attention to their needs, and come more directly in contact with the public than they can hope to do through the pages of the Proceedings of the American Academy or other scientific journals whose editors generally reap the benefit of their communications. Granting that it is not advisable to multiply scientific periodicals, your Committee believe that Cambridge not only should be, but must inevitably become, a scientific centre, and that the work of its original investigators ought, in justice to them, to be associated with the University whose officers they are.

If the proper means be taken, one important result of this increased activity would be the securing by exchange, in return for all such memoirs published by the various departments, like pub-

lications from other learned societies. It is often impossible to obtain these publications in any other way. The feasibility of dividing the exchanges thus received by the University among its different departments where provision exists for special libraries, is to be carefully considered.

Your Committee is of opinion that a library loses its usefulness to a great degree by centralization. To them the system now in vogue among university libraries, of a grand central collection, seems as unpractical as if all the apparatus of the chemical and physical laboratories, the observatory, and the physiological and anatomical departments should be kept together in one general depot and given out only on application from the professors. There are already in the University several special libraries: those of the Observatory, the Law School, the Botanic Garden, the Medical and Divinity schools, and the Museum. Some of these are growing rapidly, and their efficiency would be greatly increased should the general library distribute among them such special works as are not in common demand. By depositing in the general library card catalogues of their contents, these special libraries would still remain accessible to all persons connected with the University. Should each department maintain regular issues of memoirs or reports, thus acquiring, as suggested above, a claim to corresponding publications of other universities and societies, the special libraries would undoubtedly increase very rapidly, faster than the general library could hope to do in the same branches. That the amount of these additions to special collections is important may be shown by a comparison of the exchanges received in the College Library and in the Museum Library. The former receives, through exchange or donations, the publications of fifty societies and individual editors, while the Museum is in regular correspondence with no less than ninety-three societies, chiefly of zoölogy and geology. A moderate activity in the departments recently connected with the Museum would greatly increase this number.

The Smithsonian Institution gives a still more striking instance of what may be accomplished in this direction. This institution, although not more than thirty years old, receives the Transactions of no less than two hundred societies, while Harvard College Library, its senior by nearly two centuries, receives, as stated above, but a quarter of that number.

Considering the limited means at the disposal of the Museum for the increase of their library, it is urged that, in order to augment the efficiency of the departments connected with it, the central library should not duplicate the books already to be found in the Museum Library or the periodicals and other exchanges regularly

received there, beyond the actual needs of the College. It is well known that there exists no concerted action between the libraries of the University. Your Committee would strongly recommend that some definite arrangement be made, not only with the Museum Library, but with all the libraries, by which their acquisitions by exchange or donation and their orders should at once be reported from one to the other, thus preventing unnecessary duplication in private as well as public libraries. It often happens that the professor, who has been endeavoring, perhaps at a great personal sacrifice, to keep up with the literature of his department, presently finds that the central library has also purchased the very books he already possesses. In short, with the present irresponsible system, we frequently have in Cambridge several copies of the more common books purchased in rapid succession, while no provision is made for the more expensive works, or for such as are less easily procured.

ALEXANDER AGASSIZ.
J. D. WHITNEY.